

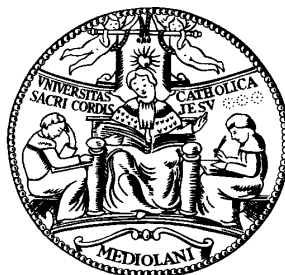
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**QUADERNI DELL'ISTITUTO DI  
ECONOMIA DELL'IMPRESA E DEL LAVORO**

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# Why so unhappy?

## The effects of unionisation on job satisfaction

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### Abstract

We use linked employer-employee data to investigate the job satisfaction effect of unionisation in Britain. We depart from previous studies by developing a model that simultaneously controls for the endogeneity of union membership and union recognition. We show that a negative association between membership and satisfaction only emerges where there is a union recognised for bargaining, and that such an effect vanishes when the simultaneous selection into membership and recognition is taken into account. We also show that ignoring endogenous recognition would lead to conclude that membership has a positive effect on satisfaction. Our estimates indicate that the unobserved factors that lead to sorting across workplaces are negatively related to the ones determining membership and positively related with those generating satisfaction, a result that we interpret as being consistent with the existence of queues for union jobs.

JEL classification: J28, J51

Keywords: Job satisfaction, Union membership, Union recognition, Endogeneity

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## 1. Introduction

The relationship between job satisfaction and unionisation has increasingly attracted analysts' attention over the past decades. The relevance of the satisfaction variable in explaining labour market behaviours and the possibility to analyse the effects of unionisation besides those on wages have motivated research in this area. In particular, the existing literature has concentrated on the link between individuals' union membership and job satisfaction, and has highlighted how its analysis can be complicated by the presence of unobservable factors that influence both workers' perceptions and the decision to join the union (see Heywood et al., 2002, for a recent example). Less attention, on the other hand, has been devoted to the role that unions might play through workplace level unionisation. In this paper we contribute at filling the gap and show that the relationship between individual membership and satisfaction crucially depends upon workplace union recognition. Specifically, we exploit the availability of linked employer-employee data to develop a model of job satisfaction that not only accounts for the endogeneity of individual membership, but also for the endogenous sorting of individuals across unionised and non-unionised workplaces.

Surveys of employees' opinions reveal that –typically—union members' reported satisfaction is lower compared to that of non-members. Taken at face value, such a result is puzzling, since unions should improve working conditions, which is among the reasons leading to membership. One first strand of literature has sought to explain the puzzle by means of Freeman and Medoff's (1984) 'exit-voice' hypothesis, stressing that members use their voice for improving the bargaining power of the trade union (Borjas, 1979). One alternative explanation has emphasised that unions organise where working conditions are poor (Bender and Sloane, 1995): according to such view, workplace characteristics would determine both unionisation and dissatisfaction, so that the observed differential would reflect spurious correlation. Another explanation has stressed the role of endogenous sorting of dissatisfied individuals into membership (Heywood et al., 2002; Bryson et al., 2004): again, the puzzling finding could be imputed to spurious correlation, this time due to unobserved characteristics of the individual, rather than of the workplace.<sup>1</sup>

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<sup>1</sup> Other studies focussed on these issues include Schwochau (1987); Hersch and Stone (1990); Gordon and Denisi (1995).

The availability of linked employer-employee data makes it possible to broaden the scope of the analysis and include the union status of the workplace as an additional sorting mechanism that can influence the membership/satisfaction relationship. There are several reasons why it may be so. Individuals may queue for jobs in the union sector, where, therefore, employers can have some degrees of freedom in shopping from the queue, so that some union member will end up being allocated outside the union sector (Abowd and Farber, 1983): controlling for workplace recognition would therefore reveal whether the negative satisfaction differential stems from ‘misallocated’ members. Alternatively, to the extent that non-members in unionised workplace free ride on the union fees paid by members, the negative satisfaction differential may, at least in part, pick up members’ moan for being victims of the free rider problem (see Booth and Bryan, 2004, for a discussion of the free rider issue in the context of union wage premiums). More generally, sorting into unionised workplaces and the decision to become a union member will not be independent events, so that including union recognition into the picture seems a viable way for deepening our understanding of the membership/satisfaction puzzle. While previous studies have either ignored workplace union recognition or treated it as an exogenous covariate of satisfaction, the present paper is the first study that explicitly acknowledges its potential endogeneity.

We use linked employer-employee data representative of the British workforce to develop a model of job satisfaction with endogenous sorting of employees into union membership and unionised workplaces. We show that such an extension is crucial, since the negative membership/satisfaction differential disappears once selection into unionised workplaces is taken into account. For unionised workplaces, we find that the dissatisfaction of members is all due to the endogeneity of membership, therefore excluding the ‘voice’ or free riding arguments from the set of explanations that are consistent with the data, since they would imply a causal effect of membership on satisfaction. Rather, our finding supports a framework where individuals who unionise are less satisfied *ex ante*, as would be the case if they had higher expectations toward the job compared to non-members. Finally, our results indicate that the underlying factors that lead to sorting across workplaces are negatively related to the ones determining membership and positively related with those generating satisfaction, a result that we interpret as being consistent with the existence of queues for union jobs.

## 2. Job satisfaction, union membership, and union recognition

Unions' reputation for the implementation of standard procedures which benefit the median worker are likely to attract workers with relatively low earnings potential. Therefore, it is workers in the lower half of the potential earnings distribution who are likely to queue for union jobs. To the extent that the demand for union jobs outstrips their supply, union employers will pick the best workers from the queue, such that those actually entering the union sector are somewhere in the mid-range of the worker quality distribution (Abowd and Farber, 1983; Farber, 2001). Those who have queued for union jobs but are unable to get one will therefore be in the tail of the worker quality distribution. They must seek employment in the non-union sector and their demand for unionisation will remain frustrated unless they are successful at organising a union from scratch. This spillover of workers who want a union job into the non-union sector is what produces a representation gap (Bryson and Gomez, 2003).

One might expect such sorting process to have implications for job satisfaction. Those who queued for union jobs and got them are likely to be reasonably satisfied since they entered the sector in the belief that union standardisation policies would benefit them. Those who never queued for a union job are those in the top part of the worker quality distribution who have a preference for steeper earnings profiles and a more individualistic pay reward structure. These policies, which are found in the non-union sector, are most likely to benefit these workers. It is those who would have benefited from union standardisation policies but were refused admittance to the union sector who are most likely to be dissatisfied since the reward system in the non-union sector works to their disadvantage.

### <TABLE 1>

The individual's choice of union membership status is likely related with the sorting process described above. It should be emphasised at the outset that, since the demise of the closed shop in the 1980s, this choice is a genuinely free one for employees in Britain. Legal changes in the 1990s protect workers against discriminatory action on the grounds of union status. Nevertheless, the probability that a worker will become a union member is considerably higher in the union sector than the non-union sector, as Table 1 shows. This is because the net returns to membership

are much higher in this sector. Members benefit from collective bargaining in the union sector which is absent in the non-union sector. These benefits come in the form of better pecuniary and non-pecuniary rewards than would be available to those workers in the absence of unionisation. Although the wage premium has declined a little recently, these rewards are likely to exceed the cost of union dues. Moreover, within the union sector, the returns to collective bargaining tend to be higher where union density is higher (Stewart, 1987), offering a further incentive for individuals to join. There are also reputational pay-offs to becoming a union member where it is the social custom to become a member (Booth, 1995). Union density in the union sector has been declining (Millward et al., 2000), implying that these reputational factors are not as strong as they used to be, but they remain significant. Finally, the costs of becoming a member are considerably lower in the union sector than the non-union sector. This is because, as Farber (2001) notes, the costs of becoming a member where there is a union present are simply the union dues whereas employees organising a union in the non-union sector must invest considerable time and effort if they are to be successful in the face of potential employer and employee apathy or hostility.

For all these reasons, the net value of membership is considerably higher in the union sector than it is in the non-union sector. We should therefore expect workplace-level unionisation to be a strong predictor of individual union membership. In the British case, workers' choice of whether to join a trade union or not happens when they move into a workplace: it is rare for workers to become members before they have found a job. Thus, which sector the worker chooses at the beginning of her working life can play an important part in determining her union status for some time to come, with workers tending to conform to the norm at that first workplace. Diamond and Freeman refer to this as the 'incumbency effect' (Diamond and Freeman, 2001). Having made an initial choice, employees rarely switch union membership status while still at the same workplace.<sup>2</sup> When workers leave membership they tend to do so when switching from a union to a non-union workplace, that is, when they enter an environment where membership is no longer the norm.

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<sup>2</sup> Bryson and Gomez (2003) explain this lack of switching in terms of membership being an experience good: workers invest time and effort to establish the benefits of union membership. This initial investment generates switching costs such that a worker will only switch status when the net benefits of a switch exceed the costs of switching.

Although workplace-level unionisation and membership are correlated the correlation is by no means perfect, as Table 1 indicates. Almost 10 per cent of workers in non-union workplaces are members. These employees are misallocated in the sense that they will pay union dues but will not receive the collective bargaining or reputational benefits of membership. However, they may receive other pay-offs to membership. For instance, their membership may be part of their occupational identification, as is the case with many journalists belonging to the National Union of Journalists. Alternatively, they may have joined the union for professional indemnity reasons. A third possibility is that they are using their membership as an insurance policy in the sense that, even though the union may not be recognised for bargaining, the individual can call on the union for protection against unfair employer behaviour. In spite of these potential benefits, we might infer by their membership that these employees are constrained in the sense that they would prefer employment in the union sector. This may generate job dissatisfaction.

The other ‘misallocated’ group in Table 1 are non-members in unionised workplaces. They are able to seek out employment in the union sector without paying for membership because neither employers nor unions can compel them to join. Since unions are unable to confine the benefits of collective bargaining to their members, these workers tend to benefit from union activity without paying union dues. Thus their net returns to being in the union sector may be particularly high, something that may generate a job satisfaction differential when compared with members in the same sector.

We have argued above that unions’ reputation for standardising terms and conditions in favour of the median worker sorts workers into the union and non-union sectors in a non-random way liable to affect worker job satisfaction in each sector. However, it remains unclear what effect unionisation will have on satisfaction once workers have entered the workplace. This will depend upon a number of factors. First, it will depend on whether the union’s reputation for standardisation is merited, that is to say, whether it is effective in delivering terms and conditions that suit the median worker. If it fails in this regard, and workers blame the union, as opposed to management, for this failure, this is likely to create job dissatisfaction arising from the gap between expectations and outcomes. Second, the union may succeed in some areas and not in others. For example, if poor conditions are fruitful ground for union



organising but those conditions are endemic in the industry or occupation, it may be easier for the union to seek compensating wage differentials in the form of pay rather than spend energy on trying to alter the underlying conditions. This may show up as higher members' satisfaction with pay relative to non-pecuniary aspects of the job, as Bryson et al. (2004) find. Third, the 'voice' aspect of union behaviour may generate its own effects on job satisfaction. It is usually assumed that these effects will create dissatisfaction. These effects include the politicising effect of belonging to an organisation committed to making changes: the union's ability to effect change is partly determined by the loudness of employee complaining, so employees voice their complaints, even if underlying or "genuine" job satisfaction is unaffected.<sup>3</sup>

Confronted with the negative association between membership and job satisfaction that typically emerges from the data, previous research has clarified that such outcome could either reflect a causal effect, consistent with the 'voice' hypothesis, or be the symptom of spurious correlation induced by unobservable individual characteristics or working conditions that co-determine satisfaction and unionisation. The discussion in this section indicates how these arguments specialise when union recognition is added to the picture. For example, it is important to assess from which sector, unionised or not, the negative satisfaction/membership relationship emerges. In the first case, an additional mechanism, besides the use of 'voice', that can ingenerate a causal effect is the free rider issue: the sole fact of becoming members produces dissatisfaction, as long as members are aware of being paying fees that also benefit non-members. In the non-union sector, on the other hand, members dissatisfaction might reflect their misallocation. Also, the unobservable factors generating spurious correlation might differ across sectors. In addition, it will be relevant to pay attention to the personal attributes (observable and unobservable) of individuals who enter the union sector, since they might be informative about the existence of queues for such jobs and the way employers chose employees along the queue.

### 3. Data and preliminary analysis of the membership/satisfaction link

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<sup>3</sup> Note that "voice" effects may create genuine dissatisfaction through increased information flows where they show employees to be disadvantaged in some way or another relative to other workers in a way they would otherwise be ignorant of.

The data set used in this paper is derived from the linked employer-employee British Workplace Employee Relations Survey 1998 (WERS). With appropriate weighting, it is nationally representative of British employees working in workplaces with 10 or more employees covering all sectors of the economy except agriculture (Airey et. al, 1999). The survey covers a wide range of issues, allowing to control for a large set of individual-level and workplace-level attributes. We use two elements of the survey. The first is the management interview, conducted face-to-face with the most senior workplace manager responsible for employee relations. The second element is the survey of employees where a management interview was obtained.<sup>4</sup>

The survey asked each employee to provide a rating, on a five-point scale from ‘very satisfied’ to ‘very dissatisfied’, concerning how satisfied they were on four aspects of their job: (i) the amount of influence they had over their job; (ii) the pay they received; (iii) the sense of achievement they got from their work; and (iv) the respect they got from supervisors and line managers. Since no overall satisfaction indicator of the types usually analysed in the literature is available in the data, we derived a variable summarising individual perceptions about the four job facets in the following way. For each of the four facets we built a dummy variable equal to 1 if the individual was either ‘very satisfied’ or ‘satisfied’ and 0 otherwise. Our overall satisfaction indicator is the sum of the four dummies thus obtained and represents the number of times an individual rated herself as being either ‘very satisfied’ or ‘satisfied’.<sup>5</sup>

<TABLE 2>

We describe the relationship between job satisfaction and membership by means of an ordered probit regression of the satisfaction indicator on a membership dummy and a set of controls that include personal characteristics, job attributes, individual opinions about the climate of industrial relations and the trade unions, and workplace attributes.<sup>6</sup> Table 2 reports the results from such a descriptive regression, either for the whole sample, and by splitting the data according to workplace unionisation status. The

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<sup>4</sup> Response rate were 80 percent on the management questionnaire and 64 percent on the employee one.

<sup>5</sup> The sample frequency distribution of the satisfaction indicator is 16.52, 17.50, 19.91, 25.49, 20.58, from the lowest to the highest degree of overall satisfaction. Bryson et al. (2004) provide evidence supporting the reliability of the aggregated indicator. They also analyse the determinants of satisfaction with pay and find that there is no statistically significant difference between union members and non-members under that respect.

<sup>6</sup> The regression uses weights that account for the sampling frame and a robust variance estimator that corrects for the presence of repeated observations on the same establishment.

first column shows that union members tend to report a level of job satisfaction that is significantly lower compared to that of non members, thereby confirming the puzzling result obtained by previous studies. In order to assess the magnitude of such effect, the table also works out the average partial effect (APE) associated to the membership coefficient, using the probability of scoring at least three on the overall satisfaction scale as the outcome of interest (an event that occurs for 45 percent of the cases in the estimation sample).<sup>7</sup> As can be seen from the table, the quantitative impact is in the order of nearly 2.5 percent, i.e. the differential is about 5 percent of the sample mean. It should be stressed that such a differential is what is left in the data when several observable attributes that are likely to be associated with (or be functions of) membership are controlled for in the regression (such as, pay and tenure, personal opinions on the trade union and the climate of industrial relations). In this sense, the effect estimated can be interpreted as ‘net’; the corresponding ‘gross’ effect, i.e. the one that emerges when the controls mentioned above are omitted from the regression, is about 7.2 percent.

Table 2 illustrates what is the association between overall satisfaction and the other attributes available in the data, and shows how some of the associations highlighted by previous studies are evident also in the WERS, such as the positive effect for females (Clark, 1996) or the positive effect for pay (Heywood et al., 2002). The regression also shows that there is no significant association between satisfaction and the presence of a union recognised for bargaining at the workplace.

The remaining part of Table 2 presents results obtained by splitting the sample according to workplace union recognition. Even if the recognition dummy does not affect satisfaction in a statistically significant way, such an exercise seems relevant given the likely interaction between individual level and workplace level unionisation discussed in Section 2. Results from the regressions by recognition status indicate that the distinction is crucial: while results from unionised workplaces tend to reproduce those from the whole sample, no statistically significant satisfaction differential between members and non-members can be detected where the trade union is not present.

<TABLE 3>

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<sup>7</sup> Parameter estimates allow to compute, for each sample member, the shift in satisfaction probabilities induced by the membership dummy: the APE is the sample average of such shifts.

Table 3 reports results from the analysis of the membership satisfaction link conducted using propensity score matching (PSM). As for the ordered probit regressions shown above, consistency of the effects estimated with propensity scores hinges upon the assumption that selection into union membership is captured by observables. However, unlike regression techniques, PSM computes the differential within the ‘common support’, i.e. by comparing members and non-members that are similar with respect to observable attributes. As discussed e.g. by Black and Smith (2004), regression analyses use functional form assumptions to project the differential outside the common support, potentially biasing the results. It seems therefore important to look at the membership satisfaction puzzle within the common support. The first estimate shown is the effect of treatment on the treated for the whole sample, i.e. the mean difference in satisfaction across members and their matched non-member counterparts where satisfaction is measured as scoring at least three on the overall satisfaction scale. There is a statistically significant effect of -9 percent. This confirms our previous analysis, though one should bear in mind that the parameter of interest is different (here we are looking at the effect for the treated, ordered probits gave an average effect on the whole sample). The matching estimates tend to corroborate our regression analysis when estimates are calculated for the union and non-union sectors separately (the second and third row of Table 3). Results resemble what we have already shown in Table 2. i.e. the negative satisfaction differential characterises union members only where there is a trade union recognised for bargaining, while no significant effect can be detected in non-recognised workplaces. Finally, the table provide the average treatment effect –i.e. the weighted average of the treatment effect for members and non-members—for the sample of workplaces with union recognised, showing that the significant satisfaction differential applies irrespective of the actual membership status.<sup>8</sup>

The results presented thus far indicate that the presence of a union recognised for bargaining is crucial for the membership/satisfaction puzzle, and that such a puzzle only emerges where unions are recognised. Such a finding is consistent with a story in which members voice out their discontent only when they know that it can be conveyed into bargaining by a representing institution. The free rider explanation would also be

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<sup>8</sup> One could also note that the treatment on the treated and the average treatment effect are very similar in size, which suggests that the effect of membership is homogeneous in the population.

supported by the result. Alternatively, one might argue that members have higher expectations towards their job only when they know that there is a formal representation that can bargain for working conditions. Whatever the explanation of this result, the evidence indicates that results on the overall sample are driven by unionised workplaces, and that a thorough explanation of the membership/satisfaction differential need to take into account the processes that generate membership and the selection of individuals across workplaces according to their recognition status.

#### 4. An econometric model of job satisfaction, union membership and union recognition.

In this section we lay out an econometric model for the simultaneous determination of job satisfaction, union membership, and union recognition for explaining the unhappiness of union members. Previous research on these issues have sought to explain the reasons of the membership/satisfaction puzzle by recognizing that membership status could not be considered an exogenous determinant of job satisfaction, and employing instrumental variables or panel data techniques to identify the effect of membership on satisfaction. Here we extend the instrumental variables framework to encompass employees selection across workplaces. That is, we allow the endogeneity of unionisation to affect not only the decision to join the union, but also the selection into a unionised workplace, thereby exploiting the double-level structure of the WERS data. Relative to the methods applied in Section 3, therefore, the model of this section allows us to assess the role of unobserved heterogeneity.

Let  $r^*_i$  denote the propensity of being employed into a unionised workplace for individual  $i$ ,  $i=1\dots n$ . Such a propensity depends upon two components: the net benefit derived from unionised employment and the employer's hiring decision. Both components are functions of personal and workplace characteristics, either observed ( $x_i$ ) and unobserved ( $\varepsilon_i$ ). We specify  $r^*_i$  as a linear function of its determinants:

$$r^*_i = \beta'x_i + \varepsilon_i \tag{1}$$

where  $\beta$  is a column coefficient vector to be estimated. We do not observe  $r^*_i$ ; rather, we observe  $i$  to be employed in a unionised workplace, an event that signals that  $r^*_i$

exceeds some latent threshold, which can be set to zero without loss of generality. Let  $R_i = I(r_i^* > 0)$  indicate the event, where  $I(\cdot)$  is an indicator function.

Given the results of Section 2, we are interested in studying the membership/satisfaction relationship in unionised workplaces; therefore, we specify the rest of the model conditional upon recognition. Let the net benefit derived from becoming a member,  $m_i^*$ , be a function of personal, job and workplace attributes, observed and unobserved:

$$m_i^* = \gamma'w_i + v_i \quad \text{if } R_i=1 \quad (2)$$

where symbols have a meaning analogous to that in equation (1). When the net benefit is positive, we observe individual  $i$  to be a union member; let  $M_i = I(m_i^* > 0)$  index that event. For non-unionised workplaces a different process is allowed to apply; however, since it is not our objective to parameterise that process, we leave it unspecified.

Finally, we specify a job satisfaction equation, for individuals in recognised workplaces, in terms of a latent propensity to be satisfied with the job, which we allow to depend upon observed characteristics, membership status, and an unobserved component:

$$s_i^* = \delta'z_i + \lambda M_i + u_i \quad \text{if } R_i=1 \quad (3)$$

We let the satisfaction indicator derived from the data ( $S_i$ ) depend from the underlying satisfaction propensity through the mapping  $\tau$ ,  $S_i = \tau(s_i^*)$ , which is a step function that takes values from 0 to 4 depending upon  $s_i^*$  crossing a set of threshold levels.

Estimating equations (2) and (3) ignoring equation (1) is subject to an endogenous sample selection issue, as long as the unobserved determinants of union recognition are correlated with unobservables in the membership and satisfaction equations. For example, individuals that care about representation might be more likely to work in covered workplaces and being union members, and the correlation of unobservables should be positive in that case. On the other hand, if low (unobserved) ability individuals care about representation to protect themselves from market fluctuations,

and ability is somehow observed by employers, then the correlation of the errors in the two equations should be negative. In any event, selecting the sample of individuals in recognised workplace would generate selectivity issues. Similarly, the unobserved components of satisfaction and recognition can be correlated.

Besides endogenous sample selection, the other source of spurious correlation is correlation between the unobserved components of membership and satisfaction, the only one that has been addressed by the literature thus far. As discussed there, such a correlation might negative if members are ‘genuinely’ dissatisfied, say because they have higher expectations towards the work environment compared to non-members, which can be more easily frustrated. Or it can be positive, if members are more motivated towards the job compared to non-members.

The discussion above highlights the issues entailed by the estimation of the membership/satisfaction relationship, and while the second issue (endogenous membership) have been addressed by the previous literature, the first (endogenous recognition) have not yet been addressed. We tackle both forms of endogeneity by allowing the unobserved individual components of equations (1), (2) and (3) to be jointly distributed according to a tri-variate normal distribution with zero means, unit variances and free correlations:

$$(\varepsilon_i, v_i, u_i) \sim N_3(0, \Omega) \quad (4)$$

By specifying the extra-diagonal elements of the correlation matrix  $\Omega$  we introduce unobserved heterogeneity into the model, thereby accounting for the endogeneity issues outlined above.<sup>9</sup>

In order to aid identification of the effects of interest we formulate a set of exclusion restrictions. In particular we need to make assumptions about variables influencing recognition but not membership; recognition but not satisfaction; and membership but not satisfaction. As a variable of the first type we use establishment age, i.e. we hypothesise that the older the workplace, the more it is likely that a union is recognised for bargaining purposes, a statement that has some empirical support in

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<sup>9</sup> We estimate the model by simulated maximum likelihood. As in the previous section, we use weights and a robust variance estimator.

Britain (see Bryson et al. 2004 bis). On the other hand, we maintain that it has no residual impact on membership probabilities, once its effect via workplace union recognition has been controlled for. Second, we assume that the single (vs multiple) - establishment nature of the firm does not have an independent impact on job satisfaction, net of union recognition and other workplace attributes, while it matters for workplace unionisation, since it affects its costs. Finally, as in Bryson et al. (2004) we identify the membership effect on satisfaction assuming that the managerial assessment of the industrial relations climate does not influence satisfaction, after the individual opinion on such climate has been controlled for, while maintaining that the climate (proxied by the manager's opinion) influences membership status.<sup>10</sup> We subject such hypotheses to tests, using functional form as the identifying restriction.

Besides the exclusion restrictions, we model the union recognition equation using demographic characteristics of the individual and workplace attributes; a similar specification applies for the membership equation, which, in addition, includes workplace union density and the travel-to-work area unemployment rate. Specification of the satisfaction equation is as in Section 3.

<TABLE 4>

## 5. Results

We present the results from the model with endogenous union membership and endogenous union recognition in Table 4, where coefficients estimated for the satisfaction, membership and recognition equations, and the estimated error correlation matrix, are shown.

Estimated correlations between unobservables of the three equations are all statistically significant at conventional confidence levels, indicating that unobservables that determine the two facets of unionisations are correlated with job satisfaction and that, as a consequence, the endogeneity issues discussed in the previous section are present in the data, justifying the adoption of the multi-equation framework of this paper. Besides being statistically relevant, these coefficients are also important from the point of view of economic interpretation, since they are informative about the

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<sup>10</sup> The membership equation does not include individual opinions on industrial relation climate due to their potential endogeneity. We experimented including such individual-level variables in the membership equation, and found that managerial perception retain their statistical significance at the 1% level. Results from this experiment are available upon request.



mechanisms generating the endogeneity issue. For example, the correlation between unobservables of the membership and satisfaction equation is negative, as could be the case if members had higher expectations towards the job compared to non-members, so that they could end up being more easily frustrated, anything else constant. In the language of the satisfaction/membership literature reviewed in Section 2, the result suggest that members' dissatisfaction is genuine (rather than strategic), similarly to what has been found in Bryson et al. (2004) on a sample that pools workplaces with and without unions recognised. An alternative interpretation could be that members have a low endowment of unobserved satisfaction determinants, for example 'motivations'. A positive sign characterises the correlation between unobservables of the recognition and satisfaction equation. If we interpret unobserved job satisfaction as motivation, and if workers queue for union jobs (say because they are risk adverse), then the result might indicate that motivations are, at least in part, observable by perspective employer, who use them to sort across job applicants. Finally, there is a negative correlation between unobservables in the membership and recognition equation. Assuming that workers queue for union jobs, and that low productivity individuals select themselves into membership in order to actively insure themselves against economic fluctuations, the negative coefficient indicate that there are some traits of productivity that are unobserved to the econometrician but not to the employer, who uses them to select perspective employees from the queue.<sup>11</sup>

The bottom of Table 3 reports results from the tests of instrument validity. As can be seen, the variables proposed as instruments have explanatory power in the 'instrumenting equations', while they have no residual impact in the equations of interest. Overall, the results from the tests indicate that the data support the proposed identification strategy.

Endogenisation of the mechanisms leading to (individual and workplace) unionisation have a clear impact on the estimated membership coefficient in the job

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<sup>11</sup> In order to subject these results to robustness check, we analysed the effect of recognition on membership using a two equation model estimated on the whole sample, where one equation is for recognition –specified as in the text—and the other is for membership –specified as in the text but with the inclusion of a recognition dummy among regressors. This model replicates the negative correlation between unobservables in the two equations (corr.= -0.471, s.e.=0.083), showing that the result presented in the text does not depend on estimating union membership for individuals in unionised workplaces. On the other hand, the recognition coefficient from the membership equation is positive and significant (coeff.= 1.379, s.e.=0.145), showing that recognition has a strong causal effect on membership decisions. Results from the experiment are available upon request.

satisfaction equation, which is now positive and not very precisely estimated (the confidence level is 20 percent). This result indicates that the puzzling negative effect emerged from the regression of Table 2 is entirely due to spurious correlation, i.e. to the fact that there is some heterogeneity in satisfaction propensity across members and non-members even before they make the unionisation choice. Once such a differential in unobservables is controlled for, any evidence of a negative causal effect of unionisation vanishes.

In order to shed further light on our results, we estimated the model ignoring selection into unionised workplaces, thereby reproducing the analytical framework adopted by the previous literature in order to account for the endogeneity issue. The membership coefficient estimated in this case was larger compared to Table 2 (the implied APE was +9 percent) and the estimate more precise (a p-value of 0.12). Such an outcome illustrates the importance of accounting for endogenous union recognition when estimating the satisfaction effect of union membership; individuals in workplaces with unions recognised have a larger satisfaction propensity relative to the whole population (recall the correlation from the ‘full model’) so that ignoring such a selectivity issue leads to overestimate the impact of factors that influence satisfaction.

## 6. Conclusion

The relationship between union membership and job satisfaction depends crucially upon the presence of a union recognised for bargaining in the workplace: while members in unionised workplaces report a level of satisfaction that is lower compared to that of non-members, the differential washes out if non-unionised establishments are taken into account. The main model of this paper helps in making sense of such result. In particular we find that members’ dissatisfaction is entirely due to endogenous selection: individuals who join the union are inherently less satisfied compared to other employees, as could be the case if, once sorted into a unionised environment and even before becoming members, their expectations for good working conditions were higher compared to non-members, and therefore harder to fulfil. We are therefore capable of ruling ‘voice’ or free-riding effects as explanation for the counterintuitive satisfaction gap that characterises member relative to non-members in surveys of employees opinions.

This paper has added to previous research by explicitly modelling employees sorting across union and non-union sectors. Such an extension has enabled us to identify the correlation between the unobserved factors that underlie workplace sorting and the individual membership decision. We have interpreted the negative sign of such correlation as a symptom of the existence of queues for union jobs, from which employers are able to pick up more productive individuals. Similarly, the positive correlation we found between the factors leading to workplace sorting and job satisfaction, is consistent with the presence of heterogeneous motivations along the queue, which are, at least partly, observable by employers. Finally, controlling for endogenous sorting has proved important for drawing conclusions on the effect of membership on satisfaction: while overlooking sorting would have led us to conclude that the causal effect of membership is positive, results from the more complete model clearly indicate that union membership does not affect job satisfaction.

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Table 1: The incidence of union membership by workplace union recognition

	Non -Member	Member	Number of observations
No Union Recognised for Bargaining at the workplace	91.79	8.21	7491
Union Recognised for Bargaining at the workplace	34.66	65.34	10341
Total			17832

Note: Sample derived from WERS98 after exclusion of observations with missing values in the explanatory variables used in the econometric analysis.

Table 2: The determinants of job satisfaction: exogenous unionisation

	Whole sample		Unionised workplaces		Non-Unionised workplaces	
Female	0.252	(0.028)	0.281	(0.039)	0.216	(0.041)
Aged 20-24	0.110	(0.065)	0.253	(0.127)	0.049	(0.080)
Aged 25-29	0.002	(0.070)	0.065	(0.133)	0.026	(0.078)
Aged 30-39	-0.003	(0.068)	0.154	(0.127)	-0.075	(0.082)
Aged 40-49	0.034	(0.070)	0.206	(0.129)	-0.067	(0.082)
Aged 50-59	0.135	(0.069)	0.286	(0.126)	0.072	(0.087)
Aged 60 or more	0.471	(0.087)	0.595	(0.147)	0.459	(0.112)
Has A-levels	-0.150	(0.032)	-0.135	(0.046)	-0.158	(0.042)
No educational qualification	0.169	(0.038)	0.195	(0.055)	0.131	(0.049)
Disabled	-0.179	(0.057)	-0.221	(0.081)	-0.133	(0.071)
Nonwhite	0.024	(0.063)	-0.032	(0.085)	0.092	(0.096)
Has children	0.001	(0.021)	-0.035	(0.028)	0.051	(0.029)
Married	0.005	(0.029)	0.078	(0.042)	-0.078	(0.037)
Medium skill occupation	0.088	(0.040)	0.110	(0.055)	0.042	(0.056)
Low skill occupation	0.016	(0.046)	0.003	(0.066)	0.028	(0.062)
Job equally done by men and women	0.059	(0.033)	0.081	(0.049)	0.024	(0.035)
Family friendly policies available	-0.071	(0.117)	-0.184	(0.139)	0.240	(0.153)
Can take day off if needed	0.130	(0.068)	0.165	(0.085)	0.094	(0.108)
Overtime always paid	-0.004	(0.028)	-0.045	(0.042)	0.035	(0.036)
Has permanent job	-0.013	(0.054)	-0.051	(0.063)	0.043	(0.086)
Has received 10+ days of training in the last year	0.143	(0.046)	0.222	(0.061)	0.033	(0.063)
Paid less than £50 per week	-0.717	(0.129)	-0.415	(0.203)	-1.016	(0.143)
Paid £51-£80 per week	-0.717	(0.112)	-0.464	(0.183)	-0.943	(0.127)
Paid £81-£140 per week	-0.744	(0.097)	-0.594	(0.157)	-0.888	(0.113)
Paid £141-£180 per week	-0.742	(0.087)	-0.595	(0.137)	-0.870	(0.101)
Paid £181-£220 per week	-0.822	(0.086)	-0.689	(0.142)	-0.951	(0.095)
Paid £221-£260 per week	-0.762	(0.075)	-0.702	(0.120)	-0.809	(0.092)
Paid £261-£310 per week	-0.689	(0.080)	-0.606	(0.129)	-0.769	(0.093)
Paid £311-£360 per week	-0.648	(0.080)	-0.574	(0.129)	-0.710	(0.092)
Paid £361-£430 per week	-0.460	(0.080)	-0.392	(0.128)	-0.505	(0.086)
Paid £431-£540 per week	-0.500	(0.076)	-0.403	(0.119)	-0.620	(0.091)
Paid £541-£680 per week	-0.187	(0.080)	-0.128	(0.118)	-0.233	(0.111)

Total hours worked on average week	-0.005	(0.002)	-0.002	(0.003)	-0.010	(0.002)
Thinks management understanding of employees' problems	0.452	(0.027)	0.433	(0.038)	0.474	(0.035)
Thinks meetings management/employees are useful	0.346	(0.026)	0.326	(0.035)	0.367	(0.040)
Thinks relations management/employees are good	0.683	(0.027)	0.645	(0.038)	0.739	(0.037)
Thinks managers are in favour of trade unions	0.022	(0.035)	0.016	(0.038)	0.150	(0.102)
Thinks trade unions take notice of members' problems	-0.079	(0.040)	-0.066	(0.044)	-0.090	(0.081)
Thinks trade unions taken seriously by management	0.199	(0.055)	0.224	(0.057)	0.082	(0.101)
Thinks trade unions make a difference in work environment	0.174	(0.054)	0.158	(0.056)	0.253	(0.121)
Has discussed with supervisor about how getting on with job	0.195	(0.034)	0.237	(0.050)	0.138	(0.038)
Has discussed with supervisor about promotions	0.040	(0.031)	0.078	(0.044)	-0.013	(0.038)
Has discussed with supervisor about training	0.058	(0.027)	0.028	(0.037)	0.131	(0.039)
Has discussed with supervisor about pay	-0.059	(0.028)	-0.121	(0.043)	-0.007	(0.037)
Has control over the range of tasks performed	0.405	(0.031)	0.420	(0.046)	0.401	(0.039)
Has control over the pace of tasks execution	0.296	(0.029)	0.305	(0.043)	0.297	(0.036)
Thinks would be better represented by self for getting pay increases	0.113	(0.029)	0.126	(0.038)	0.077	(0.047)
Thinks would be better represented by self for making complaints	0.080	(0.030)	0.060	(0.038)	0.133	(0.050)
Thinks would be better represented by self for disputes with management	0.026	(0.027)	-0.014	(0.035)	0.065	(0.043)
1≤Workplace tenure<2	-0.088	(0.042)	-0.126	(0.067)	-0.044	(0.052)
2≤Workplace tenure<5	-0.101	(0.037)	-0.091	(0.055)	-0.107	(0.049)
5≤Workplace tenure<10	-0.084	(0.043)	-0.093	(0.063)	-0.066	(0.058)
10≤Workplace tenure	-0.159	(0.040)	-0.168	(0.056)	-0.146	(0.059)
Electricity, gas water	0.154	(0.052)	0.191	(0.056)	0.094	(0.106)
Construction	0.093	(0.049)	0.131	(0.071)	0.054	(0.073)
Wholesales and retail	-0.108	(0.045)	-0.166	(0.081)	-0.170	(0.055)
Hotels and restaurants	-0.193	(0.060)	0.097	(0.127)	-0.278	(0.070)
Transports and communication	-0.047	(0.050)	-0.039	(0.062)	-0.118	(0.094)
Financial services	-0.036	(0.073)	0.075	(0.100)	-0.183	(0.094)
Other business and services	-0.038	(0.052)	-0.039	(0.072)	-0.083	(0.066)
Public administration	-0.033	(0.066)	0.051	(0.082)	-0.533	(0.186)

Education	0.007	(0.071)	0.001	(0.097)	0.047	(0.119)
Health	-0.045	(0.069)	0.035	(0.106)	-0.187	(0.081)
Other community services	-0.177	(0.068)	-0.161	(0.096)	-0.233	(0.090)
South West	0.027	(0.046)	0.032	(0.058)	-0.028	(0.072)
South East	0.036	(0.046)	0.050	(0.062)	-0.013	(0.069)
Midlands	0.005	(0.046)	0.036	(0.060)	-0.044	(0.070)
North	0.039	(0.043)	0.043	(0.057)	-0.016	(0.067)
Workplace size>200	-0.030	(0.026)	-0.019	(0.031)	-0.062	(0.044)
Public sector	-0.015	(0.044)	-0.073	(0.053)	-0.093	(0.128)
Head establishmant	0.108	(0.030)	0.100	(0.047)	0.128	(0.038)
Establishment age>	0.050	(0.025)	0.068	(0.033)	0.038	(0.036)
Share of female employees	-0.197	(0.077)	-0.372	(0.103)	-0.086	(0.108)
Share of part-time employess	0.238	(0.080)	0.441	(0.121)	0.216	(0.100)
Share medium skilled employees	0.223	(0.140)	0.381	(0.191)	0.108	(0.196)
Share low skilled employees	0.304	(0.135)	0.533	(0.188)	0.101	(0.183)
TTWA unemployment rate >5%	-0.001	(0.030)	0.068	(0.038)	-0.071	(0.043)
Workplace union density	0.0003	(0.001)	0.0001	(0.001)	0.002	(0.002)
Workplace union recognition	0.014	(0.040)				
Member of trade union	-0.078	(0.033)	-0.091	(0.039)	-0.068	(0.070)
member APE	-0.023		-0.025		-0.017	
LogLikelihood	-24150.644		-13959.22		-10080.88	
Wald chi2(80)	6777.14		4779.11		3659.68	
Prob > chi2	0.000		0.000		0.000	
Number of obs	17832		10341		7491	

Note: Coefficients (standard errors in parentheses) derived from ordered probit regression of overall job satisfaction indicator whose construction is described in the text. APE computed as described in the text. Regressions uses survey stratification weights and account for the presence of repeated observations on the same establishment.



Table 3: Propensity score estimates of membership/satisfaction differentials

	Mean differences in satisfaction	p-value
Treatment on the treated, Whole sample	-0.088	0.0000
Treatment on the treated, Union recognised	-0.086	0.0000
Treatment on the treated, Union not recognised	-0.022	0.6128
Average treatment effect, Union recognised	-0.076	0.0000

The matching method deployed is nearest neighbour matching, with common support enforced with a calliper of 0.002. The probit estimator used to generate the propensity scores conditions on X's that, we argue, are exogenous with respect to membership and are liable to affect both membership propensities and job satisfaction. These are: gender, age, qualifications, disability, ethnicity, if children, if married, occupation, industry, sector, region, establishment size, head office, share of female employees, share of part-time employees, share of medium skilled employees, share of low skilled employees, unemployment in the local area, workplace union density. All are specified as per the regression models reported. Note that the average treatment effect for the unionised sector is a weighted average of the treatment-on-the-treated and treatment-on-the-non-treated effects in the sector.

Table 4: Estimates of job satisfaction equation with endogenous union membership and endogenous selection into workplace with union recognised

	Job satisfaction		Union membership		Union recognition	
Female	0.297	(0.039)	-0.184	(0.045)	-0.013	(0.037)
Aged 20-24	0.217	(0.129)	0.341	(0.155)	-0.008	(0.099)
Aged 25-29	-0.007	(0.139)	0.674	(0.148)	0.023	(0.097)
Aged 30-39	0.063	(0.138)	0.810	(0.148)	0.048	(0.095)
Aged 40-49	0.115	(0.143)	0.854	(0.156)	0.156	(0.096)
Aged 50-59	0.209	(0.139)	0.718	(0.156)	0.130	(0.098)
Aged 60 or more	0.542	(0.155)	0.406	(0.192)	0.052	(0.123)
Has A-levels	-0.134	(0.046)	-0.062	(0.054)	-0.129	(0.049)
No educational qualification	0.181	(0.057)	0.100	(0.061)	0.051	(0.047)
Disabled	-0.213	(0.081)	0.038	(0.082)	0.098	(0.065)
Nonwhite	-0.025	(0.085)	-0.052	(0.128)	0.050	(0.103)
Has children	-0.024	(0.027)	-0.048	(0.030)	0.050	(0.028)
Married	0.079	(0.041)	0.034	(0.045)	0.093	(0.038)
Medium skill occupation	0.033	(0.086)	0.686	(0.101)	0.211	(0.063)
Low skill occupation	-0.041	(0.076)	0.371	(0.112)	0.043	(0.056)
Job equally done by men and women	0.076	(0.049)				
Family friendly policies available	-0.181	(0.136)				
Can take day off if needed	0.155	(0.084)				
Overtime always paid	-0.041	(0.041)				
Has permanent job	-0.051	(0.061)				
Has received 10+ days of training in the last year	0.221	(0.059)				
Paid less than £50 per week	-0.407	(0.199)				
Paid £51-£80 per week	-0.458	(0.178)				
Paid £81-£140 per week	-0.588	(0.154)				
Paid £141-£180 per week	-0.592	(0.135)				
Paid £181-£220 per week	-0.686	(0.139)				
Paid £221-£260 per week	-0.692	(0.117)				
Paid £261-£310 per week	-0.598	(0.126)				
Paid £311-£360 per week	-0.568	(0.127)				
Paid £361-£430 per week	-0.390	(0.126)				
Paid £431-£540 per week	-0.402	(0.117)				
Paid £541-£680 per week	-0.129	(0.116)				
Total hours worked on average week	-0.001	(0.003)				

Thinks management understanding of employees' problems	0.425	(0.038)				
Thinks meetings management/employees are useful	0.321	(0.034)				
Thinks relations management/employees are good	0.634	(0.039)				
Thinks managers are in favour of trade unions	0.016	(0.037)				
Thinks trade unions take notice of members' problems	-0.065	(0.043)				
Thinks trade unions taken seriously by management	0.219	(0.056)				
Thinks trade unions make a difference in work environment	0.156	(0.055)				
Has discussed with supervisor about how getting on with job	0.234	(0.049)				
Has discussed with supervisor about promotions	0.078	(0.043)				
Has discussed with supervisor about training	0.028	(0.037)				
Has discussed with supervisor about pay	-0.124	(0.042)				
Has control over the range of tasks performed	0.413	(0.045)				
Has control over the pace of tasks execution	0.298	(0.043)				
Thinks would be better represented by self for getting pay increases	0.125	(0.038)				
Thinks would be better represented by self for making complaints	0.059	(0.037)				
Thinks would be better represented by self for disputes with management	-0.016	(0.034)				
1≤Workplace tenure<2	-0.123	(0.066)				
2≤Workplace tenure<5	-0.088	(0.054)				
5≤Workplace tenure<10	-0.091	(0.061)				
10≤Workplace tenure	-0.163	(0.055)				
Electricity, gas water	0.280	(0.063)	-0.145	(0.102)	1.952	(0.407)
Construction	0.101	(0.083)	-0.196	(0.136)	-0.375	(0.235)
Wholesales and retail	-0.236	(0.087)	0.273	(0.127)	-0.430	(0.181)
Hotels and restaurants	-0.066	(0.145)	0.512	(0.252)	-1.220	(0.233)
Transports and communication	-0.063	(0.064)	0.221	(0.105)	0.165	(0.206)
Financial services	0.080	(0.103)	0.137	(0.131)	0.436	(0.247)
Other business and services	-0.149	(0.099)	0.138	(0.182)	-1.084	(0.208)
Public administration	0.018	(0.086)	0.070	(0.119)	0.459	(0.497)
Education	-0.043	(0.111)	-0.105	(0.150)	-0.808	(0.290)
Health	-0.027	(0.112)	0.235	(0.134)	-0.030	(0.247)

Other community services	-0.186	(0.100)	-0.028	(0.135)	-0.316	(0.233)
South West	0.071	(0.059)	-0.103	(0.086)	0.500	(0.179)
South East	0.060	(0.061)	-0.073	(0.090)	0.020	(0.151)
Midlands	0.083	(0.062)	-0.155	(0.089)	0.400	(0.169)
North	0.078	(0.059)	-0.046	(0.088)	0.356	(0.164)
Workplace size>200	0.028	(0.038)	-0.050	(0.061)	0.751	(0.111)
Public sector	0.053	(0.081)	-0.132	(0.138)	1.709	(0.188)
Head establishmant	0.047	(0.051)	0.140	(0.071)	-0.378	(0.151)
Establishment age>??? years	0.084	(0.033)			0.303	(0.100)
Share of female employees	-0.346	(0.106)	-0.252	(0.158)	-0.367	(0.357)
Share of part-time employess	0.403	(0.124)	0.146	(0.170)	-0.057	(0.350)
Share medium skilled employees	0.441	(0.192)	-0.006	(0.214)	1.229	(0.522)
Share low skilled employees	0.620	(0.191)	-0.211	(0.226)	1.392	(0.514)
TTWA unemployment rate >5%	0.051	(0.037)	0.089	(0.051)		
Workplace union density	-0.002	(0.001)	0.017	(0.001)		
member	0.283	(0.222)				
member APE	0.082					
Manager thinks trade unions improve workplace performance			0.096	(0.045)		
Manager thinks employees fully committed			-0.107	(0.048)		
Manager thinks overall IR climate is good			-0.150	(0.068)		
Manager is against trade unions			-0.056	(0.154)		
Single establishment					-0.284	(0.164)
corr(satisfaction, membership)	-0.246	(0.127)				
corr(satisfaction, recognition)	0.206	(0.076)				
corr(recognition, membership)	-0.455	(0.136)				
LogLikelihood	25573.536					
Wald chi2 (161)	7119.40					
Prob > chi2	0.000					
Number of observations	17832					
Significance of instruments for membership in membership equation (d.f.)	18.41 (4)	0.0010				
Significance of instruments for membership in satisfaction equation (d.f.)	5.63 (4)	0.2288				
Significance of instruments for recognition in	12.08 (2)	0.0024				

recognition equation (d.f.)		
Significance of instruments for recognition in	1.89 (3)	0.5963
<u>satisfaction and membership equations (d.f.)</u>		

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Note: Coefficients (standard errors in parentheses) derived from estimation of overall job satisfaction model with endogenous union membership and endogenous selection into unionised workplaces. APE computed as described in the text. Regressions uses survey stratification weights and account for the presence of repeated observations on the same establishment. Model estimated using simulated maximum likelihood with 150 random draws.

1. Solimene L., *Market Failures and State Intervention*
2. Solimene L., *The Efficiency under Private and Public Ownership: Some Empirical Evidence*
3. Baici E., Dell'Aringa C., *The EMS Effect on the Italian Labour Market*
4. Lucifora C., *Union Density and Relative Wages: Is there a Relationship?*
5. Lucifora C., Sestito P., *Determinazione del salario in Italia: una rassegna della letteratura empirica*
6. Martini G., *Testing Different Bargaining Theories: A Pilot Experiment*
7. Lucifora C., Rappelli F., *Profili retributivi e carriere: un'analisi su dati longitudinali*
8. Dell'Aringa C., Lucifora C., *Wage Dispersion and Unionism: Are Unions Egalitarian?*
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