COLLECTIVE AND INDIVIDUAL CONFLICTS IN THE WORKPLACE : EVIDENCE FROM FRANCE

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Note de Recherche n° 11-12 Avril 2011

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Abstract

Using a nationally representative dataset, this article investigates the relationships between different forms of collective and individual conflict in French workplaces. For collective conflict, we consider both the strike and other collective forms which have become increasingly frequent in recent years. The individual conflict forms considered are disciplinary actions and employment tribunal claims. We find that strikes and non-strike collective conflicts have a very similar impact on French workplaces. The impact of collective conflict on individual conflict depends on the type of individual form considered, with a positive effect on disciplinary actions and a negative effect on employment tribunal claims.

Keywords: Industrial conflict; Unions ; Endogeneity ; Recursive bivariate Probit.
JEL Classification: J50; J53; C35

1 Introduction

Despite the decline of traditional, long strikes, conflict between employees and employers continues to be an important feature in French workplaces. Recent survey data in France show that an increasing number of workplaces are affected by industrial conflict in increasingly diverse forms. Nevertheless, most industrial conflict studies to date have focused only on strikes.

The strike is certainly the most radical and visible form of industrial conflict. By disrupting the production process, the strike can be particularly detrimental to a firm's economic and financial performance. The results of previous empirical studies generally support the hypothesis that strikes have a negative economic impact (e.g. Kleiner et al. 2002).

However, the focus on such an isolated form of industrial conflict may result in biased estimates of its economic effects because the various forms of industrial conflict possible are assumed to be 'inextricably related to each other' (Hebdon and Stern 1998: 204). A number of authors studying industrial relations have demonstrated the value of simultaneously analyzing multiple forms of industrial conflict. The few major studies that have investigated the strike together with other alternative forms of industrial conflict show that a restriction or reduction in strike activity tends to be associated with an increase in alternative conflict forms (e.g. Hebdon and Stern 1998; Sapsford and Turnbull 1994, 1996). Existing empirical evidence strongly suggests that strikes and individual forms of industrial conflict are substitutes for each other in the workplace. In the absence of a strike, employees switch to individual forms of industrial conflict to express their discontent. A reduction or absence of strike activity therefore does not automatically lead to greater firm performance, all things being equal, if it is associated with an increasing use of individual conflict forms, which also are assumed to alter firm activity (e.g. Katz et al. 1983; Norsworthy and Zabala 1985).

Existing studies of the relationship between collective and individual conflict generally reduce collective conflict to a single form, the strike. They also tend to focus on only one form of individual conflict at a time. However, several forms of individual conflicts may occur at the workplace level, the most commonly cited in the literature being absenteeism and grievance [1]. To our knowledge, no major study has been conducted in France, where industrial relations have unique characteristics. The results of existing studies conducted elsewhere consequently may be irrelevant to the French context. We therefore aim to test in this paper whether collective and individual conflicts are substitutes for each other in French workplaces while taking into account different forms of individual conflict. More specifically, we ask whether the occurrence of collective conflicts in the workplace significantly reduces the probability that different forms of individual conflicts may occur. In the French workplace, two forms of individual conflict, both of which can be measured objectively, and which have become particularly pronounced in recent years, are disciplinary action and employment tribunal claims. It is interesting to compare these two forms because they describe different manifestations of employee discontent. In France, the classic strike gradually has been replaced by alternative forms of collective conflict. These have arisen in response to economic and institutional changes that have persuaded unions to develop new strategies for collective action. Workplaces in which a strike has occurred thus represent only one part of the workplaces involved in collective conflict. In this article, we explore whether less radical, alternative forms of collective conflict, which have received little attention in existing literature, impact individual conflict forms differently than strikes.

Empirical studies have shown that collective and individual conflicts have several common determinants which prove to be difficult to fully control in a multi-sectoral national analysis. The

1. A grievance in the employment context refers to a specific, formal notice of employee dissatisfaction expressed through an identified procedure. Grievances are usually based upon a violation of a law, violation of a term in an employment contract, or a violation of a past practice.

estimate of the effect of collective conflicts on individual conflicts therefore may be biased due to unobserved heterogeneity. We sought to control this potential bias by using a simultaneous equation model.

The paper proceeds as follows: Section 2 first presents the main studies which have investigated collective and individual conflicts simultaneously, then focuses on the key conflict forms that are relevant to the French case. Data and variables are described in Section 3 while the econometric specification is laid out in Section 4. The results of our empirical investigation are presented and discussed in Section 5, and Section 6 concludes.

2 Empirical Evidence and Theoretical Foundations

Collective and Individual Conflicts: Substitutes or Complements?

Few studies have explored the relationship between two or more forms of conflict (Hebdon and Stern 1998: 205). Studies examining the relationship between collective and individual conflicts usually focus on the relationship between strikes and one form of individual conflict. Authors mainly are interested in observing the evolution of individual forms of conflict following a restriction on the right to strike. Knowles (1952) is one of the first to examine this type of relationship, focusing on the effect of a strike ban on absenteeism in the British coal industry. He finds that conflict is redirected when the right to strike is restricted, with a significant, inverse relationship between strikes and absenteeism. This conclusion also is reached in a number of subsequent empirical studies. Turner et al. (1967), in their study of British Ford, find a significant rise in accident frequency rates, 'work-hours lost' from accidents, absenteeism and turnover during the two-year period when the company sought to eliminate strikes. In a separate context, Ozaki (1988) has similar results in a study of the public sector of developing countries. In countries where collective activities are banned, individual expressions of discontent have developed, including absenteeism, indiscipline and negligence.

In more recent literature, the relationship between 'organized' conflicts, namely strikes, and 'unorganized' conflicts was formalized by Sapsford and Turnbull (1994). They present two competing hypotheses: the 'balloon' hypothesis and the 'iceberg' hypothesis. According to the first hypothesis, collective and individual conflicts are interchangeable, or are alternative forms of unrest, hence the analogy of the balloon "which, when pressed in at one point expands outwards at another" (Sapsford and Turnbull 1994: 250). Under this hypothesis, reductions in strike activity are accompanied by a compensatory increase in unorganized conflict forms, in agreement with the results presented above. In contrast, their second hypothesis holds that increases in strike activity tend to be accompanied by corresponding increases in other forms of industrial conflict. They make the analogy of an iceberg, where strike activity is the tip of a much larger mass of ice, namely industrial conflict in its entirety, hidden out of sight beneath the water.

Sapsford and Turnbull (1994, 1996) empirically study the relationship between strikes and absenteeism on British docks, successively using two different methods. The first method is based on comparing estimated coefficients for common covariates between the absenteeism equation and the strike equation. Obtaining coefficients of opposite signs between the two equations, their results support the 'balloon' hypothesis, that strikes and absenteeism are substitutes in the British dock industry. Their second empirical method leads them to the same conclusion. They find a significant negative coefficient for the absentee rate when this rate is included as a determinant in the strike rate equation. This finding was obtained using a two-stage strategy and an instrumental variable identification for the absentee rate to control statistical biases due to unobserved heterogeneity. Sapsford and Turnbull (1996: 432) specify that, "this two-stage testing strategy could alternatively be applied to the absentee specification by including in this the predicted strike probability".

Hebdon and Stern (1998) focus on the rela-

tionship between strikes and grievances in the Ontario public sector. Although these are the two most widely studied forms of industrial conflict, they rarely are considered together. The authors believe that the existence of divergent theoretical views on the relationship between strikes and grievances may explain why this relationship has been neglected in empirical studies. Some theorists state that the exercise of the grievance mechanism reduces strike activity, leading to an inverse relationship between the two forms of conflict. Conversely, others argue that grievances and strikes are complements since grievances may lead to job actions and changes in collective bargaining agreements (e.g. Lewin and Peterson 1988). The results of the Hebdon and Stern (1998) study suggest the existence of a strike-grievance tradeoff, where laws suppressing the right to strike are associated with the redirection of industrial conflict into grievances. Hebdon and Stern (1998) find that bargaining units which are restricted in their right to strike have, *ceteris paribus*, higher grievance arbitration rates.

Industrial Conflict in French Workplaces

In France, as in the other countries studied in empirical literature, the strike has been the main conflict form assessed. The principal measurement used in industrial conflict studies is the number of working days not worked due to collective conflicts, or JINT, which gradually has decreased since the 1970s, from 3.5 million in 1975 to less than 200,000 days in 2004 (French Department of Labor). JINT is only a partial measure of industrial conflict and the downward trend may be a distorted representation of the actual reality of French workplaces.

Recent French survey data suggests that industrial conflict actually has increased over recent years. More specifically, statistics from each edition of the REPONSE survey, a nationally representative data set, show that the traditional, multi-day strike is the only form of collective conflict to have decreased during the periods between 1996 and 1998 and 2002 and 2004. In contrast, other less radical and less expensive collective conflicts have increased over the same periods, affecting a greater share of French workplaces (see Table 1). These alternative collective manifestations of conflict include one-day strikes, walkouts, petitions, demonstrations and even what is known as work to rule, go slow, and overtime bans. These last three forms are comparatively distinctive. 'Go slow' and 'work to rule' both lead to a voluntary slowing of activity and are illegal in France because they result in the wrongful execution of employment contracts. Employees who participate in this type of collective action are legally punishable by the employer. The overtime ban falls between collective and individual conflicts and remains a relatively undetermined form in France (Béroud et al. 2008: 10). We consequently do not integrate these forms of conflict into our empirical work because they risk introducing a bias in the analysis that may lead to erroneous conclusions. Given their expansion, non-strike collective conflicts appear interesting to study independent of traditional strikes. In existing empirical literature, the strike is the only form of collective conflict studied simultaneously with individual forms of industrial conflict. We wish to extend the empirical analysis of the relationship between collective and individual conflicts by distinguishing the effect of strikes from that of non-strike collective conflicts.

Individual conflicts, like collective conflicts, have increased in recent years. Disciplinary action and employment tribunal claims have contributed in particular to the increased share of French workplaces affected by individual conflicts. Of the various forms of individual conflict investigated in the literature, these two are particularly relevant because they may be measured objectively and do not depend on the perception of the interviewee. Both of these individual conflict forms are regulated precisely by French labor laws.

Under French labor laws, a disciplinary action is a measure taken by the employer following employee actions deemed faulty. According to legal provisions, the employee's faulty action may be sanctioned only once and with only one form of

disciplinary action. A disciplinary action may take the form of a written warning, a suspension, or dismissal for fault. Other disciplinary actions, including transfer, demotion, and incentive to resign, the latter of which is illegal in France, are less frequent (see Table 1). The three main forms of disciplinary action cited above have increased between 1998 and 2004, affecting a larger share of workplaces. Conversely, the share of workplaces registering no disciplinary sanction has reduced significantly, from 32.8% for the 1996-1998 period to 14.3% in 2002-2004.

The grievance system, as implemented in the United States and Canada, has no comparable counterpart in France. In its place, French employees may openly express their individual grievances through written claims to the employment tribunal (or *conseil des prud'hommes*) The employment tribunal is authorized to regulate contract disputes between employers and employees or apprentices. Applications to the employment tribunal generally result from conflicts over paid vacations, wages, premiums and individual dismissals. Tribunal members are responsible for reconciling the parties and, failing that, the adjudication (or judgment) of cases. In the absence of conciliation or if conciliation is partial, the conciliation board refers the case to the judgment board. During the procedure, employer and employee may be assisted or represented. Between 1998 and 2004, the share of workplaces that had at least one application to the employment tribunal increased from 36.35% to 41.98%.

To date, the question of the nature of the relationship between collective conflicts and individual conflicts in France has not been clearly addressed. Existing analyses limit themselves to a descriptive approach that appears to combine different types of workplace conflict. However, according to previous French studies, one form of conflict rarely occurs in isolation. Moreover, Carlier and Tenret (2007) show that collective conflicts and individual conflicts were associated in French workplaces more frequently in 2004 than 1998.

3 Data and Variables

The REPONSE Survey

The data source used in this paper is the most recent edition of the REPONSE survey, which was explicitly inspired by British Workplace Industrial / Employee Relations Surveys (Caroli and Van Reenen 2001: 1464). This survey is conducted by the Department of Research Animation and Statistical Studies (DARES) under the French Ministry of Labor. Three editions have been published to date at six-year intervals: 1992-1993, 1998-1999 and 2004-2005. Each survey is related to the three-year period preceding the administration of questionnaires, i.e. respectively 1990-1992, 1996-1998 and 2002-2004. An interesting characteristic of the survey is the multiplicity of interview approaches and the variety of respondents. The survey is composed of three different questionnaires, one for each respondent category at the workplace level: employers, employee representatives, and employees. In this paper, we only use data from the third edition of the survey that was collected through the questionnaire addressed to employers. Following the analysis and interpretation of REPONSE 1998 (e.g. Coutrot 2001), the 2004 version was modified to provide more detailed information on industrial conflict, including, for example, the different forms and their frequency at the workplace level (Béroud et al. 2008: 25). Most empirical studies using REPONSE data draw from the employer section of the survey (Carlier and Tenret 2007). This section is preferred because the resulting sample is larger, covering all types of workplaces and not just those where employee representatives are present. The sample selection methods used for this section also are more stringent than those used for the other sections and allow comparisons with previous versions (Béroud et al. 2008: 25). The data gather observations from a representative sample of $2,930$ French workplaces that have over 20 employees and operate in the non-agricultural private sector.

Table 1: Changing forms of industrial conflict in French workplaces

Forms of industrial conflict	Definition	% workplaces	
		1996 – 1998	2002 – 2004
Collective conflicts (at least one ...)			
Strike $\geqslant$ 2 days	work stoppage $\geqslant$ 2 days	3.0	2.5
Strike $<$ 2 days	work stoppage $<$ 2 days	7.5	8.8
Walkout	work stoppage $<$ 1 day	7.5	10.0
Go slow	performing work to idle	1.0	1.2
Work to rule	enforcing regulations in every detail	0.9	1.5
Overtime ban	refusing to work overtime	3.2	9.6
Demonstration	publicizing claims of an employee group	4.9	6.7
Petition	addressing a written request to employer	8.5	10.6
Individual conflicts			
Employment tribunal	at least one employee application	36.4	42.4
Disciplinary action	sanction applied against at least one employee		
Written warning		57.8	62.8
Suspension		21.2	28.6
Dismissal for fault		24.8	35.4
Incentive to resign		2.6	2.3
Transfer		2.6	2.5
Demotion		1.9	1.7
No disciplinary action		32.8	14.3

SOURCE: REPONSE 1998 and REPONSE 2004 surveys (DARES, French Department of Labor)

Dependent Variables

Previous studies have used rates of disciplinary action and of employment tribunal claims to investigate the extent of such phenomena in workplaces (e.g. Antcliff and Saundry 2009; Knight and Latreille 2000). It would be difficult to use such rates as dependent variables, due to the significant number of workplaces that failed to report the number of employees disciplined as well as the number of claims made during the survey period. The use of such rates thus would jeopardize the representativeness of the sample. We consequently use a binary variable for disciplinary action, which is represented in our study by the written warning. As the first level of disciplinary action, the written warning is the most common form – approximately 60% of the sample – (see Table 2). Most workplaces which experience suspensions and dismissals for fault also have experienced written warnings. Therefore, the relationship between collective conflicts and written warnings may resemble those between collective conflicts and suspensions or dismissals for fault. It is unlikely that the study of these relationships would provide additional contributions to our analysis. With regard to employment tribunal claims, we use a dummy variable to indicate the occurrence of such claims in workplaces. In existing literature, such a variable is used by Knight and Latreille (2000), who investigate the likelihood of employment tribunal claims arising only from unfair dismissal.

Collective conflict variables

We mainly are interested in the relationship between collective conflicts and individual conflicts. The collective conflicts considered here were defined previously in Table 1. We consider two distinct variables, strikes and non-strike collective conflicts, to capture collective conflict in the workplace. In accordance with the approach followed in previous studies, we aim first to estimate the effect of strikes on different forms of individual conflict. For this purpose, we build a dummy variable equal to 1 if workplaces had

Table 2: Associations between individual conflicts

	All	ET claim	Written warning	Suspension	Dismissal for fault
ET claim	42.413	100.00 (1.000)	52.478	61.401	64.576
Written warning	62.784	77.683 (0.466*)	100.00 (1.000)	91.644	84.059
Suspension	28.640	41.462 (0.472*)	41.805 (0.698*)	100.00 (1.000)	54.559
Dismissal for fault	35.365	54.150 (0.560*)	47.617 (0.615*)	67.752 (0.659*)	100.00 (1.000)

NOTES: Table entries are sample shares. Each column corresponds to a subsample. Figures in brackets are tetrachoric correlation coefficients.

experienced at least one strike during the survey period ($2002 - 2004$). We chose to use this dummy variable in the place of the strike rate due to similar problems of missing data discussed in the previous section. A dummy variable also is used for non-strike forms of collective conflict such as walkouts, demonstrations and petitions, considered alone and simultaneously. Only workplaces that had not experienced a strike are considered through this dummy variable. Most workplaces that experienced a strike also had experienced other forms of collective conflict. To test whether strikes have a specific effect, we tried to dissociate workplaces that had experienced a strike from those that had only experienced non-strike forms of collective conflict.

Collective conflicts and individual conflicts generally are assumed to be determined by several common factors, some of which may be industry-specific (see Sapsford and Turnbull 1994). They therefore would be unobservable in a multi-sectoral analysis such as ours. We consequently have adopted a simultaneous equation model to test and correct this endogeneity bias which we shall present in the following section.

Unions and collective bargaining

Beyond collective conflict variables, we consider several control variables. The choice of these additional variables largely was made on the basis of recent results from major empirical studies of the determinants of disciplinary sanctions and/or employment tribunal claims (Antcliff and Saundry 2009; Cully et al. 1999; Knight and Latreille 2000; Saridakis et al. 2008). The impact of unions on these individual conflict forms is assumed to be captured in part by the effect of collective conflicts on the latter. In previous studies, union density was found almost unanimously to affect significantly and negatively both disciplinary sanctions and employment tribunal claims. In France, the unionization rate is one of the lowest among OECD countries, with only 7.8% of unionized employees, while almost all French employees are covered by collective bargaining agreements (OCDE, 2007). Given the weakness of such union density measures in France, we prefer to focus on the union presence, captured through a dummy variable equal to 1 if at least one union delegate is present at the workplace level. We aim to assess whether unions have an effect on individual conflict forms that is independent of the effect of collective conflicts. Aside from union presence, other dimensions of workplace collective bargaining also are considered. French employers are legally obliged to engage in wage bargaining on an annual basis. Bargaining over other topics, in contrast, occurs only if the employer and/or unions chose to do so. The level of bargaining activity in workplaces therefore may be captured through the number

of non-wage topics [2] discussed or negotiated during the survey period. Outside the workplace, we also consider union activity in its employment sector with a dummy variable equal to 1 if the employer perceived that the latter is intense or very intense.

Workplace characteristics

Some workplace characteristics have been found to strongly determine both disciplinary action and employment tribunal claims, with workplace size a major factor. Cully et al. (1999: 128) find that larger workplaces are more likely to use disciplinary actions. Their findings are supported by those of Antcliff and Saundry (2009). Knight and Latreille (2000) also find a positive association between workplace size and disciplinary actions, and a rising probability of experiencing employment tribunal claims as workplace size increases. Four workplace size dummies therefore are included in our model to explain written warnings and employment tribunal claims: under 50 employees, $50-199$ employees, $200-999$ employees and over 999 employees.

Sector dummies also are considered because previous empirical studies of the link between strikes and unorganized conflicts were largely sectoral studies. Moreover, the incidence of employment tribunal claims likely varies across sectors (Knight and Latreille 2000: 542). We therefore consider a series of sector dummies, distinguishing seven sectors: Manufacturing, Commerce, Service sector, Agribusiness and Food, Transport, Construction and Non-market services. As a structural characteristic, we also assume that workplace age may explain some variations in the probability of disciplinary sanctions and employment tribunal claims. Three workplace age dummies thus are included: under 9 years, $9-19$ years and over 19 years. Profitability levels also are expected to determine the occurrence of individual manifestations of conflict. Less profitable firms are assumed to be more likely to have conflictual industrial relations. We capture this economic dimension using a dummy variable equal to 1 if an employer said the profitability level of his workplace was lower than his main competitors.

Workforce characteristics

The incidence of disciplinary actions and of employment tribunal claims also is likely to be influenced by workforce characteristics. We therefore focus on workforce characteristics noted as significant in previous research. The characteristics that determine the incidence of disciplinary sanctions probably differ from those that determine the incidence of employment tribunal claims. Among the few observable characteristics in our database, we have some information on the nature of the labor contract used in the workplace. Knight and Latreille (2000) find that the proportion of employees on permanent contracts is negatively associated with the incidence of employment tribunal claims. Such a proportion is not available in the REPONSE database. Nevertheless, through the use of adequate dummy variables, variations in the probability of individual conflicts can be observed according to whether or not workplaces have fixed-term contracts and temporary workers. Knight and Latreille (2000) and Antcliff and Saundry (2009) both observe that disciplinary action rates increase with the proportion of the total workforce aged 51 and over. Both studies also find that this proportion has no significant effect on the probability of employment tribunal claims. We control this workforce characteristic through the inclusion of the proportion of the workforce aged $50-54$, which was derived from the French Annual Declarations of Social Data [3]. Again with regard to workforce

2. The non-wage topics mentioned in the REPONSE survey are: working time, qualifications, classifications and careers, employment, working conditions, technological or organizational changes, training, employee expression rights, right to unionize, equal opportunity, company saving scheme, complementary social welfare system.

3. Translation from French "Déclarations Annuelles des Données Sociales" (DADS). Firms legally are required to annually provide for each workplace a list of the salaries paid, the workforce, and a list of names of employees indicating the amount each receive in pay.

Table 3: Distribution of explanatory variables

	All	Employment tribunal claim $\geqslant 1$	Written warning $\geqslant 1$
Strike(s)	9.895	12.672	11.521
Non-strike collective conflict(s)	11.108	13.789	12.568
Unions and collective bargaining			
Union delegate(s)	37.619	47.433	43.276
Number of topics discussed or negotiated	4.758	4.770	5.084
Intense union activity in the employment area	29.521	33.911	32.318
Workplace characteristics			
Under 50 employees	57.215	45.563	48.240
$50-199$ employees	32.582	36.040	37.766
$200-999$ employes	9.127	16.436	12.424
Over 999 employees	1.076	1.962	1.570
Under 9 years	13.489	13.401	15.374
$9-19$ years	26.574	30.619	28.572
Over 19 years	59.514	55.879	55.466
Manufacturing	21.957	22.598	23.022
Commerce	23.351	24.305	25.869
Service sector	26.442	29.084	24.975
Food and Agribusiness	3.226	2.052	3.016
Transport	7.302	8.400	8.214
Construction	8.323	5.395	7.548
Non-market services	9.399	8.166	7.358
Relative lower profitability	13.185	14.962	15.683
Workforce characteristics			
No fixed-term contracts	40.334	34.596	36.125
Temporary workers	37.524	41.176	41.246
Accurate description of tasks	68.125	67.237	70.473
$\%50-54$ years	10.988	10.724	10.283

NOTES: Table entries are sample shares in percentages for dummy variables, and sample means for continuous variables

characteristics, Knight and Latreille (2000: 542) found that 'workplaces with a large proportion of operatives are more likely to exercise discipline'. As we have no data on such a proportion, we consider in its place a dummy variable which indicates that tasks are accurately described [4].

4 Econometric Specification

Our aim is to estimate the effect of collective conflicts on the occurrence of individual conflicts while taking into account the potential endogeneity issue existing between these two distinctive conflict categories due to unobserved heterogeneity. We therefore chose to estimate simultaneously the likelihood of individual conflicts and the likelihood of experiencing collective conflicts in workplaces using a recursive bivariate Probit model (Greene 1998).

The model

This model is built according to a reduced form equation for the potentially endogenous dummy variable (i.e. collective conflicts), and a structural form equation determining the outcome of interest (i.e. individual conflicts).

$$\begin{cases} y_1 = 1(\alpha y_2 + X_1'\beta + u_1 > 0) \\ y_2 = 1(X_2'\theta + Z'\gamma + u_2 > 0) \\ \\ \begin{bmatrix} u_1 \\ u_2 \end{bmatrix} \sim \left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 & \rho \\ \rho & 0 \end{bmatrix} \right) \end{cases} \tag{1}$$

where y_1 and y_2 represent respectively the probability of individual conflicts and the probability of collective conflicts. X_1 and X_2 are vectors of exogenous covariates, detailed in the previous section, that influence respectively y_1 and y_2. The latent variable determining the occurrence of individual conflicts is assumed to be influenced by the dummy y_2 and α is an estimate of the collective conflict effect on the probability of individual conflict occurrence. As we assumed that the occurrence of collective conflicts may be affected by unobserved characteristics also influencing the occurrence of individual conflicts, the correlation term between the residuals of the two probits (u_1 and u_2) is assumed to be non zero and equal to ρ. Under the assumption that u_1 and u_2 are jointly normally distributed with a means equal to zero, variance equal to one, and correlation equal to ρ, this system of equations can be estimated as a recursive bivariate probit model using maximum likelihood methods.

It is widely asserted in the literature that parameters of the second equation are not identified unless at least one variable, called the instrument, not contained in the first equation, is included in the second equation (Monfardini and Radice 2008). Although this assertion, initially stated by Maddala (1983), has been disputed by Wilde (2000), we include a vector of instrumental variables, Z, in the second equation, as it is common practice to improve the identification of the model. These instrumental variables have the two following properties:

$$Cov(y_2, Z \mid \cdot) \neq 0 \tag{2}$$

and

$$Cov(Z, u_1) = 0 \tag{3}$$

In fact, variables in Z must be correlated sufficiently with y_2 and could be legitimately excluded from y_1 equation. We discuss potential instrumental variables at the end of this section.

If $\rho = 0$, y_2 is not correlated with the error term u_1 and the two equations can be estimated separately as univariate Probit equations. However, if $\rho \neq 0$ a joint estimation is required to obtain consistent estimates.

Despite the endogeneity issue, the terms that enter the likelihood function for the recursive bivariate Probit model are the same as those for the usual bivariate Probit model(Maddala 1983). Therefore, the probabilities for this model are given by:

4. A detailed description of tasks is associated with blue collar workers.

$$
\begin{aligned}
Pr\left(y_1 = 1, y_2 = 1\right) &= \Phi_2\left(\beta' X_1 + \alpha, \theta' X_2, \rho\right) \\
Pr\left(y_1 = 0, y_2 = 1\right) &= \Phi_2\left(-\beta' X_1 - \alpha, \theta' X_2, -\rho\right) \\
Pr\left(y_1 = 1, y_2 = 0\right) &= \Phi_2\left(\beta' X_1, -\theta' X_2, -\rho\right) \\
Pr\left(y_1 = 0, y_2 = 0\right) &= \Phi_2\left(-\beta' X_1, -\theta' X_2, \rho\right)
\end{aligned} \tag{4}
$$

where Φ_2 denotes the bivariate normal cumulative distribution function.

Because the model actually is of a probability, the absolute scale of the coefficients gives a distorted picture of the response of the dependent variable to a change in one of the stimuli (Greene 1998: 297). Marginal effect calculations therefore are particularly important in this model category. Greene (1998) provides the relevant definitions and formulas for the special case of $\rho = 0$, indicating that the marginal effect of an explanatory variable will be the sum of a direct and/or indirect effect depending on the equation(s) in which the variable is included. In our case, where ρ is suspected to be non zero, calculations are likely to slightly differ (see, for instance, Baslevent and El-hamidi 2009).

Thus, in the case of a continuous variable, z, included in X_1 and/or X_2, the marginal effect calculation will take the following form:

$$
\begin{aligned}
&\frac{\partial E[y_1|X_1, X_2, y_2]}{\partial z} \\
&= \frac{\partial \Phi_2(\beta' X_1 + \alpha, \theta' X_2, \rho)}{\partial z} \\
&+ \frac{\partial \Phi_2(\beta' X_1, -\theta' X_2, -\rho)}{\partial z} \\
&= [\phi(\beta' X_1 + \alpha)\Phi\frac{\theta' X_2 - \rho(\beta' X_1 + \alpha)}{\sqrt{1-\rho^2}} \\
&+ \phi(\beta' X_1)\Phi\frac{-\theta' X_2 - (-\rho)(\beta' X_1)}{\sqrt{1-\rho^2}}] \cdot \beta_z \\
&+ [\phi(\theta' X_2)\Phi\frac{(\beta' X_1 + \alpha) - \rho(\theta' X_2)}{\sqrt{1-\rho^2}} \\
&- \phi(-\theta' X_2)\Phi\frac{\beta' X_1 - (-\rho)(-\theta' X_2)}{\sqrt{1-\rho^2}}] \cdot \theta_z
\end{aligned} \tag{5}
$$

where the first and the second components of the equation respectively represent the direct and indirect effects of z on y_1. Φ and ϕ respectively denote the univariate normal cumulative distribution and density functions.

The total marginal effect of a binary explanatory variable, included in X_1 and/or X_2, requires the following calculations:

$$
\begin{aligned}
&E[y_1|X_1, X_2, y_2, q = 1] \\
&- E[y_1|X_1, X_2, y_2, q = 0] \\
&= [\Phi_2(\beta' X_1 + \alpha, \theta' X_2, \rho) \\
&+ \Phi_2(\beta' X_1, -\theta' X_2, -\rho)]|q = 1 \\
&- [\Phi_2(\beta' X_1 + \alpha, \theta' X_2, \rho) \\
&+ \Phi_2(\beta' X_1, -\theta' X_2, -\rho)]|q = 0
\end{aligned} \tag{6}
$$

Finally, the marginal effect calculation for the endogenous variable, y_2, remains the same whatever the value taken by ρ:

$$
\begin{aligned}
&E\left[y_1|X_1, X_2, y_2 = 1\right] - E\left[y_1|X_1, X_2, y_2 = 0\right] \\
&= \Phi(\beta' X_1 + \alpha) - \Phi(\beta' X_1)
\end{aligned} \tag{7}
$$

Instrumental variables

The main difficulty in our identification of instrumental variables is to find variables that determine the likelihood of collective conflict but not of individual conflict. Since these distinctive conflict categories rarely are analyzed together in empirical literature, little information exists on potential instruments for strikes and/or non-strike collective conflicts. Given the available data and variables in our database, we focus on a set of potential instruments that are in accordance with existing empirical literature on strike determinants. The first instrument refers to the workplace market share on the product market and is presented like a dummy variable, equal to

one when it is lower than 3%. This variable is expected to negatively affect the probability of collective conflicts, in accordance with the traditional view of strikes as being a step in collective bargaining. In fact, the market power of firms in their product market often is presented as a major source of rent from which unions obtain wage gains (see Hirsch 2004; Nickell and Layard 1999). From this perspective, unions therefore are more likely to engage in strikes, and probably in alternative collective conflicts, in firms holding such rents. Conversely, when the market share of the firm is low, available rents are potentially weaker, reducing the interest of unions to engage in strikes or alternative collective conflicts.

The second instrument provides information on the representativeness of unions. It is based on employer perception of this representativeness and results in a dummy variable equal to 1 if the employer believes that the representativeness of unions is strong or very strong. The inclusion of this instrument is consistent with the common assumption in literature that unions are more likely to implement a strike when they are sufficiently powerful and representative. Since the use of non-strike collective conflicts is described in France as a coping strategy used by unions in firms and workplaces where they are less well implanted, union representativeness is more likely to impact strike likelihood than that of non-strike collective conflicts.

The third instrument represents the difference in the average hourly wage between male workers and female workers in workplaces, both of which were drawn from the French Annual Declarations of Social Data. A positive difference in the average hourly wage is an indicator of a concentration of female workers in low-skilled jobs. Such a feminization of low-skilled jobs is likely to affect strikes and non-strike collective conflicts. In fact, it generally is accepted that the propensity to strike is higher among manual workers than non-manual workers (see, e.g. Ingram et al. 1993). At the same time, conventional wisdom holds that male workers are generally more militant and less sympathetic toward employers than female workers (Gramm 1986). The likelihood of collective conflicts is therefore likely to significantly decrease with the feminization of low-skilled jobs.

Beyond these three instruments, some of the control variables described above may be valid instruments. More specifically, the intensity of union activity in the employment sector or the level of bargaining activity are expected to affect more the likelihood of employment tribunal claims than that of disciplinary actions. As potential major determinants of collective conflicts, these variables can therefore serve as valid instruments in collective conflict equations to estimate the likelihood of written warnings. Conversely, older workers (or those with more seniority) are less likely to use indiscipline or be subject to disciplinary actions, but generally are more involved in collective industrial actions. Since the age composition of the workforce was found to non-significantly affect employment tribunal claims (e.g. Knight and Latreille 2000), the proportion of the workforce aged $50-54$ may therefore serve as a valid instrument in collective conflict equations to estimate the likelihood of such claims.

5 Results

We estimate the effect of strikes and non-strike collective conflicts on the probability of employment tribunal claims on the one hand, and on the probability of written warnings on the other hand. We present our results in four steps: we first focus on the relationship between strikes and our two individual conflict variables – i.e. employment tribunal claims and written warnings – in accordance with the approach used in existing empirical literature. We then compare these results with those obtained in the case of non-strike collective conflicts before discussing the role of French unions in these various forms of industrial conflict. In the last subsection, we analyze the impact of the control variables that we included in our estimates.

Strikes and individual conflicts

The coefficient estimates for the employment tribunal claim regressions and for the disciplinary action regressions are presented in Table 4 and Table 5, respectively. The marginal effects for all specifications are presented in Table 6. We present the results from both the univariate Probit models and the recursive bivariate Probit models to observe the potential biases caused by unobserved heterogeneity in our estimates. We prefer to use the marginal effects rather than the coefficients in assessing the impact of our independent variables because the latter can be misleading in such probability models. These marginal effects usually are calculated at the sample means of the variables, i.e. for a representative individual in the sample. However, this method of calculation is not relevant in the case of the workplace, where the concept of representative individual does not make much theoretical sense. Instead, we calculate marginal effects for each observation (i.e. workplace) and present the average of these for the weighted sample.

Assuming that our instruments are valid, the recursive bivariate model is better than the univariate model in correctly estimating the effect of strikes on both the probability of employment tribunal claims and that of written warnings. In both regressions, we obtain an estimate of ρ which is significantly different from 0. As the null hypothesis that $\rho = 0$ may be rejected at conventional levels, we can claim that the error terms from both equations are significantly correlated, causing a bias in the univariate model estimates. ρ takes values of opposite signs between the two different regressions. In the regression of written warnings, ρ actually takes a negative value. The negative estimate of ρ implies that unobserved characteristics that render a workplace more likely to observe disciplinary actions also render it less likely to experience at least one strike. Conversely, the positive estimate of ρ in the regression of employment tribunal claims implies that unobserved characteristics exerted same-sign effects on the likelihood of employment tribunal applications and on that of strikes(s). Unlike some existing studies, we decided not to conduct a more detailed analysis of the nature of unobserved factors or to draw conclusions from the value of ρ. This type of analysis is likely to be rough and not very relevant to our study. In terms of strike effects, the significant value of ρ is more interesting to analyze.

While strike occurrence has no significant effect in the two univariate specifications, it has very significant and pronounced effects when the unobserved heterogeneity is corrected. We then find that the strike is linked closely to individual forms of industrial conflict. However, the strike has opposite effects on the two individual conflict forms considered. Specifically, the occurrence of a strike negatively affects the likelihood of employment tribunal claims, with a marginal effect of -33.97 percentage points, while it positively affects the likelihood of written warnings by nearly 25 percentage points. In French workplaces, the substitutability relationship between strikes and individual conflicts, which is unanimously supported by existing empirical studies (e.g. Hebdon and Stern 1998; Sapsford and Turnbull 1994, 1996), thus seems valid only in the case of employment tribunal claims. Given the strong positive effect of strikes on the probability of written warnings, strikes and activity leading to disciplinary action cannot be considered to be substitutes for each other. These divergent results suggest that the strike does not have a uniform relationship with all of the varied forms of individual conflict that occur in the workplace. This may be explained by the substantial heterogeneity among the different forms of individual conflict. In our case, we mentioned previously that disciplinary action and employment tribunal claims illustrate different forms of employee behavior in situations of discontent. Faulty actions on the part of the employee, which are punished by employer disciplinary action, are considered to be silent forms of employee discontent. In contrast, claim applications to an employment tribunal are considered to be open expressions of dissatisfaction. Such claims tend to be a 'more prevalent indicator of overt conflict' than collective industrial action (Cully et al. 1999: 25). According to our findings, the strike only replaces this latter type of open individual conflict expres-

Table 4: Regression Results on Employment Tribunal (ET) claims: Coefficient Estimates

	Probit	Recursive bivariate Probit		Probit	Recursive bivariate Probit	
	ET	ET	Strikes	ET	ET	Non-strike conflicts
Strike(s)	-0.0537	-1.233***	–	–	–	–
	(0.113)	(0.247)				
Non-strike collective conflict(s)	–	–	–	0.121	-1.209***	–
				(0.109)	(0.279)	
Union delegate(s)	0.253***	0.399***	0.801***	0.232***	0.388***	0.686***
	(0.0859)	(0.0873)	(0.135)	(0.0856)	(0.0868)	(0.114)
Workplace size						
(50-199 employees)						
Under 50 employees	-0.263***	-0.267***	-0.232*	-0.261***	-0.248***	-0.0636
	(0.0818)	(0.0807)	(0.131)	(0.0819)	(0.0796)	(0.112)
200 - 999 employees	0.729***	0.803***	0.352***	0.715***	0.683***	0.175*
	(0.0986)	(0.0968)	(0.108)	(0.0972)	(0.0975)	(0.104)
Over 999 employees	0.730***	0.989***	0.580***	0.715***	0.647***	-0.113
	(0.234)	(0.222)	(0.189)	(0.231)	(0.221)	(0.169)
Workplace age						
(Under 9 years)						
9 - 19 years	0.233*	0.191	-0.180	0.239*	0.163	-0.262
	(0.122)	(0.120)	(0.183)	(0.122)	(0.122)	(0.174)
Over 19 years	-0.0551	-0.0594	-0.196	-0.0593	-0.00953	0.0870
	(0.111)	(0.108)	(0.162)	(0.111)	(0.109)	(0.153)
Sector						
(Manufacturing)						
Commerce	0.0836	-0.0109	-0.428***	0.0940	0.0140	-0.190
	(0.111)	(0.112)	(0.156)	(0.111)	(0.108)	(0.143)
Service sector	0.0992	0.0121	-0.460***	0.105	0.0592	-0.108
	(0.110)	(0.109)	(0.146)	(0.110)	(0.105)	(0.129)
Food and Agribusiness	-0.630***	-0.751***	-0.886***	-0.621***	-0.594***	-0.183
	(0.193)	(0.194)	(0.225)	(0.194)	(0.173)	(0.221)
Transport	0.208	0.236	0.257	0.218	0.0634	-0.555***
	(0.170)	(0.160)	(0.185)	(0.170)	(0.174)	(0.212)
Construction	-0.364**	-0.458***	-0.665**	-0.354**	-0.406***	-0.356**
	(0.145)	(0.145)	(0.311)	(0.145)	(0.141)	(0.174)
Non-market services	-0.131	-0.157	-0.195	-0.129	-0.124	-0.0501
	(0.142)	(0.138)	(0.184)	(0.142)	(0.137)	(0.163)
Workforce composition						
No fixed-term contracts	-0.166**	-0.150**	-0.0724	-0.164**	-0.177**	-0.120
	(0.0769)	(0.0748)	(0.105)	(0.0770)	(0.0738)	(0.0975)
Temporary workers	0.130	0.136*	0.104	0.126	0.149*	0.133
	(0.0806)	(0.0787)	(0.107)	(0.0807)	(0.0770)	(0.0967)
Relative lower profitability	0.0903	0.161	0.336***	0.0897	0.0485	-0.202*
	(0.108)	(0.102)	(0.128)	(0.108)	(0.105)	(0.121)
Number of topics discussed or negotiated	-0.0351***	-0.0221*	0.0784***	-0.0367***	-0.0201	0.0613***
	(0.0124)	(0.0126)	(0.0174)	(0.0124)	(0.0131)	(0.0154)
Intense union activity in the employment area	0.135*	0.190**	0.235**	0.127	0.184**	0.241***
	(0.0795)	(0.0768)	(0.101)	(0.0792)	(0.0756)	(0.0917)
Market share under 3 percent	–	–	-0.524***	–	–	–
			(0.150)			
Strong representativeness of unions	–	–	0.232**	–	–	–
			(0.103)			
%50 − 54 years	–	–	0.0279***	–	–	0.0141**
			(0.00609)			(0.00602)
Constant	-0.107	-0.0868	-2.225***	-0.112	-0.0920	-1.993***
	(0.166)	(0.164)	(0.248)	(0.166)	(0.159)	(0.229)
ρ	–	–	0.868***	–	–	0.947***
			(0.275)			(0.333)
Observations	2,865	2,865	2,865	2,865	2,865	2,865

NOTES: Robust standard errors in parentheses. ***, **, and * indicate significance at 0.01, 0.05, and 0.10 level, respectively. Data are weighted using a sampling weight variable given in database.

Table 5: Regression Results on Disciplinary Actions: Coefficient Estimates

	Probit	Recursive bivariate Probit		Probit	Recursive bivariate Probit	
	Written warning	Written warning	Strikes	Written warning	Written warning	Non-strike conflicts
Strike(s)	-0.0150	0.852***	–	–	–	–
	(0.128)	(0.316)				
Non-strike collective conflict(s)	–	–	–	0.143	1.104***	–
				(0.119)	(0.339)	
Union delegate(s)	0.222**	0.0877	0.789***	0.201**	0.0441	0.618***
	(0.0928)	(0.107)	(0.135)	(0.0918)	(0.111)	(0.121)
Workplace size (50-199 employees)						
Under 50 employees	-0.465***	-0.432***	-0.152	-0.463***	-0.424***	-0.107
	(0.0859)	(0.0867)	(0.139)	(0.0863)	(0.0884)	(0.113)
200 - 999 employees	0.462***	0.308**	0.400***	0.455***	0.359***	0.175
	(0.112)	(0.129)	(0.110)	(0.109)	(0.116)	(0.106)
Over 999 employees	0.813***	0.518**	0.726***	0.809***	0.725***	-0.0258
	(0.198)	(0.220)	(0.181)	(0.195)	(0.198)	(0.178)
Workplace age (Under 9 years)						
9 - 19 years	-0.130	-0.102	-0.200	-0.124	-0.0729	-0.306*
	(0.135)	(0.134)	(0.184)	(0.135)	(0.134)	(0.168)
Over 19 years	-0.371***	-0.341***	-0.185	-0.374***	-0.380***	0.130
	(0.124)	(0.123)	(0.164)	(0.124)	(0.120)	(0.146)
Sector (Manufacturing)						
Commerce	0.0762	0.128	-0.448***	0.0837	0.122	-0.154
	(0.120)	(0.121)	(0.159)	(0.120)	(0.119)	(0.144)
Service sector	-0.295**	-0.235**	-0.390***	-0.293**	-0.259**	-0.000318
	(0.116)	(0.118)	(0.149)	(0.116)	(0.115)	(0.136)
Food and Agribusiness	-0.329	-0.205	-0.778***	-0.321	-0.266	-0.0765
	(0.230)	(0.231)	(0.216)	(0.229)	(0.218)	(0.215)
Transport	0.155	0.123	0.374*	0.167	0.252	-0.528**
	(0.188)	(0.182)	(0.195)	(0.188)	(0.189)	(0.242)
Construction	-0.140	-0.0541	-0.540*	-0.128	-0.0587	-0.308*
	(0.149)	(0.151)	(0.294)	(0.149)	(0.148)	(0.173)
Non-market services	-0.369**	-0.326**	-0.0978	-0.367**	-0.338**	0.0204
	(0.145)	(0.146)	(0.182)	(0.146)	(0.143)	(0.160)
Workforce composition						
No fixed-term contracts	-0.176**	-0.168**	-0.136	-0.173**	-0.138*	-0.136
	(0.0803)	(0.0790)	(0.108)	(0.0805)	(0.0808)	(0.0961)
Temporary workers	0.110	0.0860	0.175	0.105	0.0649	0.146
	(0.0858)	(0.0857)	(0.110)	(0.0857)	(0.0853)	(0.101)
Accurate description of tasks	0.212**	0.200**	0.0538	0.211**	0.203**	-0.0265
	(0.0828)	(0.0820)	(0.106)	(0.0828)	(0.0804)	(0.0922)
$\%50-54$ years	-0.0220***	-0.0242***	0.0260***	-0.0224***	-0.0231***	0.0132**
	(0.00530)	(0.00529)	(0.00629)	(0.00532)	(0.00522)	(0.00626)
Relative lower profitability	0.348***	0.281**	0.360***	0.351***	0.355***	-0.162
	(0.118)	(0.120)	(0.133)	(0.118)	(0.116)	(0.122)
Number of topics discussed or negotiated	–	–	0.0751***	–	–	0.0632***
			(0.0162)			(0.0143)
Intense union activity in the employment area	–	–	0.251**	–	–	0.243***
			(0.0998)			(0.0899)
Market share under 3 percent	–	–	-0.586***	–	–	–
			(0.151)			
Strong representativeness of unions	–	–	0.197*	–	–	–
			(0.109)			
Feminization of low-skilled jobs	–	–	–	–	–	-0.0294**
						(0.0117)
Constant	0.948***	0.878***	-2.300***	0.938***	0.830***	-1.916***
	(0.183)	(0.187)	(0.262)	(0.184)	(0.188)	(0.234)
ρ	–	–	-0.575***	–	–	-0.630**
			(0.219)			(0.284)
Observations	2,865	2,865	2,865	2,865	2,865	2,865

NOTES: Robust standard errors in parentheses. ***, **, and * indicate significance at 0.01, 0.05, and 0.10 level, respectively. Data are weighted using a sampling weight variable given in database.

sion. It also should be noted that disciplinary action may also reflect an employer's management style, and thus does not only depend on employee behavior.

The strike among collective conflicts

The strike is the conflict form that has been investigated most widely in empirical literature. In studies where organized and unorganized conflict forms are considered simultaneously, the strike generally is perceived as being synonymous with organized conflict. Given the growing importance of non-strike collective conflict forms in France, we chose to estimate the effect of both strike and non-strike collective conflict forms on the individual conflict forms included in our study (disciplinary action and employment tribunal claims). In so doing, we aim to test whether the results for workplaces that had experienced a strike are different from those of workplaces that only had experienced non-strike collective conflict. The two dummy variables related respectively to firm market share and union representativeness were removed from the vector of instrumental variables due to their lack of a significant effect on the probability of the occurrence of collective conflict. In contrast, the feminization level of low-wage jobs was found to be a valid instrument for non-strike conflicts in the regression equations of written warnings, although it is not significantly correlated with the probability of strikes. A recursive bivariate model is required to obtain unbiased estimates of the effect of non-strike collective conflicts on both the probability of employment tribunal claims and the probability of written warnings. As in the case of strikes, ρ is significantly different from 0, taking a negative value in the regression of written warnings and a positive value in that of employment tribunal claims. We also find that the effect of non-strike collective conflicts on each form of individual conflict is comparable to that of strikes. Indeed, the occurrence of non-strike collective conflicts significantly and negatively affect the probability of employment tribunal claims, with a strong marginal effect assessed at -34.48 percentage points. It also increases the probability of written warnings by 30.39 percentage points. Non-strike conflicts thus appear to have a larger effect than strikes on the likelihood of written warnings. While the effects of strikes and non-strike collective conflicts depend on the variables included in their equations, we nevertheless may conclude that the strike and non-strike collective conflict are linked with disciplinary action and employment tribunal claims in the same way. The strike thus has no specific effects on individual conflicts.

The role of unions

Considering first the simple Probit specifications, the presence of union delegates is found to impact significantly and positively both the probability of employment tribunal claims and that of written warnings, whereas no significant effect is associated with collective conflict variables. This positive effect of union presence appears to contrast with the results of Edwards (1995), Knight and Latreille (2000), and Antcliff and Saundry (2009), who unanimously find that union presence reduces the use of disciplinary action and the likelihood of employment tribunal claims. When the biases resulting from unobserved heterogeneity are corrected, we obtain significant changes in the effects of union presence. In fact, the presence of union delegates appears to sharply increase the probability of employment tribunal claims, by about 14 percentage points, while collective conflicts (with or without a strike) reduce this probability. With regard to the probability of written warnings, the effect of union delegates seems to be almost totally absorbed by that of collective conflicts. The effect of union delegates appears to be non significant while collective conflicts have a significant and strong positive effect. The presence of union delegates and the occurrence of collective conflicts appear to be closely related.

Both strikes and non-strike collective conflicts are determined to a significant degree by the presence of union delegates. This supports the assertion that unions remain the main instiga-

Table 6: Estimated marginal effects for univariate and recursive bivariate Probit models

	Employment Tribunal (ET) claims				**Disciplinary actions**			
	Strike(s)		Non-strike conflict(s)		Strike(s)		Non-strike conflict(s)	
	Univariate Probit	Recursive bivariate Probit	Univariate Probit	Recursive bivariate Probit	Univariate Probit	Recursive bivariate Probit	Univariate Probit	Recursive bivariate Probit
Strike(s)	-0.019	-0.340***	–	–	-0.005	0.249***	–	–
	(0.113)	(0.247)			(0.128)	(0.316)		
Non-strike collective conflict(s)	–	–	0.044	-0.345***	–	–	0.047	0.304***
			(0.109)	(0.279)			(0.119)	(0.339)
Union delegate(s)	0.092***	0.138***	0.084***	0.137***	0.075**	0.036	0.067**	0.023
	(0.0859)	(0.0873)	(0.0856)	(0.0868)	(0.0928)	(0.107)	(0.0918)	(0.111)
Workplace size (50-199 employees)								
Under 50 employees	-0.096***	-0.095***	-0.095***	-0.093***	-0.159***	-0.154***	-0.158***	-0.153***
	(0.0818)	(0.0807)	(0.0819)	(0.0796)	(0.0859)	(0.0867)	(0.0863)	(0.0884)
200 - 999 employees	0.268***	0.287***	0.263***	0.253***	0.146***	0.107**	0.144***	0.124***
	(0.0986)	(0.0968)	(0.0972)	(0.0975)	(0.112)	(0.129)	(0.109)	(0.116)
Over 999 employees	0.261***	0.329***	0.256***	0.234***	0.227***	0.168**	0.226***	0.222***
	(0.234)	(0.222)	(0.231)	(0.221)	(0.198)	(0.220)	(0.195)	(0.198)
Workplace age (Under 9 years)								
9 - 19 years	0.084*	0.072	0.086*	0.065	-0.044	-0.037	-0.042	-0.029
	(0.122)	(0.120)	(0.122)	(0.122)	(0.135)	(0.134)	(0.135)	(0.134)
Over 19 years	-0.020	-0.018	-0.021	-0.005	-0.124***	-0.120***	-0.125***	-0.133***
	(0.111)	(0.108)	(0.111)	(0.109)	(0.124)	(0.123)	(0.124)	(0.120)
Sector (Manufacturing)								
Commerce	0.030	-0.002	0.034	0.008	0.026	0.041	0.028	0.041
	(0.111)	(0.112)	(0.111)	(0.108)	(0.120)	(0.121)	(0.120)	(0.119)
Service sector	0.036	0.011	0.038	0.024	-0.101**	-0.086**	-0.100**	-0.092**
	(0.110)	(0.109)	(0.110)	(0.105)	(0.116)	(0.118)	(0.116)	(0.115)
Food and Agribusiness	-0.203***	-0.232***	-0.200***	-0.202***	-0.114	-0.078	-0.111	-0.096
	(0.193)	(0.194)	(0.194)	(0.173)	(0.230)	(0.231)	(0.229)	(0.218)
Transport	0.075	0.082	0.078	0.030	0.051	0.045	0.055	0.082
	(0.170)	(0.160)	(0.170)	(0.174)	(0.188)	(0.182)	(0.188)	(0.189)
Construction	-0.125**	-0.150***	-0.122**	-0.140***	-0.048	-0.023	-0.044	-0.024
	(0.145)	(0.145)	(0.145)	(0.141)	(0.149)	(0.151)	(0.149)	(0.148)
Non-market services	-0.046	-0.053	-0.046	-0.045	-0.128**	-0.118**	-0.128**	-0.122**
	(0.142)	(0.138)	(0.142)	(0.137)	(0.145)	(0.146)	(0.146)	(0.143)
Workforce composition								
No fixed-term contracts	-0.059**	-0.053**	-0.059**	-0.064**	-0.060**	-0.060**	-0.059**	-0.051*
	(0.0769)	(0.0748)	(0.0770)	(0.0738)	(0.0803)	(0.0790)	(0.0805)	(0.0808)
Temporary workers	0.047	0.048*	0.045	0.053*	0.037	0.031	0.035	0.025
	(0.0806)	(0.0787)	(0.0807)	(0.0770)	(0.0858)	(0.0857)	(0.0857)	(0.0853)
Accurate description of tasks	–	–	–	–	0.072**	0.071**	0.072**	0.072**
					(0.0828)	(0.0820)	(0.0828)	(0.0804)
%50 − 54 years	–	–	–	–	-0.007***	-0.008***	-0.008***	-0.008***
					(0.00530)	(0.00529)	(0.00532)	(0.00522)
Relative lower profitability	0.032	0.053	0.032	0.021	0.112***	0.098**	0.113***	0.120***
	(0.108)	(0.102)	(0.108)	(0.105)	(0.118)	(0.120)	(0.118)	(0.116)
Number of topics discussed or negotiated	-0.013***	-0.005*	-0.013***	-0.006	–	–	–	–
	(0.0124)	(0.0126)	(0.0124)	(0.0131)				
Intense union activity in the employment area	0.049*	0.066**	0.046	0.064**	–	–	–	–
	(0.0795)	(0.0768)	(0.0792)	(0.0756)				
Observations	2,865	2,865	2,865	2,865	2,865	2,865	2,865	2,865

NOTES: Robust standard errors in parentheses. ***, **, and * indicate significance at 0.01, 0.05, and 0.10 level, respectively. Data are weighted using a sampling weight variable given in database. The marginal effects were calculated at each observation; the sample averages are displayed in this table. In the recursive bivariate Probit, net marginal effects were obtained using the appropriate formulas given by Greene (1998), and Baslevent and El-hamidi (2009).

tors of collective conflicts (Amossé and Jacod 2008; Cézard et al. 1996). Unfortunately, the predominant effect of unions on the occurrence of collective conflicts cannot be quantified. In such an econometric model, only total marginal effects may be computed for the binary explanatory variables included in one or both equations of the simultaneous equation model. The estimated coefficients nevertheless give an overview of the direction and magnitude of the effect of union presence. There is a strong positive effect of union presence on both the occurrence of strikes and the occurrence of non-strike collective conflicts.

Thereby, the distinct effects of collective conflicts and of union delegates on the probability of employment tribunal claims are consistent with the theoretical vision of the "two faces of unionism" (Freeman and Medoff 1979, 1984), i.e. the monopoly face and the 'collective voice / institutional response' face. The collective conflict may be perceived as the expression of a collective 'voice' (Drinkwater and Ingram 2005; Godard 1992) that, by gathering employee discontent, limits individual conflicts – here in the form of employment tribunal claims. However, this theoretical vision is questionable in the light of the positive relationship between collective conflicts and disciplinary action. This latter result may reflect the inability of unions to collect all forms of employee discontent within a collective expression in French workplaces. Alternately, this result may underline the weakness of this monopoly / 'voice' distinction to understand the role of unions in workplaces. For instance, the collective union 'voice' has been described as having potentially adverse effects, thus promoting the bargaining position of unions (see, e.g., Gunderson 2005). Therefore, a model of union behavior based on union objectives seems preferable (e.g. Turnbull 1991), such as that proposed by Aidt and Sena (2005), where union activities are distinguished according to their goals: 'rent extraction' or 'rent creation'. In this kind of model, collective conflict may be viewed differently depending on the original purpose of the union, and its effect represents a subset of the union effect, given the assumed coexistence of these two activities.

Control variables

Workplace characteristics – As stated above, size is a workplace characteristic that is assumed to strongly and positively determine both the probability of employment tribunal claims and the probability of disciplinary sanctions, represented here through written warnings. When we retain workplaces with 50 to 199 employees as a class reference in our regressions, the dummy 'under 50 employees' has a negative marginal effect of about -9.5 percentage points on the probability of employment tribunal claims, and of about -15 percentage points on the probability of disciplinary sanctions. Dummy variables for the upper classes, '$200-999$ employees' and 'over 999 employees' have significantly positive effects on both probabilities. However, workplace size affects the likelihood of employment tribunal claims more strongly than written warnings. With regard to collective conflicts, workplace size significantly increases strike probability only. Virtually no significant effect is associated with workplace size in equations for non-strike collective conflicts. We may conclude that strikes are more easily implemented in large workplaces. In smaller workplaces, collective conflicts tend to be limited to non-strike forms. The likelihood of a written warning is significantly reduced in workplaces established for the longest periods of time. A strong and negative marginal effect of over 10 percentage points is associated with the dummy, 'over 19 years'. However, the probability of employment tribunal claims does not appear to vary with workplace age. Substantial sectoral differences also are apparent in our results. While the manufacturing sector has the greatest likelihood of strikes, this did not hold true with regards to individual forms of industrial conflict. Only workplaces in the 'Food and Agribusiness' and 'Construction' sectors have, all things being equal, a significantly weaker probability of experiencing employment tribunal claims. With regard to written warnings, workplaces in both

service sectors are significantly less likely to have such disciplinary sanctions than manufacturing workplaces. No significant effect is obtained for other sectors. Interestingly, workplaces in the 'Transport' sector have a significantly lower probability of experiencing non-strike collective conflicts than workplaces in manufacturing, while no significant difference is obtained for the probability of strikes. In this sector, the strike appears to be the preferred industrial collective conflict form. Contrary to what one would expect, workplaces with relatively lower profitability seem to have a higher strike likelihood. However, such an effect does not exist for non-strike collective conflicts. With regard to individual conflicts, relatively less profitable workplaces are significantly more likely to use disciplinary action.

Workforce characteristics – Our results are consistent with those reported in empirical literature regarding workforce characteristics. Our findings support those of Knight and Latreille (2000), who report a negative association between the proportion of permanent workers and the incidence of employment tribunal claims. We find a reduced probability of employment tribunal claims (approximately -5 percentage points) in workplaces that do not employ fixed-term contracts. In our regressions, a similar effect on the probability of written warnings is obtained for such workplaces, while Knight and Latreille (2000) find no significant relationship between the proportion of permanent workers and the disciplinary sanction rate. In the same vein, the presence of temporary workers tends to increase the probability of employment tribunal claims, but has no significant effect on that of written warnings. Workplaces employing a large proportion of older workers (aged between 50 and 54) are less likely to use written warnings, in accordance with previous results (e.g. Antcliff and Saundry 2009; Knight and Latreille 2000). Workplaces that use an accurate description of tasks conversely are more likely to use disciplinary action, especially written warnings. These last two workforce characteristics were removed from regressions of employment tribunal claims because their effect is close to zero, as might be expected from the previous results.

6 Conclusion

Using a large workplace data set for France, we investigate the effect of collective conflicts on the occurrence of individual conflicts, alternately taking into consideration disciplinary actions and employment tribunal claims. The results of our empirical analysis indicate that the occurrence of collective conflict is associated with a higher probability of disciplinary action, as assessed through the occurrence of written warnings. Conversely, collective conflict seems to reduce the probability of employment tribunal claims. Such results are obtained for both strike and non-strike collective conflict forms. The strike, which has received the most attention in the literature, does not seem to have a different or more pronounced effect on individual conflict than other collective conflict forms. These findings were obtained using a simultaneous equation method that corrects estimates from the endogeneity bias due to unobserved heterogeneity.

Our results provide additional insight into what is a slightly extensive body of empirical literature. Previous empirical studies that investigated collective and individual forms of industrial conflict together found that these two conflict categories were substitutes for each other (e.g. Sapsford and Turnbull 1994, 1996). However, this relationship does not hold true for all individual forms of industrial conflict. In France, while collective conflicts and employment tribunal claims can be considered to be substitutes, indiscipline and the resulting disciplinary action prove to be complementary to collective industrial action. Unlike the collective conflict, which appears to be a relatively homogeneous category of industrial conflict, individual conflicts appear to be very heterogeneous. Therefore, the occurrence of a collective conflict does not warrant a reduction in all individual conflict forms.

Collective conflicts thus are linked closely to individual conflicts. The one-subject focus adopted in most industrial conflict studies may

ignore such dynamics and may cause errors in the estimation of the impact of any single form of conflict. The strike, or more generally the collective conflict, has strong and very varied links with different individual forms of industrial conflict. In estimating the economic effects of strikes, we should include several relevant individual conflict forms, such as disciplinary actions and employment tribunal claims, to consider the complex and various situations of conflict in French workplaces.

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