Abstract

We investigate the effect of union membership on job satisfaction. Whilst it is common to study the effects of union status on satisfaction treating individual membership as given, in this paper, we account for the endogenous selection induced by the sorting of workers into unionised jobs. Using linked employer-employee data from the 1998 British Workplace Employee Relations Survey, we address the question of how the membership decision is related to overall job satisfaction and to satisfaction with pay. Once the endogeneity of membership is accounted for, the marked difference in job satisfaction between unionised and non-unionised workers characterising raw data disappears, indicating that a selection effect, rather than a causal effect, explains the relationship.

JEL classification: J28, J51
Keywords: Job satisfaction, Trade unions, Linked employer-employee data

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Does Union Membership Really Reduce Job Satisfaction?

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1. Introduction

Job satisfaction and satisfaction with pay are often used by economists to explain a number of labour market stylised facts such as job shopping, job tenure and quit behaviour, as well as unionisation and strike activity. Satisfaction, as an economic variable, plays a central role in labour market theories and in our ability to explain workers' behaviour. Job matching and search theories, focussing on 'entry/exit' behaviour and successful employer-employee match, suggest that mobility decisions depend on the comparison of the net benefits with the current employer *vis-à-vis* alternative opportunities. As such dissatisfaction with the current job may imply a move to a new job (Jovanovic, 1979; Burdett and Mortensen, 1998). Dissatisfaction with the job, conditional on the wage, may also determine non co-operative behaviour, shirking and more generally lower levels of effort (Akerlof and Yellen, 1986; Weiss, 1980; Khaneman et al., 1986). Alternatively, dissatisfied workers, by internalising the individual cost of separations, may decide to form or join a union, using collective 'voice' to convey grievances to the employer in order to improve upon job and pay conditions. In this case, dissatisfaction favours unionisation and collective action (Freeman, 1978; Freeman and Medoff, 1984).

The empirical literature concerning the determinants and the economic effects of satisfaction on labour market outcomes is expanding, but the lack of appropriate statistical information and some scepticism among economists as to the use of satisfaction data still limit empirical knowledge on satisfaction. In this paper, we use detailed information on individual self-reported satisfaction, job attributes and establishment characteristics to investigate the relationship between job satisfaction and union membership.

Whilst it is common to study the effects of union status on satisfaction treating individual membership as given, we account for the endogenous selection induced by the sorting of workers into unionised jobs. In particular we address the question of how the membership decision is related to overall job satisfaction and to satisfaction with pay. We use linked employer-employee data from the 1998 Workplace Employee Relations Survey (WERS). We argue that most previous studies on this topic, due to either data deficiencies or estimation problems, suffer from severe limitations that are dealt with in the present paper. The contribution of this paper to the literature is twofold. First, the rich data combines employer and employee characteristics, providing the ideal set of information (and instruments) to investigate the effects of union membership on job satisfaction. Second, the

endeogeneity of unionisation decisions is explicitly modelled and jointly estimated with overall job satisfaction and satisfaction with pay. This reveals the bias arising in assuming membership to be given. This allows us to shed light on a puzzling finding often reported in the literature, namely that unionised workers are less satisfied than non-unionised ones. Our findings indicate that once the endogeneity of membership is accounted for dissatisfaction disappears. Furthermore, analyses of pay satisfaction suggest unions are successful in providing a wage differentials for to their members.

The paper is organised in the following way. Section Two reviews the relevant literature. Section Three describes the data and presents some stylised facts. In Section Four we discuss the main features of the empirical methods used. Section Five discusses the results and concludes.

2. The Economics of Job Satisfaction and Union Membership

The analysis of reported subjective satisfaction has been the object of a long standing debate among economists. Besides the standard caveat of cross-individual comparability, inference is further complicated by the fact that researchers generally do not know the set of information and the characteristics (both personal and of the work environment) that are taken into account when reporting the level of satisfaction (Clark and Oswald, 1996 and 1998). We acknowledge the existence of some of these caveats, still we believe that useful information can be retrieved and a better understanding of the behaviour of agents can be gained by analysing individual subjective satisfaction.

Union objectives may be broadly characterised as an attempt to improve workers' welfare and satisfaction through improvements in the working environment and wages. Yet a number of papers have come to the puzzling conclusion that union members are generally less satisfied as compared to non-unionised workers (Hammermesh, 1977; Kochan and Helfman, 1981). One line of argument has emphasised the role of individuals' unobserved heterogeneity by suggesting that those who experience lower satisfaction are more likely to join the union and be involved in union activities. In other words, being a union member *per se* (once self-sorting of workers has been considered) should bear no relation to job satisfaction. A similar view considers workplace heterogeneity and argues that union workers are generally more dissatisfied, since where discontent is high unions are more likely

to set up a formal organisation – i.e. net benefits of unionisation are higher. In both cases, a non-random allocation of workers across union and non-union jobs may give rise to reverse causation problems and the need to control for observed and unobserved differences across individuals, jobs and workplaces. Although the above arguments are not new in the literature, most previous studies suffer from data limitations (restricted controls, and unrepresentative or small samples) or an inappropriate methodology – which means they have not succeeded in dealing adequately with the issues. Bender and Sloane (1998) is a first attempt to deal with the selectivity issue by correcting the satisfaction equations for unobserved heterogeneity. They also stress a point, originally made by Gordon and Denisi (1995), that confusion can arise if one does not distinguish between job satisfaction and satisfaction with the union and management. However, by forcing membership status to be equivalent to coverage status – i.e. dropping uncovered members and covered non-members – they are unable to distinguish union membership effects from workplace unionisation and other workplace characteristics affecting satisfaction. Miller (1990), in a study which is closest in spirit to our research, reports that after instrumenting for union status in the satisfaction equation, the negative dissatisfaction effect disappears suggesting a selection process working through a higher union presence into workplaces with poor working conditions (and low satisfaction levels).

It is clear, then, that the relative dissatisfaction of union members may originate in the poor working conditions or poor management that are conducive to unionisation. Isolating any causal impact of membership on job satisfaction therefore involves controlling for workplace characteristics and satisfaction with management. But it is important not to lose sight of the fact that union membership may indeed have a causal impact on job dissatisfaction. This effect can occur when unions provide workers with the opportunity to express their discontent and grievances to the management through collective 'voice', thus increasing (reported) dissatisfaction (Freeman and Medoff, 1984). Although often overlooked in the literature, the 'voice' mechanism attributes to union membership a causal effect in reporting dissatisfaction. Leigh (1986) analyses job satisfaction and the desire for unionisation. Consistent with the union voice hypothesis, he finds dissatisfied and moderately satisfied union members have approximately the same probability of desiring union representation as do very satisfied union workers; conversely among non-union members, worker desire for unionisation rises with job dissatisfaction, suggesting

dissatisfaction may result in membership.[1] Leigh also finds desire for unionisation rises with higher pay among members, but falls with higher pay among non-members, suggesting dissatisfaction with pay may be particularly important in encouraging non-members to join a union. Other studies indicate that union-inspired egalitarian policies designed to reduce wage dispersion may create discontent (Borjas, 1979; Hersch and Stone, 1990). In this context, given the importance of union bargaining over wage levels and workplace pay policies, any analysis of job satisfaction should focus particular attention on satisfaction with wages.[2]

Studies assessing the causal effect of union membership on job satisfaction have been criticised for failing to control for important differences between the work environments of union members and non-members. This led to studies based on samples of members and non-members drawn from the same working environment (e.g. Gordon and Denisi, 1995). It is arguable that the presence of a union recognised for bargaining purposes may influence employees' job satisfaction through the union's ability to enhance employees' terms and conditions. The strength of the union may also be pertinent: as Borjas (1979: 24) suggests, only the strongest unions will be able to resist employer efforts to compensate for a union wage premium with a corresponding decrease in non-pecuniary job rewards. If this is so, one might expect job satisfaction to be highest where union strength maintains what Borjas (1979: 22-25) refers to as the 'full wage', comprising both the money wage rate and non-pecuniary job components. Since the presence and strength of a recognised union is also likely to influence employees' decisions to join a union – for instrumentalist or 'bandwagon' reasons (Bryson and Gomez, 2002) – we include union recognition and union density in our estimation.

This brief review indicates that we should model union membership and satisfaction as a joint process using information on personal, job and workplace characteristics. If joining the union is what prompts workers to express discontent through collective 'voice', unionisation and workers' (dis)satisfaction will not be independent. We view the reported satisfaction of individual i as $S_i = E(S_i^* \mid X_i, M_i)$, where S_i^* is the latent degree of satisfaction for individual i, X_i is a vector of observable attributes that can be both person or workplace-specific, and M_i is an indicator of membership status. Conditionally on X_i, union membership has an independent effect which needs to be adequately modelled. In contrast to

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[1] On the desire of union representation see also: Farber, 2001; Bryson and Gomez, 2002; Bryson, 2003.

[2] Another reason to analyse satisfaction with pay separately from overall satisfaction is that it might be easier to report satisfaction with respect to pecuniary aspects of the job rather than with non-pecuniary aspects.

much of the previous literature, union membership is not just considered as a job attribute but as a specific choice of the individual which can give rise to strategic behaviour.

3. Patterns of Unionisation and Job Satisfaction

3.1 The data

In this section we provide a detailed description of the information used in the empirical analysis. The data set is 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 for the inclusion of a large set of individual-level and workplace-level controls as well as detailed information on workers' job satisfaction. A complete list of the variables used in the analysis and their means is contained in Appendix Table A1.

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. Interviews were conducted in 2,191 workplaces between October 1997 and June 1999, with a response rate of 80%. The second element is the survey of employees where a management interview was obtained. Self-completion questionnaires were distributed to a simple random sample of 25 employees (or all employees in workplaces with 10-24 employees) in the 1,880 cases where management permitted it. Of the 44,283 questionnaires distributed, 28,237 (64%) usable ones were returned.

The sample of workplaces is a stratified random sample with over-representation of larger workplaces and some industries (Airey et al., 1999). Employees' probability of selection for the survey is a product of the probability of their workplace being selected and the probability of the employee's own selection. To extrapolate from our analyses to the population from which the employees were drawn (namely employees in Britain in workplaces with 10 or more employees) we weight the analysis using the employee weights.[3] Our estimating sub-sample is all employees with complete information on the variables used in the analysis, namely 18,012.

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'. Similarly to each of the specific indicators it can assume values on a 5 point scale, from 0 to 4. Table 1 cross-tabulates overall-job-satisfaction (OJS henceforth) and satisfaction-with-pay (SWP henceforth) against individual membership status and shows that members tend to report lower satisfaction levels relative to non-members on both indicators. The null hypothesis of independence of the two variables is overwhelmingly rejected in the case of OJS. For SWP, the hypothesis can be rejected at the 5% level, indicating that the differential dissatisfaction of members is less evident when pay, rather than other job facets, is analysed. The distributions of satisfaction with non-pecuniary job aspects by membership status are given in Appendix Table A2. The table shows that, as for OJS, the independence hypothesis is strongly rejected by the data. Since the similarities between OJS and the non-pecuniary indicators of job satisfaction in their relationship with membership status are confirmed by some preliminary regression analyses, to save space we focus on OJS and SWP in the rest of the paper.[4]

3.2. Union membership and job satisfaction: a descriptive analysis

To explore the relationship between membership and satisfaction in WERS, we estimate a set of job satisfaction regressions that include a union member dummy on the right hand side. Due to the endogeneity issues that potentially plague this type of exercise, it is important at this stage not to infer any causal interpretation from the estimated coefficients.

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[3] The weighting scheme used in this paper compensates for sample non-response bias which was detected in the employee survey (Airey et al., 1999: pp. 91-92).

[4] Given that the distribution of workers across satisfaction levels is not symmetric, we also experimented with an alternative measure of overall job dissatisfaction where the indicator is computed by summing the

We assume that the satisfaction propensity of individual i ($i=1,…,N$) is summarised by a continuous latent variable S_i^* which is a linear function of personal, job and workplace attributes represented by the column vector X_i, a dummy variable M_i taking value 1 if the individual is a union member and 0 otherwise and an error term e_i distributed as standard normal:

$$S_i^* = X_i'\boldsymbol{b} + \boldsymbol{d}M_i + \boldsymbol{e}_i \tag{1}$$

where $\boldsymbol{b}$ is a vector of coefficients associated with personal attributes and $\boldsymbol{d}$ is the scalar coefficient associated with membership. The set of controls included in X_i refers to personal background, occupational and job characteristics, personal opinions on the climate of industrial relations and the trade union, gross weekly earnings, average weekly hours worked and workplace controls. S_i^* is not observed; rather, in the WERS questionnaire we observe S_i, its discrete realisation which can assume a set of ordered values depending on S_i^* crossing the latent cut-off points $t_1..t_4$. Coefficients in (1) can be estimated using an ordered probit model.[5]

Results are reported in Table 2. We first include only M_i among regressors and then progressively add personal, job and workplace characteristics. By doing so, we can control how the estimated membership coefficient varies as the set of controls widens: changes in the membership coefficient would signal that membership is correlated with the observable attributes suggesting that membership is not random and might also be correlated with personal attributes not observed in the data, causing endogeneity.

As can be seen from the first column, union members report satisfaction levels that are significantly lower than non-members. The gap is wider for OJS than it is for SWP, indicating that members see themselves better off when it comes to pay compared to the overall aspects of their job. In column (2) we include a set of controls for personal characteristics, namely gender, age, education, marital status, parental status, health status and ethnicity. Although these controls have a significant impact on job and pay satisfaction, their introduction does not affect the estimated membership coefficient in the OJS equation, indicating that the negative estimate in column (1) is not the result of differences in observed

'dissatisfied' and 'very dissatisfied' categories on each of the four job aspects. Since the results mirror closely those obtained with the satisfaction indicator, we only report empirical evidence on satisfaction.

personal characteristics between members and non–members.[6] The gap on pay satisfaction, however, does narrow quite markedly, though it remains statistically significant. Estimates in column (3) also control for occupational and job characteristics. The membership coefficient in the OJS equation drops, indicating that members tend to be concentrated in occupations and jobs where satisfaction is lower. As suggested by the literature reviewed in Section 2, lower job satisfaction among union members relative to non-members may also reflect unobserved heterogeneity at the firm or workplace level if unionisation is more likely to occur in places where working conditions are poor. Column (4) exploits the employer dimension of WERS and adds a set of controls for workplace characteristics, establishment characteristics (such as age, activity undertaken, ownership), gender and occupational composition of the workforce, union coverage and density as well as industry, size, region and local labour market conditions. Controlling for these factors does not seem to alter the conclusions reached so far, indicating that workplace heterogeneity – once conditioning on personal and occupational characteristics - does not affect substantially union members' satisfaction. Column (5) includes additional controls for individual perceptions of industrial relations climate and opinions on the trade union and management, which might help in separating job satisfaction from satisfaction towards unions and management (see Bender and Sloane, 1998). These variables further reduce the size of the membership coefficient in the OJS equation, nevertheless the reduction is small and the member-non-member satisfaction differential still remains significant. As far as pay satisfaction is concerned the membership coefficient is small and statistically non-significant. Column (6) adds pay and hours worked to the controls.[7] Their effect is to increase the dissatisfaction of members with both the aspects considered; in particular, the coefficient related to pay satisfaction is now weakly statistically significant (at the 20% level). This evidence suggests that higher wages of members partly compensate for their working conditions and lower dissatisfaction, so that once the effect of pay on satisfaction has been controlled for the estimated membership coefficients gains size and significance.[8]

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[5] We account for differential sampling probability across establishment using sampling weights, whereas we control for the presence of multiple observations within the same establishment using robust variance estimator. Overall, our estimators are Pseudo Weighted Maximum Likelihood.

[6] Tables with coefficients estimated on all the controls used are not reported here, for lack of space, but can be obtained upon request from the authors.

[7] 'Wages' are the 12 banded categories for gross weekly pay. 'Hours' is a continuous variable recording total weekly hours worked.

[8] There is evidence from other WERS analyses that membership confers a wage premium (Bryson, 2002).

Besides providing estimates of the association between membership and satisfaction, evidence in Table 2 shows that the estimated membership coefficient varies considerably with the set of observable characteristics included in the analysis, indicating that membership might not be randomly distributed across the features defined by the available controls. Before moving onto a direct test of the hypothesis of membership exogeneity in the next section, we conclude this section by exploring the possibility that the negative membership coefficient reflects some 'voice' effect, in which case it could be interpreted – at least in part – as a causal effect of membership. In particular we focus on a variable which should capture a 'louder' use of voice by members when answering job satisfaction questions, namely an activist member dummy, which takes the value one if the member takes active part in trade union activity (defined here as either being a union representative or having frequent contact with a worker representative) and zero otherwise. If members voice out their discontent, then we might expect active members to do it louder, since they are more directly involved in union activities than ordinary members.[9] Thus, if the coefficient on the membership dummy reflects a 'voice' effect, we should expect it to lose size and significance once the activist dummy has been added to the regression. Table 2, column (7), shows that the inclusion of the activist variable in the regression hardly affects the size and significance of the membership coefficients obtained otherwise, suggesting that the negative association between membership and satisfaction does not stem from 'voice effects'.

4. The Effect of Membership on Satisfaction

The analysis carried out so far in this paper suggests that the negative association between job satisfaction and membership might be induced by unobserved factors which co-determine the decision to join the union and the reported satisfaction. In this section we provide a direct test of the membership exogeneity hypothesis.

To do this, we estimate the effect of union membership on job satisfaction while simultaneously modelling union membership status using instrumental variables. In this way we are able to control for the presence of unobserved correlation between union membership and job satisfaction, thus eliminating the bias induced by unobserved heterogeneity and

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[9] Cappellari et al (2002) find for Italy that union activists report lower satisfaction with organisational changes relative to ordinary members, and that such differences can be attributed to a 'voice effect'.

delivering the causal impact of union membership on job satisfaction. We augment equation (1) with a probit equation for the probability of being a union member:

$$M^*_i = Z_i'\boldsymbol{g} + W_i'\boldsymbol{q} + u_i \qquad (2)$$

where M^*_i is a continuous latent propensity underlying the dummy M_i, Z_i is a vector of observables, W_i is a vector of variables that have no effect on satisfaction after union membership has been controlled for, $\boldsymbol{g}$ and $\boldsymbol{q}$ are vectors of coefficients associated with personal attributes and u_i is an error term distributed as standard normal. We model the link between u_i and $\boldsymbol{e}_i$ by allowing them to be distributed as bivariate normal with unrestricted correlation $\boldsymbol{r} \equiv \mathrm{corr}(\boldsymbol{e}_i\ u_i)$. By simultaneously estimating equations (1) and (2) we are able to separately identify the correlation between unobservables – the coefficient $\boldsymbol{r}$ – and thus to remove the bias induced by unobserved heterogeneity from the coefficient $\boldsymbol{d}$ in (1).

The set of attributes in Z_i is a subset of those in X_i. In particular, some job attributes have been excluded since they might form the bargaining object and be distributed across workers according to their membership status.[10] Our choice of variables is informed by previous empirical work on satisfaction, discussed earlier, and the theory and empirical evidence on the worker choice and queuing models of selection into union membership (Farber, 2001; Bryson and Gomez, 2002). Variables entering the model are demographics (age, gender, marital status, health, qualifications), job-related (occupation, gender segregation), workplace (size, industry, the activity conducted at the workplace – administrative, head office, producer or distributor of goods or services - ownership, location) and local labour market conditions. In the light of the literature on union membership wage differentials, hourly gross earnings do not enter Z_i. Individual opinions on the climate of industrial relations and the trade union do not appear in Z_i, as they might be determined by membership status.

The 'instruments' in W_i are given by a set of indicators of managerial opinions on the climate of industrial relations; see the four last rows of Appendix Table A1 for their description. The identifying assumption is that after the employee's membership status and opinions on industrial relations climate have been controlled for in the satisfaction equation, managerial opinions have no additional effect on individual satisfaction. On the other hand,

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[10] Variables such as ethnicity, nature of contract, age of establishment, foreign ownership were excluded from the model because they were not statistically significant in membership and/or satisfaction equations.

they are the sole exogenous indicator of industrial relations climate in the membership equation, since individual opinions are likely to be shifted by the membership status. Our identifying strategy takes advantage of the availability of linked employer-employee data: we observe the climate of industrial relations from two different perspective – the worker's and the manager's ones – and we claim that the latter has no effect on individual satisfaction after the former (together with membership) has been controlled for. Since our model is not over-identified, we test the validity of our claims using functional form as an identifying restriction.

Although our linked employer-employee data provide much of the requisite information, it is arguable that we are missing some data. For example, we have no data on motivation, which may be positively correlated with membership and satisfaction, potentially biasing the membership coefficient upwards.

We report estimates of the endogenised membership coefficients in Table 3 and, to facilitate comparisons, we also report coefficients from analogous models in which the union dummy is treated as exogenous – i.e. the coefficients from column (6) in Table 2. Before considering the main results, note that the tests for instrument validity reported at the bottom of the table are in favour of the use of managerial opinions on industrial relations climate as instruments for union status in satisfaction equations. In fact, these variables are not significant in the job satisfaction equations, whereas they significantly affect membership probabilities. Thence, the data support our proposed instruments.

The estimated coefficient on union membership from the OJS column reveals that, after endogenisation of the membership status, union membership has no residual effect on satisfaction, as is signalled by a t-ratio of 0.53. On the other hand, the negative relationship between membership and job satisfaction is now absorbed by the correlation coefficient r which is negative and similar in size to the estimated coefficient on the union dummy in the exogenous model, while it is statistically significant at the 15% level. These results reveal quite clearly that the negative estimate obtained from models treating membership as exogenous is purely the effect of unobserved heterogeneity. The pool of union members is composed of individuals who have a satisfaction propensity lower than that in the population – as indicated by the negative r – and once this compositional effect has been taken into account no causal effect of membership on satisfaction can be found in the data. From an economic perspective, our results suggest that the same factors that lead individuals to unionise make them feel unsatisfied with their job, as could be the case if individuals with

higher expectations and aspirations from their working life are more likely to both unionise and see their aspirations frustrated once in the job.

Evidence about SWP tells a story which is pretty similar to the one that emerges from the overall satisfaction indicator. The coefficient on the union dummy loses significance after endogenisation, while its negative sign is absorbed by the correlation coefficient. The statistical significance of the correlation coefficient is lower compared to the right column of the table, suggesting that endogeneity is less relevant in this case. This fact is in line with the estimate from the model with exogenous unionism, where the estimated membership coefficient from the SWP equation was smaller in size and significance compared to the one from the OJS equation. This finding confirms the importance of treating overall satisfaction and satisfaction with pay separately, since the higher wages granted by the union to their members seems to offset their larger intrinsic dissatisfaction generated by higher expectations.

5. Conclusions

Our results are consistent with previous studies in showing union members to be less satisfied with their jobs and pay than non-members. The association between union membership and overall job satisfaction remained statistically significant controlling for a range of personal, job, workplace and attitudinal variables. However, members' dissatisfaction with pay is not significant once personal and job characteristics are accounted for, suggesting that members are less dissatisfied with pay than with non-pecuniary aspects of their jobs. Members' relative dissatisfaction with pay strengthens once we condition on their pay indicating that unions achieve a wage premium for their members which partly offsets their greater propensity to be dissatisfied with their jobs.

The satisfaction differential between members and non-members can be interpreted in one of two ways. Either it is the result of union membership, or else it is driven by unobserved differences between members and non-members that are associated with satisfaction and membership status. In our exploratory descriptive regression analysis, where membership is treated as exogenous, there were two indications that the effects might be attributable to selection into union membership. The first was the fact that the size of the union membership coefficient altered substantially with the introduction of additional

variables, indicating that membership is not randomly assigned across employees. This raises the prospect that there may be unobservable differences across members and non-members that affect their job satisfaction. Second, we were able to reject the proposition that members' lower satisfaction was the result of 'voice' effects arising from the politicising influence of membership. Exploiting the linked employer-employee data available in WERS, we therefore explored the possibility that membership is endogenous with respect to satisfaction. Our analyses indicate that this is indeed the case and that, once account is taken of endogenous selection into membership, union membership is no longer associated with lower job satisfaction. It seems that some individuals have unobservable attributes – perhaps higher aspirations from their working life - that lead them to unionise and also make them feel unsatisfied with their job. By affecting membership probabilities, our instruments remove the bias induced by endogenous selection from the estimated membership coefficient in the job satisfaction equation. We conclude that unions are innocent of any charge that they may incite job dissatisfaction in the bargaining process and that, further, unions continue to deliver for their members by delivering a union wage premium.

Table 1: Satisfaction and membership

Overall Job Satisfaction			Satisfaction with Pay		
Number of job facets about which was 'very satisfied' or 'satisfied'	Member	Non-Member	Reported degree of satisfaction	Member	Non-Member
4	16.8	23.0	Very satisfied	3.1	3.5
3	24.0	25.9	Satisfied	30.3	32.8
2	19.0	20.2	Neither satisfied nor dissatisfied	22.7	24.5
1	19.4	15.7	Dissatisfied	30.4	27.7
0	20.8	15.2	Very dissatisfied	13.4	11.5
P	0.0000		P	0.0205	

Notes:
  1) Figures are column percentages which take account of survey design.
  2) Number of observations=18,012.
  3) P indicates the p-value of a design-based Pearson χ^2 test of independence of the two variables.

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Table 2: The impact of union membership on job satisfaction

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	OJS	SWP	OJS	SWP	OJS	SWP	OJS	SWP	OJS	SWP	OJS	SWP	OJS	SWP
Union Member	-.222	-.091	-.217	-.068	-.157	-.007	-.155	-.034	-.121	-.016	-.135	-.047	-.128	-.037
	(9.43)	(2.70)	(8.77)	(1.96)	(6.07)	(0.24)	(4.88)	(1.08)	(3.80)	(0.50)	(4.17)	(1.34)	(3.93)	(1.05)
Personal characteristics	No		Yes		Yes		Yes		Yes		Yes		Yes	
Job characteristics	No		No		Yes		Yes		Yes		Yes		Yes	
Workplace characteristics	No		No		No		Yes		Yes		Yes		Yes	
Opinions on industrial relations and trade unions	No		No		No		No		Yes		Yes		Yes	
Pay	No		No		No		No		No		Yes		Yes	
Union Activist	No		No		No		No		No		No		Yes	
Log likelihood	-28712	-25850	-28389	-25650	-27835	-25332	-27721	-25071	-25022	-24016	-24871	-23348	-24715	-23210
Model p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes:
1) The table shows union membership coefficients from overall job satisfaction (OJS) and satisfaction with pay (SWP) equations estimated using ordered probit models. Regressions use survey stratification weights and account for the presence of repeated observations on the same establishment.
2) A "Yes" indicates that the relevant set of controls is included in the regression.
3) Number of observations=18,012.
4) Asymptotically robust t-ratios in parentheses.

Table 3: The impact of union membership on job satisfaction

	Overall Job Satisfaction		Satisfaction with Pay	
	Exogenous	Endogenous	Exogenous	Endogenous
Union Member	-.135	.078	-.047	.123
	(4.17)	(0.53)	(1.34)	(0.71)
Personal characteristics	Yes		Yes	
Job characteristics	Yes		Yes	
Workplace characteristics	Yes		Yes	
Opinions on industrial relations and trade unions	Yes		Yes	
Pay	Yes		Yes	
Correlation of unobservables between satisfaction and membership equation (r)		-.124		-.101
		(1.52)		(1.05)
Exclusion of instruments from satisfaction equation, p-value		0.5812		0.4540
Exclusion of instruments from membership equation, p-value		0.0001		0.0001
Log likelihood	-24871.74	-31263.589	-23348.97	-29759.439
Model p-value	0.0000	0.0000	0.0000	0.0000

Notes:
1) The table shows union membership coefficients from overall job satisfaction equations estimated using ordered probit ('Exogenous' column) and ordered probit with endogenous dummy ('Endogenous' column) models. Regressions use survey stratification weights and account for the presence of repeated observations on the same establishment.
2) A "Yes" indicates that the relevant set of controls is included in the regression.
3) Number of observations=18,012.
4) Asymptotically robust t-ratios in parentheses.

Appendix

Table A1: Variables used in the analysis (number of observations=18012)

	Mean	Appears in RHS of satisfaction equation	Appears in RHS of membership equation
Female	0.46	×	×
Aged less than 20	0.05	×	×
Aged 20-24	0.07	×	×
Aged 25-29	0.12	×	×
Aged 30-39	0.29	×	×
Aged 40-49	0.25	×	×
Aged 50-59	0.18	×	×
Aged 60 or more	0.04	×	×
Has children aged 0-4	0.15	×	×
Has children aged 5-11	0.20	×	×
Has children aged 12-18	0.20	×	×
Single	0.21	×	×
Widowed	0.01	×	×
Divorced	0.07	×	×
Has at most CGSE	0.12	×	×
Has at most O-levels	0.27	×	×
Has at most A-levels	0.15	×	×
Has at most graduate degree	0.16	×	×
Has at most post-graduate degree	0.05	×	×
Has none of these qualifications	0.24	×	×
Has vocational qualifications	0.39	×	×
Disabled	0.06	×	×
Non-white	0.03	×	×
Manager	0.10	×	×
Professional	0.13	×	×
Associate professional and technical	0.09	×	×
Clerical and secretarial	0.16	×	×
Craft and skilled service	0.11	×	×
Personal and protective service	0.08	×	×
Sales	0.10	×	×
Operative and assembly	0.13	×	×
Other occupations	0.11	×	×
Temporary job	0.04	×	
Fixed term contract	0.03	×	
Overtime always paid	0.47	×	
Job equally done by men and women	0.29	×	

Availability of flexible hours	0.76	×	
Availability of job sharing	0.15	×	
Availability of parental leave	0.06	×	
Availability of nursery	0.005	×	
Can take day off if needed	0.97	×	
Paid less than £50 per week	0.06	×	
Paid £51-£80 per week	0.07	×	
Paid £81-£140 per week	0.12	×	
Paid £141-£180 per week	0.09	×	
Paid £181-£220 per week	0.11	×	
Paid £221-£260 per week	0.11	×	
Paid £261-£310 per week	0.10	×	
Paid £311-£360 per week	0.08	×	
Paid £361-£430 per week	0.10	×	
Paid £431-£540 per week	0.08	×	
Paid £541-£680 per week	0.04	×	
Paid more than £681 per week	0.04	×	
Total hours worked on average week	36.65	×	
Has discussed with supervisor about how getting on with job	0.59	×	
Has discussed with supervisor about promotions	0.21	×	
Has discussed with supervisor about training	0.48	×	
Has discussed with supervisor about pay	0.30	×	
Thinks management understanding of employees' problems	0.54	×	
Thinks meetings management/employees are useful	0.59	×	
Thinks relations management/employees are good	0.54	×	
Thinks managers are in favour of trade unions	0.16	×	
Thinks trade unions take notice of members' problems	0.33	×	
Thinks trade unions taken seriously by management	0.26	×	
Thinks trade unions make a difference in work environment	0.21	×	
10 thru 24 employees	0.13	×	×
25 to 49 employees	0.15	×	×
50 to 99 employees	0.15	×	×
100 to 199 employees	0.15	×	×
200 to 499 employees	0.20	×	×
500 or more employees	0.22	×	×
Manufacturing	0.26	×	×
Electricity, gas water	0.01	×	×
Construction	0.03	×	×
Wholesales and retail	0.15	×	×
Hotels and restaurants	0.05	×	×

Transports and communication	0.06	×	×
Financial services	0.04	×	×
Other business and services	0.08	×	×
Public administration	0.08	×	×
Education	0.09	×	×
Health	0.12	×	×
Other community services	0.03	×	×
East Anglia	0.06		
East Midlands	0.09	×	×
London	0.10	×	×
North	0.07	×	×
North West	0.10	×	×
Scotland	0.10	×	×
Rest of the South East	0.18	×	×
South West	0.08	×	×
Wales	0.04	×	×
West Midlands	0.10	×	×
Yorkshire & Humberside	0.08	×	×
Share female employees	0.47	×	×
Share part time employees	0.24	×	×
Share managers	0.08	×	×
Share professionals	0.12	×	×
Share technicals	0.09	×	×
Share clericals	0.16	×	×
Share crafts	0.11	×	×
Share personal and protective services	0.08	×	×
Share salers	0.10	×	×
Share operatives	0.14	×	×
Share other occupations	0.12	×	×
Single establishment	0.24	×	×
Head establishment	0.32	×	×
Foreign owned firm	0.15	×	×
Public owned firm	0.28	×	×
Workplace aged less than 3 year	0.08		
Workplace aged 3 to 4 years	0.06	×	×
Workplace aged 5 to 9 years	0.15	×	×
Workplace aged 10 to 20 years	0.20	×	×
Workplace aged More than 20 years	0.51	×	×
Workplace produces goods or services for consumers	0.53		
Workplace supplies goods or services to other companie s	0.23	×	×
Workplace supplies of goods or services to other parts of organisation	0.08	×	×

Workplace does not produce goods or services for sale in the open market	0.13	×	×
Workplace is an administrative office only	0.03	×	×
TTWA unemployment rate between 5 and 7 percent	0.33	×	×
TTWA unemployment rate between 7 and 7.5 percent	0.12	×	×
TTWA unemployment rate above 7.5 percent	0.06	×	×
Workplace union density	34.68	×	×
Trade union recognised	0.56	×	×
Manager thinks trade unions improve performance	0.36		×
Manager thinks employees fully committed	0.67		×
Manager thinks IR climate is good	0.86		×
Manager thinks management against trade unions	0.12		×

Table A2: Distribution of members and non-members across non pecuniary measures of job satisfaction

Reported degree of satisfaction	Satisfaction with the sense of achievement derived from the work		Satisfaction with the respect from supervisors or line managers		Satisfaction with the amount of influence over the job	
	M	NM	M	NM	M	NM
Very satisfied	12.6	15.3	10.8	15.5	8.8	12.7
Satisfied	45.9	50.4	40.5	46.0	44.4	49.6
Neither satisfied nor dissatisfied	22.3	21.3	21.3	19.7	26.6	25.1
Dissatisfied	13.0	9.2	15.6	11.7	15.2	10.5
Very dissatisfied	6.1	3.8	11.8	7.0	4.9	2.2
P	0.0000		0.0000		0.0000	

Notes:
1) Figures are column percentages which take account of survey design.
2) M = union members. NM = union non-members.
3) Number of observations=18,012.

P indicates the p-value of a design-based Pearson χ^2 test of independence of the two variables.

Available from the authors upon request: estimates of satisfaction equation with endogenised membership dummy

Variable	OJS		SWP		Membership*	
	Coeff.	|t-stat|	Coeff.	|t-stat|	Coeff.	|t-stat|
Female	0.260	(8.920)	0.298	(10.380)	-0.070	(1.600)
Aged 20-24	0.056	(0.850)	-0.023	(0.300)	0.365	(2.810)
Aged 25-29	-0.037	(0.540)	-0.152	(2.080)	0.638	(5.160)
Aged 30-39	-0.065	(0.960)	-0.180	(2.360)	0.821	(6.590)
Aged 40-49	-0.033	(0.460)	-0.176	(2.260)	0.939	(7.290)
Aged 50-59	0.072	(1.010)	-0.220	(2.800)	0.808	(5.960)
Aged 60 or more	0.481	(5.490)	0.057	(0.610)	0.475	(2.780)
Has children aged 0-4	0.090	(2.400)	0.064	(1.860)	-0.032	(0.660)
Has children aged 5-11	-0.020	(0.650)	-0.039	(1.300)	-0.048	(1.180)
Has children aged 12-18	0.016	(0.460)	-0.014	(0.480)	-0.074	(1.700)
Single	0.002	(0.060)	0.028	(0.820)	-0.059	(1.170)
Widowed	0.063	(0.700)	0.232	(2.560)	-0.305	(1.880)
Divorced	0.002	(0.050)	0.018	(0.400)	-0.078	(1.280)
Has at most O-levels	-0.081	(2.030)	-0.055	(1.180)	-0.121	(1.940)
Has at most A-levels	-0.171	(3.520)	-0.072	(1.640)	-0.124	(1.750)
Has at most graduate degree	-0.242	(4.540)	-0.251	(5.260)	-0.019	(0.250)
Has at most post-graduate degree	-0.295	(4.500)	-0.286	(4.350)	0.017	(0.180)
Has none of these qualifications	0.117	(2.330)	0.010	(0.230)	-0.054	(0.810)
Has vocational qualifications	-0.009	(0.330)	-0.071	(2.800)	0.038	(0.990)
Disabled	-0.203	(3.580)	-0.147	(3.050)	0.037	(0.520)
Non-white	0.078	(1.270)	-0.119	(1.870)	0.029	(0.270)
Professional	-0.099	(1.860)	-0.106	(1.940)	0.586	(5.870)
Associate professional and technical	-0.174	(3.370)	-0.087	(1.500)	0.673	(6.670)
Clerical and secretarial	-0.176	(3.450)	0.063	(1.170)	0.057	(0.670)

Craft and skilled service	-0.042	(0.670)	-0.050	(0.760)	0.847	(7.470)
Personal and protective service	-0.049	(0.760)	0.094	(1.460)	0.125	(0.900)
Sales	-0.103	(1.570)	0.104	(1.470)	0.495	(4.050)
Operative and assembly	-0.312	(4.510)	0.163	(1.890)	1.106	(8.750)
Other occupations	-0.068	(1.020)	0.205	(2.830)	0.309	(2.380)
Temporary job	0.087	(1.280)	0.173	(2.450)		
Fixed term contract	-0.056	(0.840)	0.064	(0.930)		
Overtime always paid	-0.052	(1.910)	-0.012	(0.460)		
Job equally done by men and women	0.081	(2.590)	0.052	(2.040)		
Availability of flexible hours	-0.128	(1.050)	0.011	(0.100)		
Availability of job sharing	-0.050	(0.410)	0.006	(0.060)		
Availability of parental leave	0.001	(0.010)	0.127	(1.110)		
Availability of nursery	0.107	(0.530)	0.222	(1.450)		
Can take day off if needed	0.123	(1.820)	0.111	(1.520)		
Paid less than £50 per week	-0.947	(7.430)	-2.114	(14.950)		
Paid £51-£80 per week	-0.927	(8.330)	-2.116	(17.430)		
Paid £81-£140 per week	-0.903	(9.400)	-1.924	(17.820)		
Paid £141-£180 per week	-0.868	(10.060)	-1.873	(19.720)		
Paid £181-£220 per week	-0.917	(10.520)	-1.835	(20.750)		
Paid £221-£260 per week	-0.844	(10.860)	-1.594	(18.740)		
Paid £261-£310 per week	-0.746	(9.300)	-1.415	(16.020)		
Paid £311-£360 per week	-0.706	(9.040)	-1.222	(14.930)		
Paid £361-£430 per week	-0.521	(6.230)	-0.928	(13.650)		
Paid £431-£540 per week	-0.554	(7.590)	-0.813	(10.710)		
Paid £541-£680 per week	-0.201	(2.560)	-0.458	(5.240)		
Total hours worked on average week	-0.005	(3.000)	-0.021	(10.310)		
Has discussed with supervisor about how getting on with job	0.202	(6.110)	0.150	(4.520)		

Has discussed with supervisor about promotions	0.043	(1.450)	-0.048	(1.660)		
Has discussed with supervisor about training	0.046	(1.720)	0.034	(1.070)		
Has discussed with supervisor about pay	-0.029	(1.080)	-0.312	(11.140)		
Thinks management understanding of employees' problems	0.475	(18.260)	0.249	(8.880)		
Thinks meetings management/employees are useful	0.364	(14.170)	0.242	(9.540)		
Thinks relations management/employees are good	0.722	(27.320)	0.380	(14.690)		
Thinks managers are in favour of trade unions	0.032	(0.920)	0.010	(0.290)		
Thinks trade unions take notice of members' problems	-0.099	(2.480)	-0.122	(3.090)		
Thinks trade unions taken seriously by management	0.207	(3.800)	0.175	(3.480)		
Thinks trade unions make a difference in work environment	0.152	(3.000)	0.086	(2.240)		
25 to 49 employees	-0.015	(0.310)	0.015	(0.310)	-0.108	(1.300)
50 to 99 employees	-0.081	(1.740)	-0.028	(0.560)	-0.019	(0.240)
100 to 199 employees	-0.058	(1.190)	-0.030	(0.590)	0.039	(0.470)
200 to 499 employees	-0.073	(1.490)	-0.066	(1.280)	0.126	(1.520)
500 or more employees	-0.111	(2.150)	-0.085	(1.540)	0.101	(1.170)
Electricity, gas water	0.042	(0.710)	0.160	(2.230)	0.119	(1.140)
Construction	0.033	(0.640)	0.019	(0.300)	-0.052	(0.500)
Wholesales and retail	-0.113	(2.190)	0.029	(0.510)	-0.246	(2.650)
Hotels and restaurants	-0.264	(3.980)	-0.196	(2.270)	0.202	(1.470)
Transports and communication	-0.099	(1.890)	-0.091	(1.680)	0.134	(1.380)
Financial services	-0.132	(1.820)	-0.057	(0.740)	0.089	(0.700)
Other business and services	-0.089	(1.700)	-0.103	(1.740)	-0.109	(0.920)
Public administration	-0.108	(1.560)	-0.233	(3.030)	0.096	(0.800)
Education	-0.066	(0.920)	-0.179	(2.380)	-0.053	(0.420)
Health	-0.061	(0.840)	-0.215	(2.810)	0.190	(1.510)
Other community services	-0.215	(3.260)	-0.205	(3.020)	-0.210	(1.780)
East Midlands	0.004	(0.050)	0.063	(0.820)	0.039	(0.320)

London	-0.129	(1.710)	-0.186	(2.260)	0.093	(0.710)
North	0.001	(0.010)	-0.130	(1.430)	-0.039	(0.280)
North West	-0.059	(0.850)	-0.025	(0.350)	0.122	(1.030)
Scotland	-0.019	(0.290)	-0.018	(0.230)	-0.067	(0.540)
Rest of the South East	-0.064	(1.040)	-0.052	(0.760)	0.014	(0.120)
South West	-0.015	(0.210)	0.044	(0.600)	-0.014	(0.100)
Wales	-0.100	(1.320)	-0.045	(0.470)	0.167	(1.170)
West Midlands	-0.160	(2.170)	-0.043	(0.540)	-0.037	(0.300)
Yorkshire & Humberside	-0.056	(0.760)	-0.025	(0.320)	0.060	(0.440)
Share female employees	-0.183	(2.160)	-0.120	(1.400)	-0.394	(2.760)
Share part time employees	0.183	(2.130)	0.129	(1.350)	0.386	(2.600)
Share managers	-0.137	(0.430)	0.063	(0.200)	1.787	(0.990)
Share professionals	0.361	(1.230)	0.177	(0.600)	2.241	(1.240)
Share technicals	-0.002	(0.010)	-0.047	(0.160)	2.023	(1.120)
Share clericals	0.278	(0.950)	0.245	(0.830)	2.410	(1.330)
Share crafts	0.283	(0.960)	0.219	(0.740)	1.978	(1.100)
Share personal and protective services	0.289	(1.000)	0.354	(1.200)	2.209	(1.230)
Share salers	0.166	(0.560)	0.273	(0.910)	2.431	(1.350)
Share operatives	0.343	(1.180)	0.228	(0.780)	1.804	(1.000)
Share other occupations	0.296	(1.020)	0.236	(0.810)	1.994	(1.110)
Single establishment	-0.006	(0.140)	0.040	(0.990)	-0.146	(1.940)
Head establishment	0.106	(2.750)	0.103	(2.590)	0.057	(0.810)
Foreign owned firm	-0.075	(2.060)	0.084	(2.030)	-0.034	(0.520)
Public owned firm	-0.097	(2.120)	-0.080	(1.640)	0.159	(2.140)
Establishment aged 3 to 4 years	0.032	(0.500)	0.145	(2.020)	0.188	(1.980)
Establishment aged 5 to 9 years	-0.010	(0.200)	0.068	(1.320)	0.139	(1.440)
Establishment aged 10 to 20 years	0.019	(0.410)	0.021	(0.430)	0.090	(1.090)

Establishment aged More than 20 years	0.036	(0.830)	0.054	(1.160)	0.148	(1.880)
Workplace supplies goods or services to other companies	0.020	(0.600)	-0.053	(1.410)	-0.180	(3.040)
Workplace supplies of goods or services to other parts of organisation	0.077	(1.560)	0.129	(2.440)	-0.045	(0.560)
Workplace does not produce goods or services for sale in the open market	-0.037	(0.890)	-0.075	(1.850)	-0.045	(0.740)
Workplace is an administrative office only	-0.015	(0.270)	-0.032	(0.510)	-0.009	(0.090)
TTWA unemployment rate between 5 and 7 percent	0.029	(0.830)	-0.040	(1.170)	0.034	(0.600)
TTWA unemployment rate between 7 and 7.5 percent	-0.057	(1.190)	-0.094	(1.780)	0.269	(3.600)
TTWA unemployment rate above 7.5 percent	0.000	(0.000)	-0.058	(0.930)	0.094	(1.100)
Workplace union density	-0.002	(1.760)	-0.002	(1.280)	0.020	(19.420)
Trade union recognised	-0.017	(0.400)	0.040	(0.860)	0.612	(9.060)
Manager thinks trade unions improve performance					0.069	(1.590)
Manager thinks employees fully committed					-0.153	(3.370)
Manager thinks IR climate is good					-0.091	(1.390)
Manager thinks management against trade unions					-0.124	(1.480)
Member of trade union	0.078	(0.530)	0.124	(0.710)		
Constant					-4.655	(2.550)
τ1	-1.165	(3.330)	-2.955	(8.580)		
τ2	-0.464	(1.320)	-1.858	(5.380)		
τ3	0.198	(0.560)	-1.146	(3.320)		
τ4	1.108	(3.130)	0.539	(1.560)		
rho	-0.125	(1.520)	-0.100	(1.050)		

Notes:

N=18,012. Ordered Probit with Endogenous Dummy Weighted Pseudo Maximum Likelihood estimates use survey stratification weights and account for the presence of repeated observations on the same establishment. Asymptotically robust t-ratios in parentheses. *The membership equation is the one estimated in the OJS model; the one from the SWP –which is pretty similar—is not reported.

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