

# **Anticipation, Free Rider Problem, and Adaptation to Trade Union: Re-examining the Curious Case of Dissatisfied Union Members**

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## **Abstract**

This paper documents evidence that rejects the paradox of dissatisfied union members. Using eleven waves of the BHPS, it studies the past, contemporaneous, and future effects of union membership on job satisfaction. By separating union “free riders” from other nonmembers in the fixed effects equations, I find significant anticipation effects to joining a unionized firm for both prospective union members and covered nonmembers of both genders. Workers go on to report, on average, a significant increase in job satisfaction at the year of union coverage. Nonetheless, adaptation to unionism is complete within the first few years of joining a unionized firm.

**Key words:** Union coverage; Union membership; Job satisfaction; Anticipation; Adaptation; Free rider; Longitudinal

**JEL:** J28, J5.

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## **I. Introduction**

Perhaps one of the most well-known results in trade union and collective bargaining literature comes from studies that find union members to be generally less satisfied with their jobs compared to nonmembers. Part of its fame comes from the fact that it is not an uncommon occurrence: Ever since the evidence of dissatisfied male union members in the US labor market was first published back in the late 1970s (see, e.g., Freeman, 1978; Borjas, 1979), this provocative finding has been replicated for many industrialized countries across different time periods, including the UK (Clark, 1997; Heywood, Siebert, & Wei, 2002; Guest & Conway, 2004), Canada (Meng, 1990; Renaud, 2002), and Australia (Miller, 2008). But perhaps the main reason for its worldwide fame is due to the fact that it is deeply counterintuitive: Given that unionism often leads to more bargaining power and improved work conditions for the workers, one would expect it to lead to higher job satisfaction rather than lowers it.

Owing to this paradoxical finding, there have been many hypotheses set forth by economists to explain such phenomenon. Freeman (1978, 1980) and Freeman and Medoff (1984) propose that the negative relationship between unionism and job satisfaction may have been reflecting the role of union as a “voice” for workers to express their discontentment and grievance to the management, thus heightening the level of job dissatisfaction for union members during their contract negotiations. Duncan (1976) and Borjas (1979) propose that unionized jobs are inherently unpleasant and hence union wage effect can be viewed as a compensating differential for lowered job satisfaction overall. Moreover, Borjas (1979) argues that the impact of unionism on job satisfaction will also depend on the strength of the trade union to maintain the “full wage” and non-pecuniary job rewards. An inverse relationship is therefore possible if there is a notable discrepancy between what is expected by union members and what they receive in actuality. In a more recent study, Bryson,

Capellari, and Lucifora (2004) hypothesize that the negative relationship between unionism and job satisfaction may reflect the role of workers' unobserved heterogeneity, i.e. those who are intrinsically unhappy with their jobs are more likely to join the union and involve themselves in union activities, thus leading to lower satisfaction being observed amongst union members compared to nonmembers.

The above arguments point towards one important empirical implication. That is, if we are able to sufficiently control for individual and workplace heterogeneity, as well as allowing for the selection effect into a unionized job, then it may be possible to estimate a net effect of union membership on job satisfaction that is both causal and nonnegative. Nevertheless, mainly because of data restrictions (restricted controls and unrepresentative or small samples), only a handful of studies have been able to satisfy a number of these requirements. For example, using linked employer-employee data from the 1998 Workplace Employee Relations Survey (WERS) for the UK, Bryson et al. (2004) find that, controlling for both individual and establishment heterogeneity and explicitly modeling the effect of union status, the gap in job satisfaction between unionized and non-unionized workers is statistically insignificantly different from zero. Based on this finding, they argue that unions are only successful at securing an attractive wage package for their members that is large enough to offset their intrinsic dissatisfaction generated by higher expectations about their job. In a similar study, Bender and Sloane (1998) use two-step estimation methodology and employee perceptions of employer attitudes as instruments for membership decisions. They find that, although there is a reduced effect once endogeneity is accounted for, the relationship continues to be negative albeit statistically insignificant. In addition to this, Gordon and Denisi (1995) and Ranaud (2002) find no effect of union membership on either job satisfaction or the intent to quit once working conditions are controlled for. No studies,

however, have found the relationship between union membership and job satisfaction to be positive and statistically significant.

The finding that trade union does nothing to improve workers' well-being – at least in the psychological sense – may be a bitter pill to swallow for many prospective union members. Yet it is fast becoming the conclusion that many have now come to accept. This paper, however, proposes that the discussion regarding the role of union membership on job satisfaction is in fact far from over.

In this paper, I argue that previous empirical studies have consistently failed to take all of the following information into account when making their analysis on the impact of unionism on job satisfaction: (a) levels of workers' job satisfaction periods before and after joining the union, (b) unaccounted for individual fixed effects, and (c) the status of union coverage of the control group. As a result, previous studies, which were mainly studies of cross-section data sets, have failed to consider that:

- (1) The estimated effects of unionism on job satisfaction at cross-section may not only suffer from unobserved heterogeneity – in that unhappy workers are more likely to select themselves into a unionized job, but may also be biased owing to confounding time-varying endogenous effects. For example, there may well be a significant **anticipation effect** to individuals joining a trade union, e.g., the same worker may have been experiencing a decline in job satisfaction for some years before she decides to become a union member. This implies that the set-point of job satisfaction for that worker may be higher than the one she is experiencing at the year of joining the union, even if she has regained some of the losses in well-being during the transitional year from being a nonmember to being a member. This problem is exacerbated in cross-section comparisons: If we are happened to be comparing between first-year union members and nonmembers who, for some

unobserved reasons, will become union members in a few years down the line, then it is possible to obtain a net union effect that is negative but nevertheless spurious;

- (2) There may be a significant **free rider problem** amongst covered nonmembers (workers who are covered by collective bargaining agreements but are not union members) which, if unaccounted for, can lead to an underestimated effect of union membership on job satisfaction; and
- (3) There may be a significant mean-reversion or **adaptation effect** to the initial impact of union membership on job satisfaction, which could lead to an underestimation of union effect.

For the first time since Richard Freeman's (1984) echoes of caveats against the use of short-run longitudinal data sets to estimate the impact of union membership (simply because of the associated measurement error bias stemming from the fact that workers hardly change their union status in short-run panels is too great), we now have many rich, long-run micro-panel data sets, with reasonably good number of observations of those who change their membership status over time, at our disposal. This paper uses eleven years (Waves 5-15) of the British Household Panel Surveys (BHPS) to study the leads and lags in job satisfaction to having a recognised union at the workplace for (i) all workers who went on to be employed at a unionized firm, as well as splitting sample (i) into (ii) prospective union members, and (iii) prospective covered nonmembers. Although there are perhaps too many statistical findings to be mentioned here in the introduction, one seems to stand out: Once information on anticipation, union free riders, and adaptation has been taken into account, there is indeed evidence of an initial *positive* and *statistically significant* effect of unionism on job satisfaction.

Section II briefly discusses the concepts of anticipation, free rider problem, and adaptation. Data and analytical strategy are outlined in Section III. Section IV reports the results. Section V concludes.

## **II. Concepts**

### **A. Anticipation effect**

When we think of anticipation, we think of the effect of an event of interest on well-being *before* it actually occurs (Clark, Diener, Georgellis, & Lucas, 2008; Frijters, Johnston, & Shields, 2008). In the context of unionism and job satisfaction, one hypothesis may be that non-union members go through a significant decline in their perceptions about work conditions over time, which leads them to join the union in the future. This can be captured empirically by looking at the coefficients on a series of lead variables (will join the union in the next 12 months, in the next 1-2 years, etc.) in job satisfaction equations. In the analysis of anticipation effect to unionism, an individual fixed effect must be introduced so that any negative effect of the lead variables will pick up anticipation rather than selection (where those who are inherently unhappy with their jobs are also those who are likely join the union). Failure to take into account the anticipation effect may bias the union effect in the same direction as the usual selection bias.

### **B. Free rider problem**

Previous empirical studies on the impact of unionism on job satisfaction have often failed to distinguish between covered and uncovered nonmembers (usually all nonmembers are used as the reference group to union members). This would be acceptable if the decision to remain a nonmember at a unionized firm is exogenous, which may not always be the case (Chaison & Dhavale, 1992; Booth, 1985; Booth & Bryan, 2001). The results on the benefits of free rider status (employees who are covered by collective bargaining agreements but not members) are mixed. In terms of the estimated wage differentials, Kahn (1980) and Belfield

and Heywood (2001) show that union threat effects by covered nonmembers have a positive impact on the nonunion wages which exceeds that of the average pay package received by nonmembers in the uncovered sector. Using WERS 1998 data sets, Booth and Bryan (2001) find evidence of zero wage premia between union members and covered nonmembers once union membership is instrumented. By contrast, Budd and Na (2000) find for the US, and Hildreth (1999) for the UK, that covered nonmembers do not receive the same wage premia as covered members. Nonetheless, in a more novel approach to identify the differences between the two groups, Clark (2001) finds using the BHPS that a dissatisfied union member and a dissatisfied covered nonmember have a statistically the same probability to quit. In other words, his results supports the notion that union dissatisfaction is real rather than an artifact of institutional structures that make union members more likely to express dissatisfaction. However, he also finds that a worker with low job satisfaction at a “union-recognized” workplace is less likely to quit than an identical worker at a workplace where a union is not recognized. Given these conflicting findings, further analysis that distinguishes between union members, covered nonmembers, and nonmembers in the uncovered sector is warranted.

### **C. Adaptation**

When we think of adaptation, we think of the processes that reduce the effects of repeated sensory and cognitive stimuli (see, e.g., Frederick & Loewenstein, 1999). In other words, adaptation generally refers to the decline in satisfaction over time *after* the event has occurred. Empirical studies in this area have found significant evidence of adaptation to marriage and divorce (Lucas & Clark, 2006; Zimmerman & Easterlin, 2006), income (Di Tella, Haisken-DeNew, & MacCulloch, 2005), disability (Oswald & Powdthavee, 2008), and unemployment (Lucas, Clark, Georgellis, & Diener, 2004). With regards to unionism, one could hypothesize that union members get ‘used to’ improvements in the pay package and

work conditions. After a period of satisfaction, the psychological effects of union membership adapt to a base level and cognitive changes in interests, values and goals set in. In this process, workers increase their expectation (or aspiration) level (Stutzer, 2004).

### **III. Implementing a test**

#### **A. Empirical implications**

Is union job dissatisfaction real? Are there anticipation effects to joining a trade union? Is there a free rider problem in the covered sector? Do union workers adapt to their new work conditions? A test of these questions has to have a number of special features:

- (i) individuals in the sample must be followed for a reasonably long period, so that information on them is available before and after joining a union-covered firm;
- (ii) there needs to be a control group who does not join a union-covered firm;
- (iii) A distinction between union members and nonmembers at a unionized firm can be made within the data set;
- (iv) the sample should be representative of the working age population;
- (v) a set of other job-related variables, particularly on occupation, has to be available in the data set, so that confounding influences can be differenced out.

No study of this type has apparently been published in either economic or industrial relation literature.

#### **B. Data**

The main data set comes from Waves 5–15 of the British Household Panel Survey (BHPS). The BHPS is a nationally representative longitudinal data of British households, contains over 10,000 adult individuals, and has been conducted between September and Christmas each year since 1991 (Taylor et al., 2002).

The questions used to measure job satisfaction are as followed. In every wave since Wave 1, individuals were asked to rate how satisfied they are with four different aspects of

their job: total pay, job security, satisfaction with work itself, and hours of work<sup>2</sup>. Each of these criteria was to be given a number from one to seven, with one representing “very dissatisfied” and 7 “very satisfied”. Finally, individuals asked about their overall job satisfaction: “All things considered, how satisfied or dissatisfied are you with your present job overall using the same 1 - 7 scale?”

This paper also draws upon two questions regarding trade union status in the BHPS:

*(1) Is there a trade union, or a similar body such as a staff association, recognised by your management for negotiating pay or conditions for the people doing your sort of job in your workplace?*

*(2) Are you a member of this trade union/association?*

I employ three empirical categories of trade union status in this paper. The first category is having a recognized trade union at the workplace or ‘Union Coverage’, which includes all workers working in unionized firms. The other two categories are broken-down by union membership status, which are ‘Union Members’ and ‘Covered Nonmembers’.

I consider only those in full-time employment (omitting the self-employed), who are aged between 16 and 65, and who reported a level of overall job satisfaction in any given wave; this produces a sample of 33,196 observations (7,028 individuals) for men and 34,592 observations (7,633 individuals) for women. Of those, 16,267 observations for men and 19,265 observations for women had a trade union, or a similar body such as a staff association, in their workplace. Approximately 65% of men and 62% of women in unionized firms were union members. The data are unbalanced, in that not every one is present in all eleven waves. Because the impacts of union on job satisfaction may be different for men and women (see, e.g., Clark, 1997), I conduct all statistical analysis separately by gender. The distribution of responses to the domain-specific job satisfaction questions as well as the

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<sup>2</sup> Respondents were also asked to rate their levels of satisfaction with promotion opportunities, and relations with boss, use of initiative in Wave 1 to 7. Because I only have 7 waves where these domain-specific job satisfaction variables were present, the leads and lags in these variables were not analysed in this article.

overall job satisfaction question is reported in Table 1. Finally, because the vast majority of individuals can be tracked for far shorter periods of time than the available eleven BHPS waves, I concentrate only up to four years before and three years after union coverage.

### C. Analytical Strategy

Rather than delving into the estimation of the lead and lag effects of union membership on job satisfaction straightaway, I will first consider the union coverage effect on job satisfaction for all workers. To do so, I follow the method outlined in Clark et al. (2008) and estimate the following lead equation:

$$JS_{it} = \beta_{-1}U_{-1,it} + \beta_{-2}U_{-2,it} + \beta_{-3}U_{-3,it} + \beta_{-4}U_{-4,it} + X'_{it}\delta + u_i + \varepsilon_{it}, \quad (1)$$

Here,  $JS$  represents job satisfaction;  $U$  denotes a set of dummy variables showing whether there will be a recognized trade union at the individual  $i$ 's workplace in the next 0-1 year, 1-2 years, 2-3 years, and 3-4 years;  $X$  represents a vector of standard controls, which includes age-squared, marital status, number of hours normally worked per week, temporary job status, opportunity for promotion, real annual personal income, work size, education level, health, as well as social class, occupational, regional and wave dummies (see, e.g., Clark, 1997);  $\varepsilon_{it}$  is the error term. The individual fixed effects,  $u_i$ , is included in the equation so that we are effectively following the same individual through different periods prior to being employed at a unionized firm. The descriptive statistics of the variables used in this paper's analysis are reported in Table A1.

One issue is that people may switch from a nonunionized job to a unionized job, making it difficult to tell whether the leap (or fall) in the overall job satisfaction is the result of the person switching workplaces or because she is now covered by collective bargaining agreements. To be sure that the observed effects of union coverage are not confounded by the effects of people switching workplaces, I also include dummies of year started at the current job in the fixed effects estimation, thereby allowing switchers to be controlled for in the panel

regressions. Finally, note that only nonmembers in the uncovered sector are used in the estimation of the lead effect into working at a unionized firm.

Equation (1) allows us to explore the dynamics of job satisfaction for up to 4 years before union coverage. Here,  $U_{-4,it}$  takes the value of 1 if the respondent will become covered by a trade union in the following 3 or 4 years, and all the other “ $U$ ” variables equal to zero. The other lead dummies are defined similarly. If there is a significant anticipation effect to union coverage, I would expect the lead union coefficients to be zero or negative, and to be more negative closer to  $T$ , i.e. the time of being employed at a unionized firm. Heuristically, the inclusion of individual fixed effects implies that we are comparing, for example, the job satisfaction of those who will be covered by a trade union in the next 3 or 4 years and the job satisfaction scores reported by the same individual one year before the event.

Equation (1) can also be rewritten with lag instead of lead variables so to capture the dynamics of job satisfaction after union coverage for 0-1 year, 1-2 years, 2-3 years, and 3 years or more:

$$JS_{it} = \beta_0 U_{0,it} + \beta_1 U_{1,it-1} + \beta_2 U_{2,it} + \beta_3 U_{3,it} + X'_{it} \delta + u_i + \varepsilon_{it}, \quad (2)$$

As in equation (1), the first time an individual is observed with a trade union at the workplace – regardless of whether or not he or she is a member,  $U_{0,it}$  will equal to 1, and all other “ $U$ ” equal to zero. If there is no important well-being effect from working at a unionized firm, so that being covered by a trade union does nothing to improve the employees’ job satisfaction immediately or in the fewer years down the line, then we would expect all of the values of  $\beta$  to take the same negative values as the  $\beta_{-1}$  coefficient in the lead equation. However, if there is a positive and persistent union coverage effect on workers’ well-being, then we would expect all of the values of  $\beta$  to be positive and statistically significant. Conversely, if there is a complete adaptation to being covered by collective bargaining agreements, then later values

of  $\beta$  will be insignificant: Being covered by a trade union long enough is the same as not being covered at all.

To test for the welfare impacts of union coverage on workers with free-rider status, i.e. covered nonmembers, Equations (1) and (2) can be rewritten to distinguish between covered members and covered nonmembers. For the lead equation:

$$JS_{it} = \theta_{-1}UM_{-1,it} + \theta_{-2}UM_{-2,it} + \theta_{-3}UM_{-3,it} + \theta_{-4}UM_{-4,it} + \gamma_{-1}UN_{-1,it} + \gamma_{-2}UN_{-2,it} + \gamma_{-3}UN_{-3,it} + \gamma_{-4}UN_{-4,it} + X'_{it}\delta + u_i + \varepsilon_{it}, \quad (3)$$

where  $UM$  and  $UN$  are respectively dummies representing covered members and covered nonmembers. As in equation (1),  $UM_{-4,it}$  takes the value of 1 if the respondent will become a union member in the following 3 or 4 years, and all the other “ $UM$ ” and “ $UN$ ” variables equal to zero. And for the lag equation:

$$JS_{it} = \beta \sum_{k=0}^3 U_{k,it} + \theta \sum_{m=0}^3 UM_{m,it} + \lambda \sum_{n=0}^3 (U_{n,it} \times UM_{n,it}) + X'_{it}\delta + u_i + \varepsilon_{it}. \quad (4)$$

Here, the number of years being covered by a trade union is interacted with the number of years being a union member. This effectively controls for the timing of union membership as some workers may decide to become a union member in their second or third year rather than in their first year of joining a union-covered firm. To interpret the coefficients,  $\beta_3$ , for example, represents the well-being impact of having worked in a union-covered firm for at least three years, whilst the sum  $\beta_3 + \theta_3 + \lambda_3$  represents the well-being impact of being a union member in a union-covered firm for at least three years. In the case where all  $UM$  variables equal to zero,  $\beta_3$  on its own can be interpreted as the well-being impact of remaining a nonmember in a covered firm for at least three years. The number of observations of the various lags and leads are presented in Table A2 in the appendix.

This set-up allows us to carry out simple tests of whether the dynamics of job satisfaction differ significantly between covered members, covered nonmembers, and

uncovered nonmembers. One hypothesis is that the anticipation effect, if any, will be more prominent amongst those who went on to become a covered member in the lead equation, compared to covered nonmembers. Moreover, if there is evidence of union free riding (in that there are no significant differences in terms of job satisfaction between union members and covered nonmembers) then we would expect all of the values of  $\beta$  to take some positive numbers, whilst all of the sums of  $\theta + \lambda$  are expected to be statistically insignificantly different from zero.

#### **IV. Longitudinal results**

##### **A. Union coverage**

Are workers in a union-covered firm more dissatisfied with their jobs compared to nonmembers? A first look at the raw data evidence suggests that they are. Figures 1A and 1B respectively show the reported levels of overall job satisfaction for men and women working in the covered and uncovered sector, as well as the  $t$ -statistic from the test of identical means between the two. We can see from both figures that, in almost every wave of the BHPS, workers in the uncovered sector report higher scores of overall job satisfaction than did workers employed in the covered sector. Moreover, for eight of the eleven waves for men and seven of the eleven years for women, the differential is easily significant at the 5% level. This is consistent with previous studies that find a negative association between unionism and job satisfaction (Freeman, 1978; Borjas, 1979; Clark, 1997).

Could anticipation and adaptation effects explain the above findings? To test this, Table 2 provides us with a within-person evidence of leads and lags in overall job satisfaction, which is measured cardinally<sup>3</sup>, four years before and three years after being employed at a unionized firm.

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<sup>3</sup> All the paper's results can be replicated with ordered estimators. But as in the paper by Luttmer (2005), as a pedagogical device and for ease of reading I here use cardinal methods.

The first and third columns deal with the lead effects of union coverage for men and women respectively. We can see that both male and female workers who will be employed at a unionized firm in the next year report significantly lower levels of job satisfaction, i.e. the lead coefficient at  $T-1$  is negative and statistically significant at conventional confidence levels (at the 10% for men and 1% for women). Interestingly, this anticipation effect applies to men who were significantly happier with their jobs at least three years prior to working at a unionized firm: The average levels of job satisfaction of male workers who will be covered by a trade union within the next four years are *ceteris paribus* significantly higher – at the 5% level – than those who will not join the covered sector at least in the next four years. In other words, at least in this data set, it appears that male workers who will make a transition from being uncovered nonmembers to be employed in the covered sector in the next three to four years are those who normally enjoy a significantly higher level of job satisfaction than an average worker who stayed in the uncovered sector throughout the panel. The sharp fall in their satisfactions will then come at  $T-2$  and  $T-1$ . Rather than waiting it out for their situations to improve or learning to adapt to the changes in their work conditions, they will then form a union or join a unionized firm at  $T$ .

Is the impact of union coverage on job satisfaction positive or negative? To answer this question, Columns 2 and 4 of Table 2 present the contemporaneous and lag effects of union coverage on overall job satisfaction. Conditioning on individual fixed effects and personal and workplace characteristics, there is some evidence of both men and women reporting to be *ceteris paribus* happier with their jobs at the first year of working at a unionized firm (or having a recognized union set up and running at the same workplace), i.e., at  $T$ . For men, the coefficient on ‘Union coverage 0-1 year’ is positive at 0.053, with a statistically well-determined standard error of 0.026. For women, the equivalent coefficient is slightly less positive at 0.046, with the same standard error as men of 0.026.

The initial impact of having a trade union at the workplace is even more pronounced if we take changes in job satisfaction between  $T-4$  and  $T-1$  into consideration. By joining a workplace with a recognized union, male workers can recover up to 76% (= from 0.127 to -0.084 between  $T-4$  to  $T-1$  and from -0.084 to 0.076 between  $T-1$  to  $T$ ), on average, of the well-being losses that they experienced during the three-year period prior to joining the firm. The equivalent recovery figure is approximately 87% (= from 0.076 to -0.159 between  $T-4$  to  $T-1$  and -0.159 to 0.046 between  $T-1$  to  $T$ ) for female workers. Thus, rather than voicing out their dissatisfactions during their contract negotiations as previously suggested in the literature, workers do indeed register a leap in job satisfaction at the first year of being covered by collective bargaining agreements.

There is, however, a noticeable mean-reversion in the levels of job satisfaction at the second year after working at a union-recognized firm. This mean-reversion or adaptation effect is complete within the first two years of working at a unionized firm for both men and women. The estimated lead and lag effects obtained from the fixed effects regression can also be represented graphically, as shown in Figures 2a and 2b.

What about workers' satisfaction with different aspects of job? To test this, the dependent variable (i.e. overall job satisfaction) is replaced by four different aspects of job satisfaction. These are satisfaction with total pay, satisfaction with job security, satisfaction with work itself, and satisfaction with hours worked. The results are then presented graphically in Figures 3a and 3b for men and women, respectively<sup>4</sup>.

Figures 3a and 3b contain a number of findings that might have been hard to predict. First, whilst there is little evidence to suggest that workers who will be employed at a union-recognized workplace are significantly unhappier with their total pay in the years prior to  $T$  than other nonmembers, the impact of being covered by collective bargaining agreements on

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<sup>4</sup> For the estimation results, see Tables A3a and A3b in the appendix.

satisfaction with total pay at  $T$  is positive and continues to be positive and statistically significant at least for the next three years of working at a unionized firm. The results are robust for both men and women. It is also worth noting that since income is controlled for in the job satisfaction equations, the impact of unionism is purely non-pecuniary. With respect to satisfaction with total pay, this result suggests that workers in a union-covered firm feel more secure about their future finances than do nonmembers in the uncovered sector with the same level of income.

Second, there is a negative and statistically significant lead effect of two years in the levels of satisfaction with job security for male workers. In other words, male workers who will join a unionized firm in the next few years tend to be those who have been growing more discontent with the security of their jobs (rather than with their total pay). Nonetheless, it is women and not men who will go on to experience a steady increase in the levels of satisfaction with job security between  $T$  and  $T+3$ .

Third, women will join a unionized firm within the next year report significantly lower levels of satisfaction with work itself. By joining a unionized firm, they gain back some of these losses. Nevertheless, there is evidence for both men and women of a significant decline in the levels of satisfaction with work itself a few years after joining a unionized firm, thus implying that unions may not have done a lot to improve the level of enjoyment of work itself for their workers.

And finally, there appears to be a small dip in the level of satisfaction with hours worked only for prospective union-covered female workers at  $T$ . However, there is evidence that union coverage is associated with significantly higher levels of satisfaction with hours worked, regardless of genders and the duration of being covered by the trade union.

#### **B. Union members *versus* union “free riders”**

Table 3 examines whether the results obtained in Table 2 vary significantly by union membership status. In particular, I am interested whether (1) the negative anticipation effect found in the previous section is primarily driven by prospective union members rather than prospective union free riders (or covered nonmembers), and (2) there are any clear psychological benefits to union free-riding, i.e. the post-union impact on job satisfaction is statistically indifferent between union members and nonmembers in unionized firms. The first and third columns of Table 3 do this by splitting, in the lead equations, those working in a union-covered firm into two groups: Prospective union members and prospective covered nonmembers. Columns 2 and 4 then distinguish, in the lag equations, between covered union members and covered nonmembers by interacting “the number of years being covered by a recognized trade union” and “the number of years being a union member” together. For simplicity, only the coefficients for those who have either been a union member or remained a nonmember since the first year of working for a union-covered firm are reported. Again, the estimated lead and lag effects obtained from Table 4’s regressions are represented graphically in Figures 4a and 4b.

Overall, there is a noticeable decline in job satisfaction for both male and female workers who will become a union member in the next few years. However, what is perhaps more surprising is that both prospective male and female covered nonmembers have also experienced a fall in overall job satisfaction in the years that preceded  $T$ . This finding contradicts the notion that only dissatisfied workers go on to voice their opinions by becoming a union member.

Looking at the lag equations, we can see that only male and not female union members go on to experience a statistically significant increase in job satisfaction in the first two years of union membership. By contrast, both male and female covered nonmembers go on to report a significantly significant increase in overall job satisfaction in their first year of

working at a unionized firm, with men reporting to be happier with the overall aspect of their job compared to those working in the uncovered sector three years in a row. Thus, this finding supports the notion that union free-rider do ‘free ride’ (Booth, 1985; Booth & Bryan, 2004) in that the psychological benefits experienced by covered nonmembers seem to exceed that of union members.

Figures 5a and 5b go on to illustrate the lead and lag effects of working at a unionized firm on different measures of job satisfaction by union membership status<sup>5</sup>. Some interesting patterns emerge. First, there is little evidence to support the notion that prospective union members – male and female – are significantly dissatisfied with their total pay before joining a unionized firm, thus suggesting that dissatisfaction with pay may not be the main reason that explains why workers want to join or form a trade union.

Second, there is strong evidence that male union members and male covered nonmembers go on to experience a significant increase in satisfaction with pay at the first year of being covered by collective bargaining agreements. However, whilst there is little evidence of quick adaptation to an increase in the level of satisfaction with pay for male union members, women who are either union members or covered nonmembers go on to enjoy a persistently higher level of satisfaction with pay in the years that followed union coverage at *T*.

Third, there is a negative and statistically significant anticipation effect of two years with respect to satisfaction with job security for prospective male covered nonmembers, and one year for prospective female union members.

Fourth, it is only female workers in the covered sector – regardless of their union membership status – who go on to experience a continuing increase in satisfaction with job security in the years that followed union coverage at *T*.

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<sup>5</sup> For the estimation results, see Tables A4a and A4b in the appendix.

Fifth, there is statistically robust evidence that union members and covered nonmembers of both genders are significantly happier with hours worked at  $T$ , something which last them for at least for three years afterwards.

And finally, there is some evidence for both covered union members and nonmembers of both genders of a continuing decline in satisfaction with work itself after being employed at a unionized firm.

In sum, the results from Figures 5a-5b imply that there are significant psychological benefits to be gained from being a union free rider – in that free riders enjoy similar boosts in satisfaction at the year of joining a workplace with a recognized union – and that distinction between union members and covered nonmembers should always be made when conducting an analysis on the effects of unionism on job satisfaction.

## V. Conclusions

This paper utilizes data from the British Household Panel Survey (Waves 5-15) to study the relationship between job satisfaction and past, contemporaneous, and future union status. The main conclusions of this paper's findings can be set forth as followed:

- A) Anticipation (from  $T-4$  to  $T-1$ ).** There is evidence to suggest that, on average, workers select themselves into a unionized firm at  $T$  based on how unhappy they have become with their jobs in the periods before  $T$ . This finding is consistent with the view that workers' decision of whether or not to join a unionized firm is endogenously determined (see, e.g., Hildreth, 1999; Budd & Na, 2000).
- B) Initial union coverage effect (at  $T$ ).** In contrast to the popular findings of zero or even negative effects of trade union on job satisfaction, this paper finds a significant improvement in the level of workers' overall job satisfaction at the first year of being covered by collective bargaining agreements, i.e. at year  $T$ . The impact of union coverage is positive and statistically significant for union members of both genders.

What is perhaps a more surprising finding is that the union coverage effect on overall job satisfaction is also positive and statistically significant for covered nonmembers, which seems consistent with the notion that employees who are covered by collective bargaining agreements but are not union members free ride from the group (Booth, 1985; Chaison & Dhavale, 1992; Booth & Bryan, 2004).

**C) Adaptation (from  $T+1$  to  $T+3$ ).** Evidence on adaptation to working in the covered sector is mixed. In terms of overall job satisfaction, there is evidence of a complete adaptation to the initial increase in job satisfaction within one year of working at a unionized firm for both men and women. There is, however, zero adaptation to the initial increase in satisfaction with pay and hours worked after becoming a union member in a union-recognized firm. Nevertheless, at least for women, this boost in well-being is offset by the decline in the levels of satisfaction with work itself for both members and nonmembers in the covered sector.

These results are important for several reasons. First, the evidence of significant anticipation effects to unionism implies that, in addition to the usual unobserved heterogeneity, there are also unobservable time-varying differences between prospective union workers (both members and nonmembers) and other ‘permanent’ nonmembers in the uncovered sector that are correlated with job satisfaction of individuals in these two groups. Both types of endogeneity will therefore have to be taken into account if one wishes to estimate the causal effects of unionism on job satisfaction. Secondly, because of the potential free rider problem, it is important to make a clear distinction between union members, covered nonmembers, and other nonmembers when constructing a union membership variable. Third, because of adaptation to unionism, it seems pertinent for future studies to control also for the number of years individuals have been a member of the trade union.

The fourth consequence of these results is purely descriptive or positive. The evidence of a positive and statistically significant coverage effect on all workers at least at the first year of joining a unionized firm suggests that there may in fact be no paradox at all to workers joining the trade union. In other words, the workers' decision to join the union is rational in the sense that they do indeed become more satisfied with their jobs after joining. However, as the evidence of this paper clearly suggests, we would also need to take into consideration the adaptation effects to unionism as well if we want to build more realistic and accurate, economics model of trade union.

The results of this study also give rise to many important, normative questions. For example, how should trade unions prevent the subsequent decline in their member's overall job satisfaction over time? Why are they so successful in securing a persistently higher wage differential and better work hours, whilst at the same time fail to raise the overall quality of the work itself for their members? Should any actions be taken on union free riders if they clearly benefit psychologically from working in a union-covered firm?

I began by noting the famous paradox of dissatisfied union members. The above results seem to point towards a reverse conclusion – that there is indeed a statistically significant psychological benefit to becoming a union member, at least at the first year of union membership. What strategies trade unions could adopt to maintain that boost in job satisfaction for their members, however, remain to be seen.

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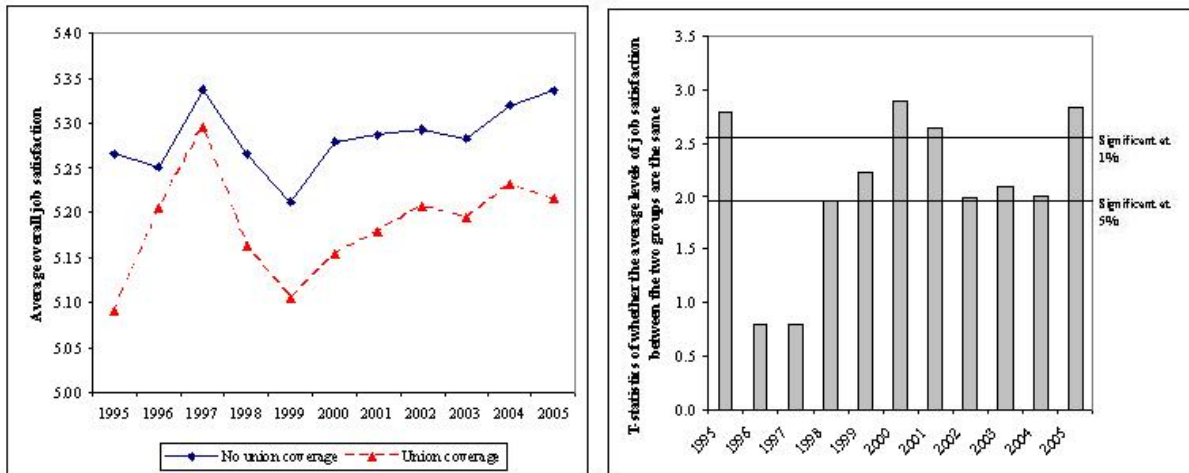
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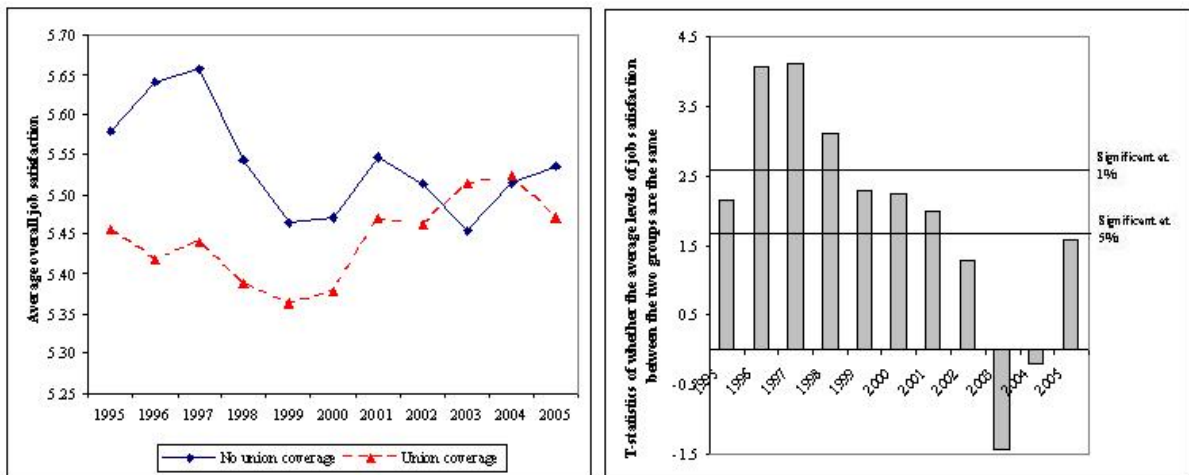
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## Figure 1: Union coverage and job satisfaction in the UK

*Fig 1a: Men*



*Fig 1b: Women*



**Table 1: Job Satisfaction, Pooled BHPS, Waves 5-15 (Percentages %)**

Men	Total pay	Job security	Work itself	Hours worked	Overall
Not satisfied at all	3.49	2.96	1.62	2.29	1.52
2	5.24	3.24	2.79	3.54	3.14
3	14.46	7.62	6.64	11.24	7.50
Not satisfied/dissatisfied	9.05	9.31	8.73	12.06	9.20
5	26.22	19.01	21.61	23.06	24.43
6	34.30	37.33	43.33	36.58	44.49
Completely satisfied	7.24	20.53	15.29	11.24	9.71
Women	Total pay	Job security	Work itself	Hours worked	Overall
Not satisfied at all	3.57	2.47	1.43	1.57	1.37
2	4.80	2.38	2.47	2.62	2.45
3	13.28	6.15	6.09	9.62	5.85
Not satisfied/dissatisfied	6.61	6.49	6.00	7.18	5.74
5	24.01	16.53	19.76	20.57	20.45
6	37.09	39.38	44.65	39.12	48.75
Completely satisfied	10.64	26.60	19.60	19.32	15.38

**Note:** The figures represent proportion, so that the top left-hand number, for example, means that 3.54% of the men sample reported not being satisfied at all with their total pay.

**Table 2: Fixed effects job satisfaction regressions:  
Leads to and lags of union coverage**

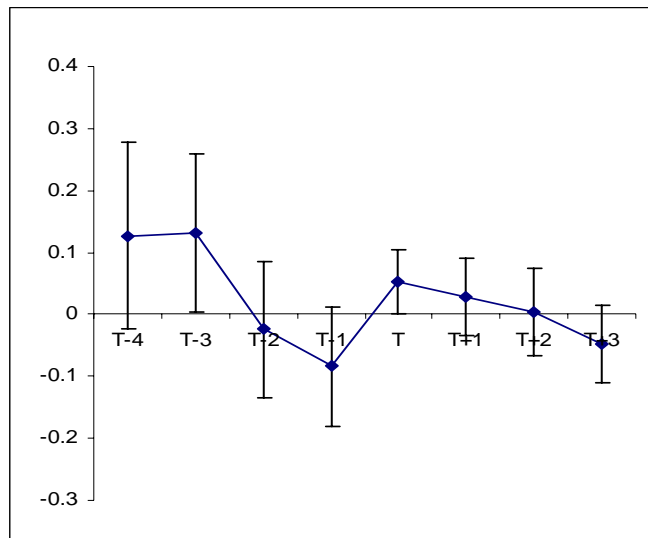
Dependent variable: Overall job satisfaction	Men		Women	
	Leads	Lags	Leads	Lags
Union coverage 4 years hence	0.127 [0.075]+		0.076 [0.081]	
Union coverage 3 years hence	0.131 [0.064]*		0.039 [0.070]	
Union coverage 2 years hence	-0.024 [0.055]		0.067 [0.060]	
Union coverage within the next year	-0.084 [0.048]+		-0.159 [0.052]**	
Union coverage 0-1 year		0.053 [0.026]*		0.046 [0.026]+
Union coverage 1-2 years		0.028 [0.031]		0.005 [0.030]
Union coverage 2-3 years		0.004 [0.035]		-0.010 [0.034]
Union coverage 3 years or more		-0.048 [0.031]		-0.019 [0.031]
Age-squared/100	0.036 [0.017]*	0.056 [0.012]**	0.030 [0.018]	0.009 [0.012]
Living with a partner	-0.010	-0.011	-0.087	-0.100

	[0.049]	[0.035]	[0.055]	[0.036]**
Widowed	-0.040	0.329	-0.211	-0.037
	[0.295]	[0.168]+	[0.178]	[0.104]
Separated	0.078	0.068	-0.264	-0.091
	[0.095]	[0.063]	[0.083]**	[0.054]+
Divorced	0.137	0.176	-0.051	-0.011
	[0.101]	[0.070]*	[0.088]	[0.057]
Never married	0.012	-0.030	-0.179	-0.175
	[0.066]	[0.047]	[0.074]*	[0.048]**
Ln(number of hours normally worked per week)	-0.248	-0.264	-0.150	-0.178
	[0.063]**	[0.045]**	[0.038]**	[0.026]**
Temporary job	-0.172	-0.092	-0.257	-0.086
	[0.062]**	[0.040]*	[0.060]**	[0.035]*
Promotion opportunity	0.380	0.357	0.345	0.297
	[0.025]**	[0.017]**	[0.028]**	[0.017]**
Ln(real annual personal income)	-0.028	-0.005	-0.025	-0.022
	[0.024]	[0.018]	[0.024]	[0.015]
Work size: 1-24	0.069	0.041	-0.066	0.041
	[0.063]	[0.035]	[0.081]	[0.035]
Work size: 25-199	-0.027	0.006	-0.127	-0.015
	[0.058]	[0.031]	[0.077]	[0.031]
Education: completed first degree	-0.028	-0.075	-0.166	0.019
	[0.151]	[0.101]	[0.180]	[0.083]
Education: completed higher degree	-0.169	0.062	-0.261	0.005
	[0.239]	[0.145]	[0.424]	[0.169]
Health: poor	0.269	0.146	0.101	-0.004
	[0.146]+	[0.100]	[0.122]	[0.080]
Health: fair	0.317	0.218	0.261	0.120
	[0.144]*	[0.098]*	[0.119]*	[0.078]
Health: good	0.435	0.360	0.390	0.210
	[0.144]**	[0.098]**	[0.119]**	[0.078]**
Health: excellent	0.528	0.448	0.495	0.303
	[0.146]**	[0.099]**	[0.122]**	[0.079]**
Constant	5.501	4.254	4.900	5.811
	[0.438]**	[0.385]**	[0.547]**	[0.290]**
<hr/>				
Year started current job dummies (to capture whether the individual changes job in the panel)	Yes	Yes	Yes	Yes
Social class dummies (21)	Yes	Yes	Yes	Yes
Occupation dummies (372)	Yes	Yes	Yes	Yes
Regional dummies (20)	Yes	Yes	Yes	Yes
Wave dummies (10)	Yes	Yes	Yes	Yes
Observations	17416	33196	16070	34592
Number of individuals	4796	7028	4828	7633
R-squared (within)	0.0808	0.0668	0.0728	0.0518

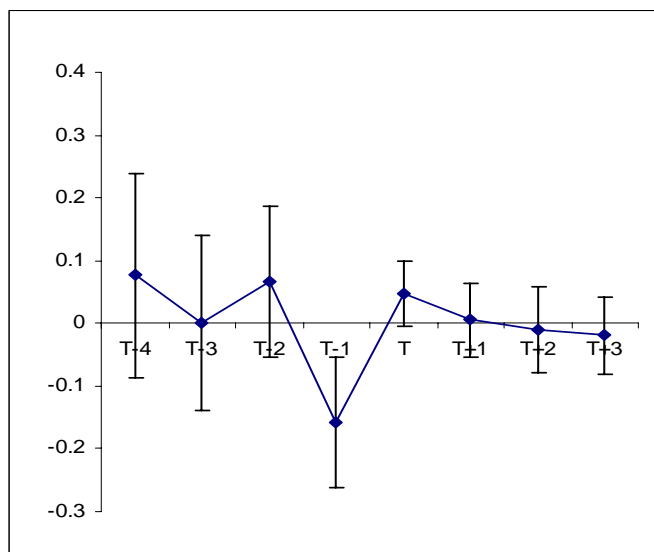
**Note:** + sig. at 10%, \* sig. at 5%, \*\* sig. at 1%. Standard errors are in parentheses. Reference groups: no union at the workplace, married, permanent job, no promotion opportunity, work size: 200 and more workers, education: lower than first degree, health: very poor.

**Figure 2: The dynamic effect of union coverage on job satisfaction**

*Fig 2a: Men*



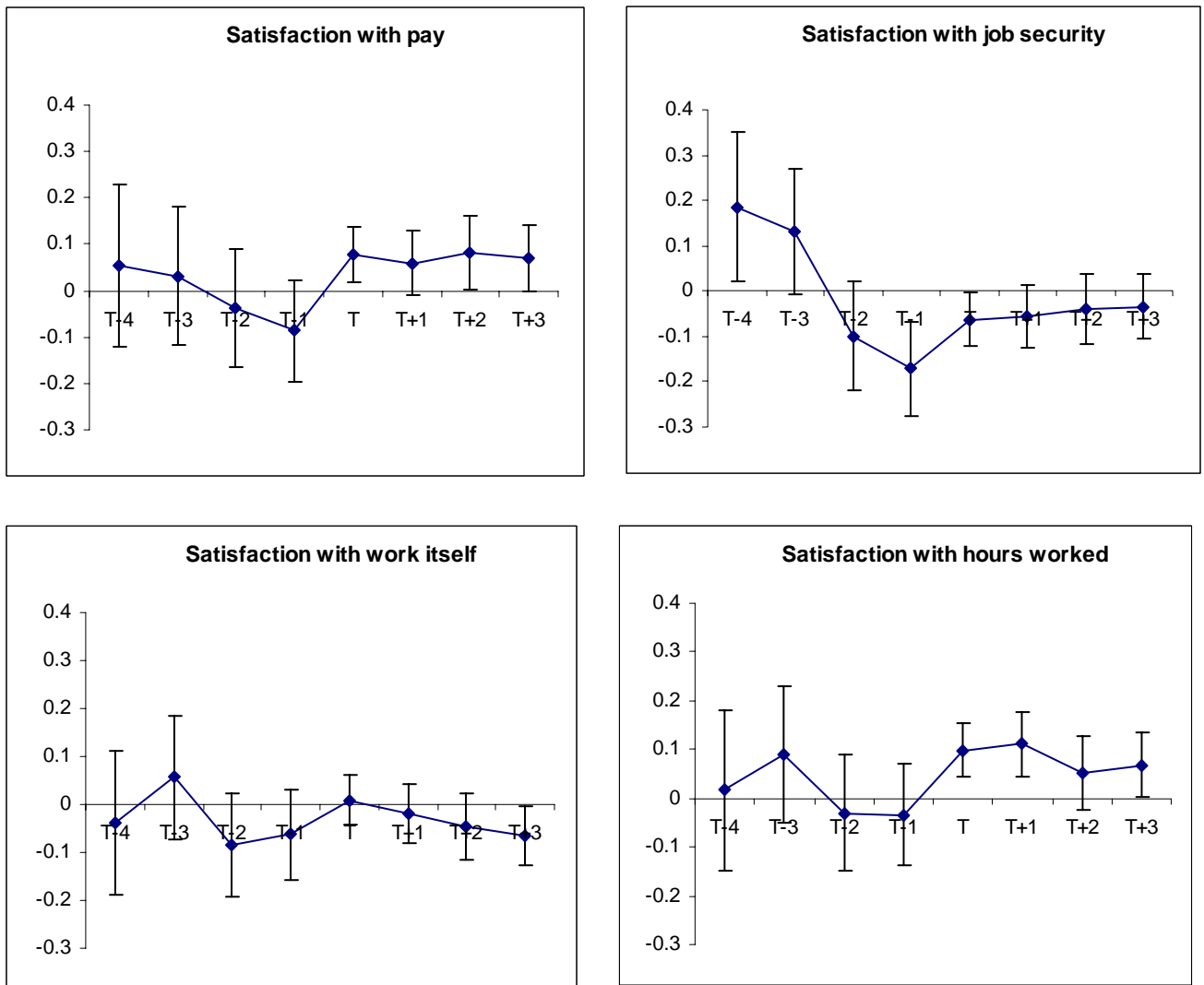
*Fig 2b: Women*



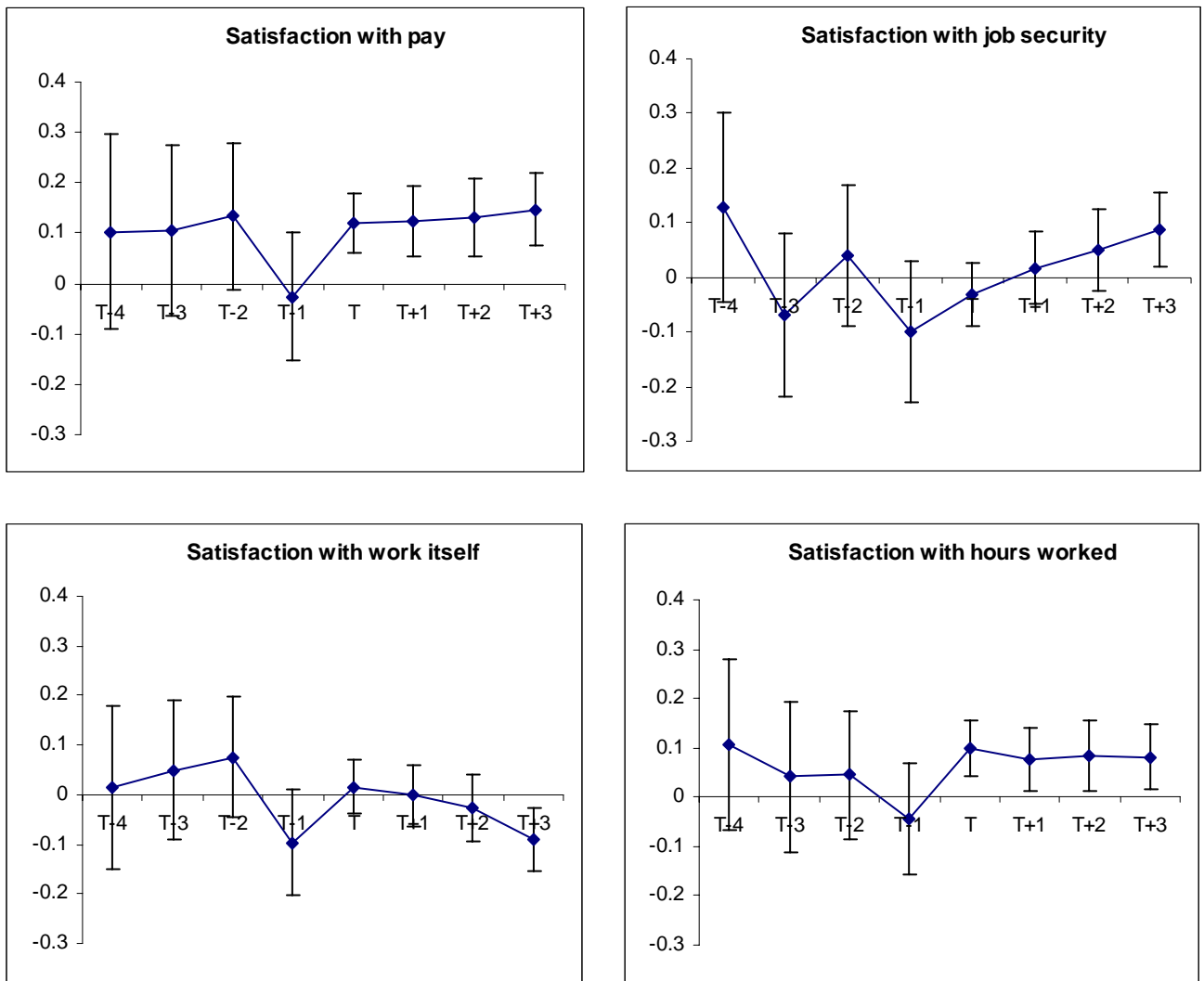
**Note:** Year T is the year of union coverage. 4-standard-error bands (95% C.I.) are reported: two S.E. above and two below.

**Figure 3: The dynamic effect of union coverage on different aspects of job satisfaction**

*Fig 3a: Men*



**Fig 3b: Women**



**Note:** Year T is the year of union coverage. 4-standard-error bands (95% C.I.) are reported: two S.E. above and two below.

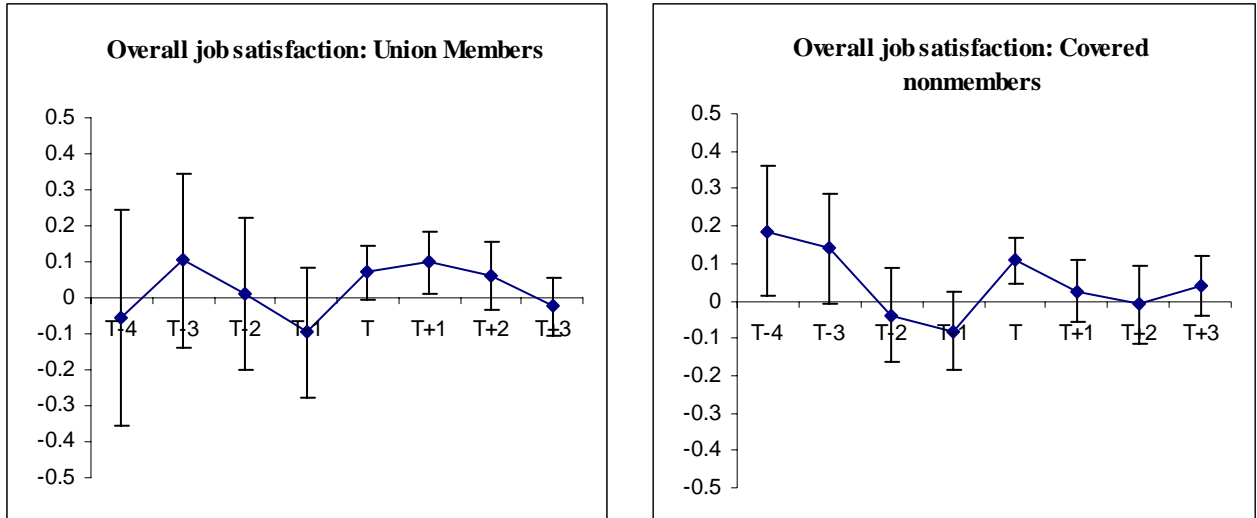
**Table 3: Fixed effects job satisfaction regressions:**  
**Leads to and lags of union coverage by membership status**

	Men		Women	
	Leads	Leads	Lags	Lags
Union member, i.e. the sum of $\beta + \theta + \lambda$ parameters				
Union coverage 4 years hence & become member in the 1 <sup>st</sup> year	-0.045		-0.055	
	[0.153]		[0.149]	
Union coverage 3 years hence & become member in the 1 <sup>st</sup> year	0.053		0.105	
	[0.131]		[0.121]	
Union coverage 2 years hence & become member in the 1 <sup>st</sup> year	0.176		0.012	
	[0.109]		[0.105]	
Union coverage within the next year & become member in the 1 <sup>st</sup> year	-0.182		-0.096	
	[0.091]*		[0.090]	
Union coverage union 0-1 year & member 0-1 year		0.070		0.016
		[0.038]+		[0.037]
Union coverage 1-2 years & member 1-2 years		0.098		-0.028
		[0.038]*		[0.042]
Union coverage 2-3 years & member 2-3 years		0.060		-0.036
		[0.047]		[0.046]
Union coverage 3 years or more & member 3 years or more		-0.024		-0.020
		[0.039]		[0.039]
Non-member, i.e. $\beta$ parameter				
Union coverage 4 years hence & remain non-member	0.119		0.187	
	[0.093]		[0.086]*	
Union coverage 3 years hence & remain non-member	0.033		0.140	
	[0.080]		[0.074]+	
Union coverage 2 years hence & remain non-member	0.026		-0.038	
	[0.068]		[0.062]	
Union coverage within the next year & remain non-member	-0.147		-0.081	
	[0.058]*		[0.053]	
Union coverage union 0-1 year & non-member		0.107		0.123
		[0.031]**		[0.031]**
Union coverage 1-2 years & non-member		0.025		0.099
		[0.042]		[0.039]**
Union coverage 2-3 years & non-member		-0.010		0.078
		[0.052]		[0.047]+
Union coverage 3 years or more & non-member		0.039		0.019
		[0.040]		[0.038]

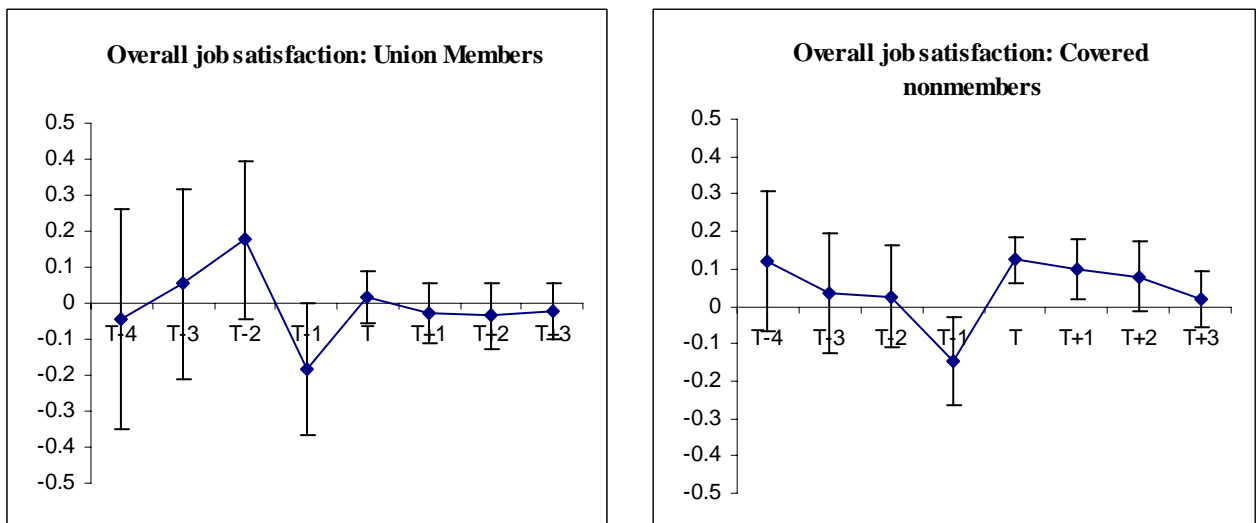
**Note:** + sig. at 10%, \* sig. at 5%, \*\* sig. at 1%. Standard errors are in parentheses. Same control variables as Table 2.

**Figure 4: The dynamic effect of union coverage on job satisfaction by membership status**

*Fig 4a: Men*



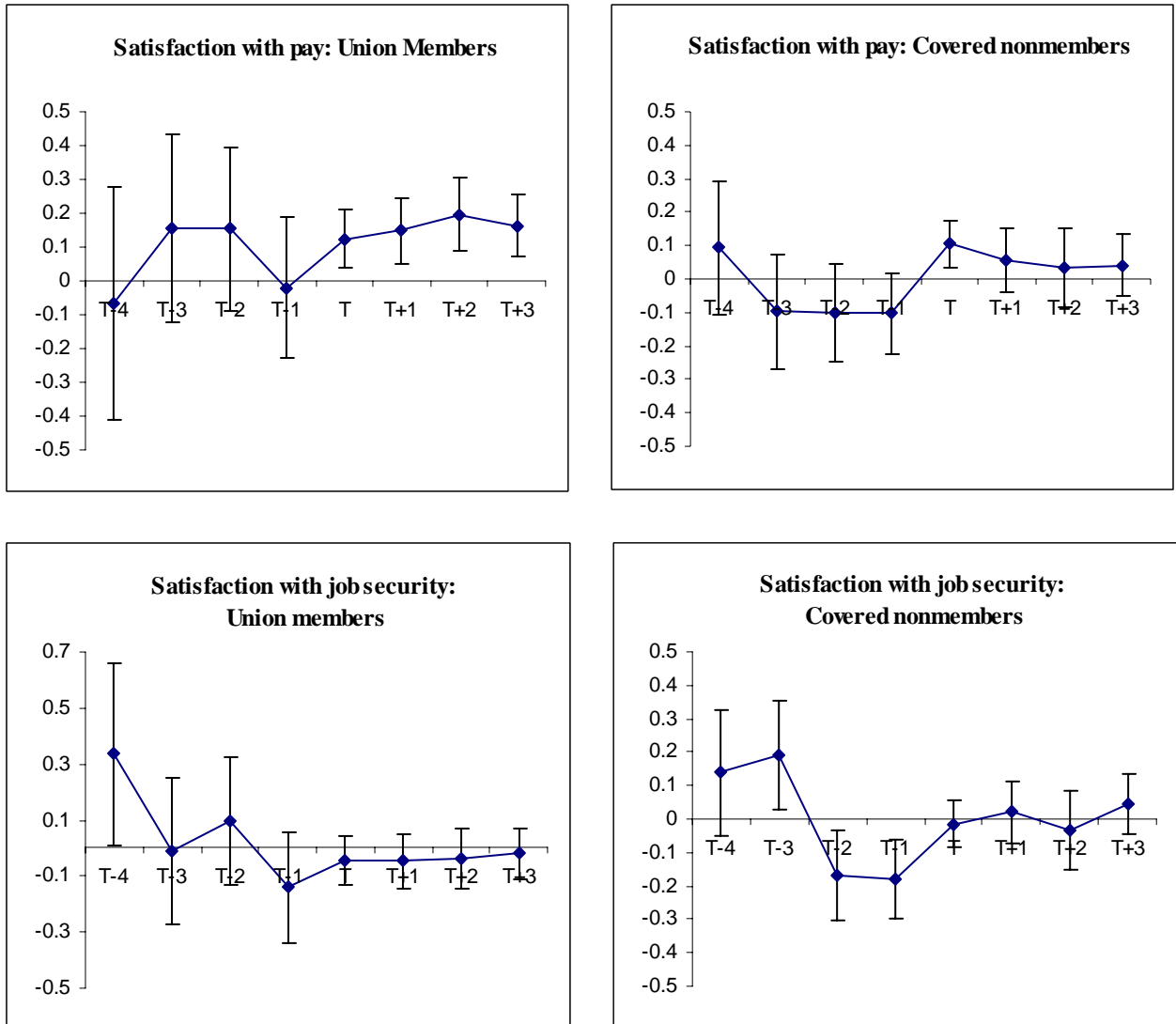
*Fig 4b: Women*

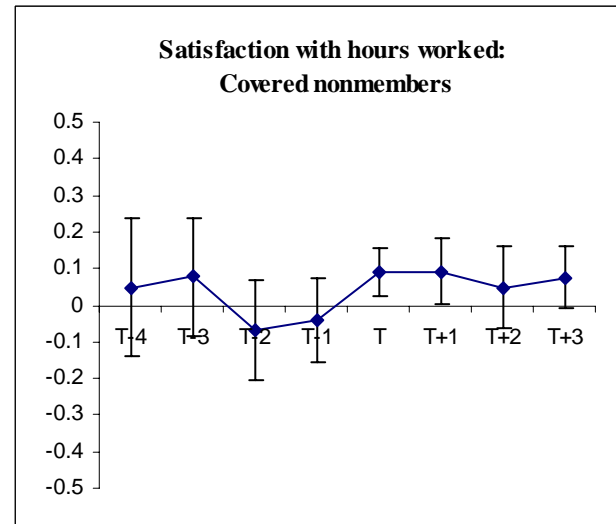
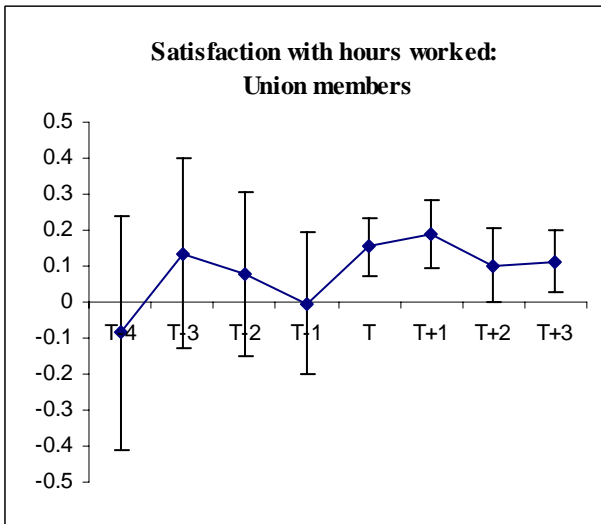
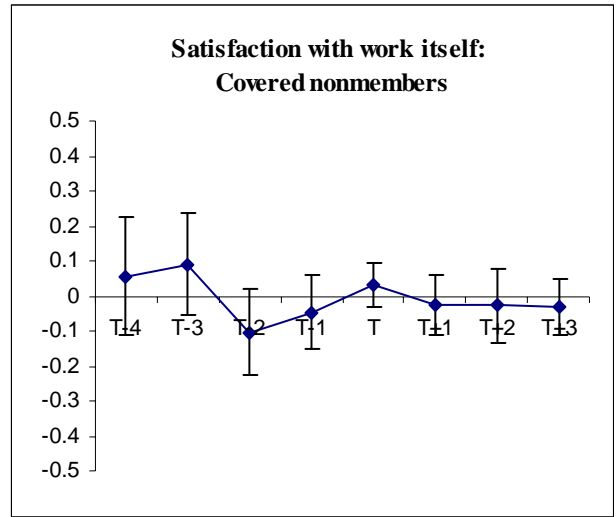
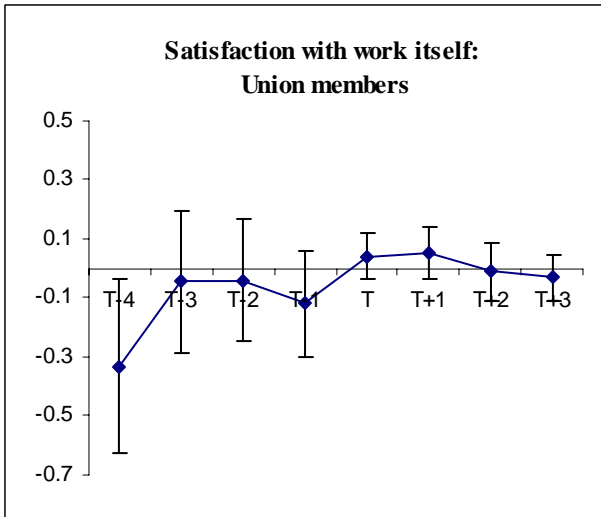


**Note:** Year T is the year of union coverage. 4-standard-error bands (95% C.I.) are reported: two S.E. above and two below.

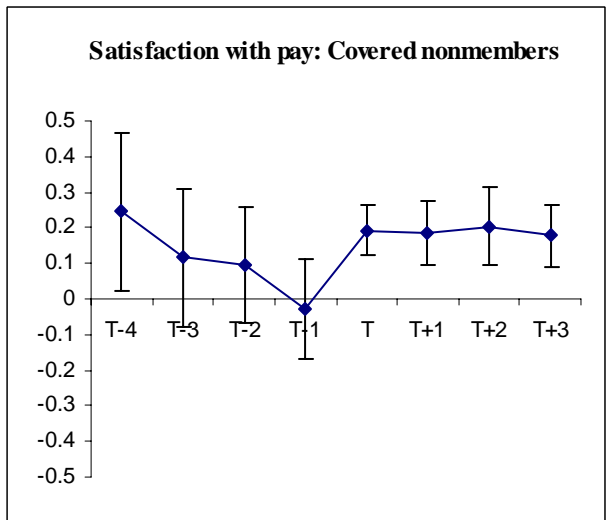
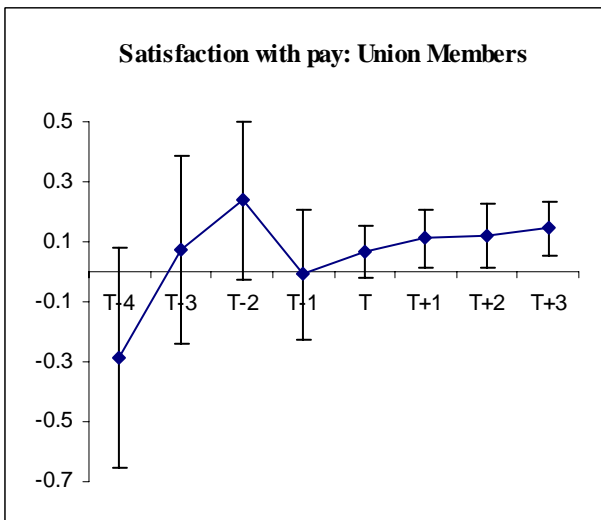
**Figure 5: The dynamic effect of union coverage on different aspects of job satisfaction  
by membership status**

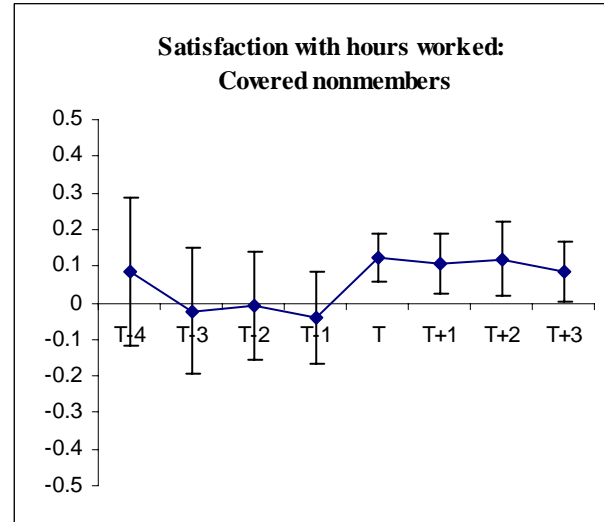
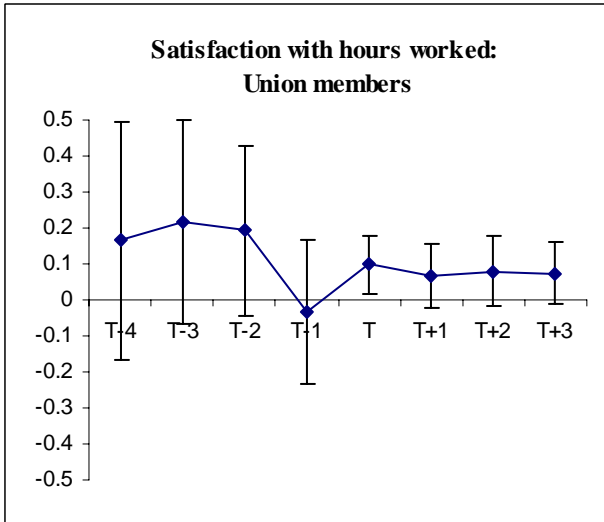
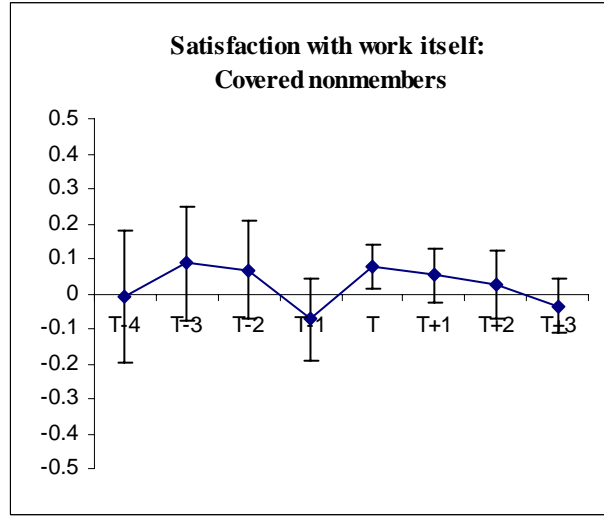
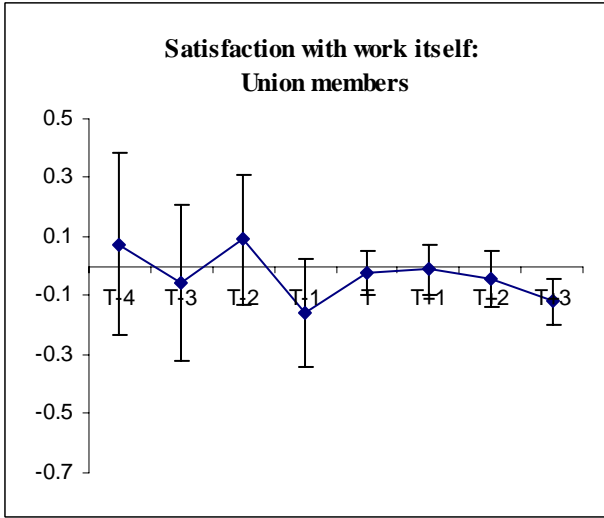
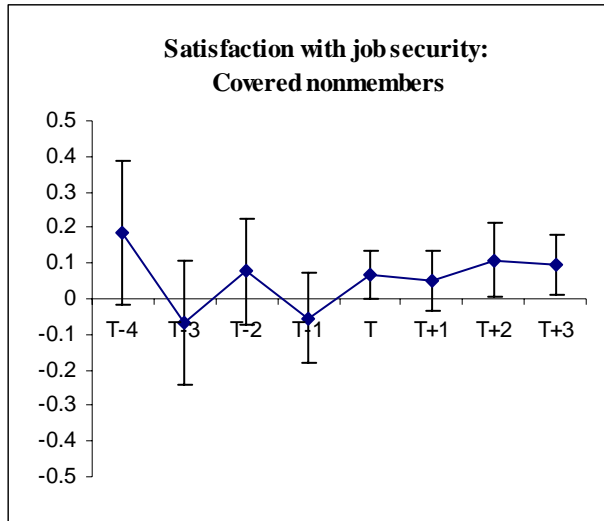
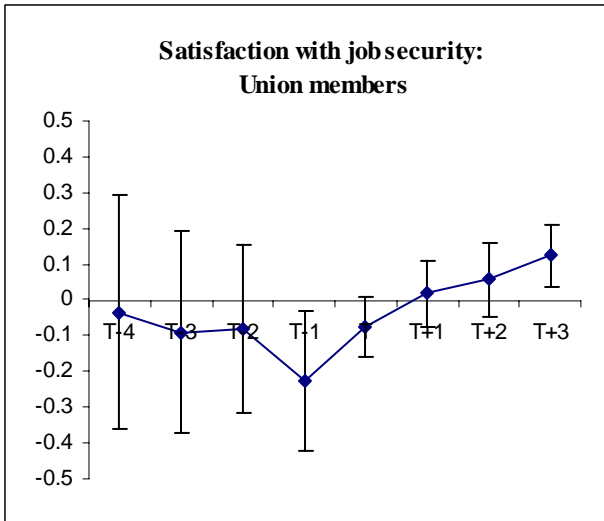
*Fig 5a: Men*





**Fig 5b: Women**





**Note:** Year T is the year of union coverage. 4-standard-error bands (95% C.I.) are reported: two S.E. above and two below.

**Table A1: Some Descriptive Statistics, BHPS 1995-2005**

	Men			Women		
	Union-covered		Non-unionized firms	Union-covered		Non-unionized firms
	Union member	Non-members		Union member	Non-members	
Overall job satisfaction	5.16 (1.33)	5.26 (1.27)	5.30 (1.27)	5.40 (1.25)	5.50 (1.21)	5.54 (1.29)
Job satisfaction: total pay	4.77 (1.49)	4.83 (1.49)	4.85 (1.55)	4.95 (1.51)	5.04 (1.47)	4.95 (1.61)
Job satisfaction: security	5.24 (1.56)	5.27 (1.49)	5.39 (1.47)	5.54 (1.45)	5.47 (1.48)	5.64 (1.39)
Job satisfaction: work itself	5.26 (1.37)	5.32 (1.33)	5.45 (1.30)	5.44 (1.30)	5.49 (1.30)	5.57 (1.31)
Job satisfaction: hours worked	5.04 (1.43)	5.19 (1.36)	5.03 (1.46)	5.21 (1.45)	5.48 (1.29)	5.42 (1.40)
Age	40.89 (10.71)	36.91 (12.97)	36.69 (13.15)	40.28 (10.59)	37.29 (12.01)	36.61 (13.19)
Married	0.64 (0.47)	0.52 (0.49)	0.52 (0.49)	0.62 (0.48)	0.53 (0.49)	0.49 (0.49)
Ln(annual individual income)	9.87 (0.52)	9.61 (0.83)	9.57 (0.93)	9.54 (0.67)	9.15 (0.83)	8.96 (0.94)
Ln(work hours)	3.63 (0.18)	3.57 (0.33)	3.59 (0.40)	3.40 (0.35)	3.25 (0.50)	3.18 (0.60)
Completed first degree	0.14 (0.34)	0.15 (0.36)	0.11 (0.32)	0.20 (0.40)	0.13 (0.34)	0.08 (0.27)
Completed higher degree	0.03 (0.19)	0.05 (0.22)	0.03 (0.17)	0.04 (0.21)	0.03 (0.18)	0.01 (0.11)
Temporary job	0.02 (0.14)	0.09 (0.29)	0.07 (0.26)	0.04 (0.20)	0.10 (0.31)	0.09 (0.29)
Promotional opportunity	0.63 (0.48)	0.60 (0.48)	0.41 (0.49)	0.59 (0.49)	0.53 (0.49)	0.33 (0.47)
Work size: 1-24	0.15 (0.35)	0.19 (0.39)	0.44 (0.49)	0.24 (0.42)	0.24 (0.42)	0.55 (0.49)
Work size: 25-199	0.68 (0.46)	0.64 (0.47)	0.49 (.50)	0.59 (0.49)	0.57 (0.49)	0.41 (0.49)
Health: very good	0.28 (0.45)	0.30 (0.45)	0.29 (0.45)	0.26 (0.44)	0.25 (0.43)	0.24 (0.43)

**Table A2: Number of leads and lags to working in a union-covered firm,****BHPS (1995-2005)****A) Leads**

Leads	Male workers			Female workers		
	Total	Will join union in the 1 <sup>st</sup> year	Will not join union in the 1 <sup>st</sup> year	Total	Will join union in the 1 <sup>st</sup> year	Will not join union in the 1 <sup>st</sup> year
Union coverage 4 years hence	282	71	211	259	68	191
Union coverage 3 years hence	451	132	319	406	108	298
Union coverage 2 years hence	775	217	558	706	201	505
Union coverage within the next year	1,568	461	1,107	1,583	497	1,086

**B) Lags**

Lags (Male workers)	Total	Covered non-members	Member for 0-1 year	Member for 1-2 years	Member for 2-3 years	Member for 3 years or more
Union coverage 0-1 year	4,438	2,229	2,209	-	-	-
Union coverage 1-2 years	2,731	1,014	196	1,521	-	-
Union coverage 2-3 years	1,879	583	85	99	1,112	-
Union coverage 3 years or more	7,219	1,923	177	161	181	4,777
Lags (Female workers)	Total	Covered non-members	Member for 0-1 year	Member for 1-2 years	Member for 2-3 years	Member for 3 years or more
Union coverage 0-1 year	5,058	2,626	2,432	-	-	-
Union coverage 1-2 years	3,300	1,333	279	1,688	-	-
Union coverage 2-3 years	2,327	809	138	162	1,218	-
Union coverage 3 years or more	8,580	2,532	315	259	315	5,159

**Appendix A3: Fixed effects regressions for each different aspect of job satisfaction**

***A3a: Men***

	Satisfaction with pay		Satisfaction with job security		Satisfaction with work itself		Satisfaction With hours worked	
	Leads	Lags	Leads	Lags	Leads	Lags	Leads	Lags
Union coverage 4 years hence	0.054		0.186		-0.037		0.016	
	[0.087]		[0.082]*		[0.075]		[0.082]	
Union coverage 3 years hence	-0.032		0.131		0.056		0.091	
	[0.074]		[0.070]+		[0.064]		[0.070]	
Union coverage 2 years hence	-0.038		-0.099		-0.083		-0.030	
	[0.063]		[0.060]+		[0.054]		[0.060]	
Union coverage within the next year	-0.087		-0.171		-0.063		-0.034	
	[0.055]		[0.052]**		[0.047]		[0.052]	
Union coverage 0-1 year		0.078		-0.062		0.008		0.099
		[0.029]**		[0.029]*		[0.026]		[0.028]**
Union coverage 1-2 years		0.059		-0.055		-0.018		0.112
		[0.035]+		[0.035]		[0.031]		[0.033]**
Union coverage 2-3 years		0.082		-0.040		-0.045		0.051
		[0.040]*		[0.039]		[0.035]		[0.038]
Union coverage 3 years or more		0.070		-0.034		-0.066		0.068
		[0.035]*		[0.035]		[0.031]*		[0.033]*

***A3b: Women***

	Satisfaction with pay		Satisfaction with job security		Satisfaction with work itself		Satisfaction With hours worked	
	Leads	Lags	Leads	Lags	Leads	Lags	Leads	Lags
Union coverage 4 years hence	0.103		0.129		0.015		0.107	
	[0.097]		[0.087]		[0.082]		[0.087]	
Union coverage 3 years hence	0.105		-0.070		0.050		0.041	
	[0.084]		[0.075]		[0.071]		[0.076]	
Union coverage 2 years hence	0.133		0.039		0.076		0.046	
	[0.072]+		[0.065]		[0.061]		[0.065]	
Union coverage within the next year	-0.026		-0.099		-0.096		-0.044	
	[0.063]		[0.056]+		[0.053]+		[0.057]	
Union coverage 0-1 year		0.120		-0.032		0.015		0.100
		[0.030]**		[0.029]		[0.027]		[0.028]**
Union coverage 1-2 years		0.125		0.017		-0.001		0.075
		[0.035]**		[0.033]		[0.031]		[0.032]*
Union coverage 2-3 years		0.132		0.050		-0.027		0.083
		[0.039]**		[0.037]		[0.034]		[0.036]*
Union coverage 3 years or more		0.147		0.089		-0.089		0.081
		[0.036]**		[0.034]**		[0.032]**		[0.033]*

**Note:** + sig. at 10%, \* sig. at 5%, \*\* sig. at 1%. Standard errors are in parentheses. Same control variables as Table 2.

**Appendix A4: Coefficients from fixed effects regressions for each different measures of job satisfaction by membership status**

***A4a: Men***

	Satisfaction with pay		Satisfaction with job security		Satisfaction with work itself		Satisfaction with hours worked	
	Leads	Lags	Leads	Lags	Leads	Lags	Leads	Lags
Union member, i.e. the sum of $\beta + \theta + \lambda$ parameters								
Union coverage 4 years hence & become member in the 1 <sup>st</sup> year	-0.065 [0.172]		0.336 [0.162]*		-0.331 [0.147]*		-0.085 [0.163]	
Union coverage 3 years hence & become member in the 1 <sup>st</sup> year	0.157 [0.139]		-0.010 [0.132]		-0.045 [0.120]		0.134 [0.132]	
Union coverage 2 years hence & become member in the 1 <sup>st</sup> year	0.153 [0.121]		0.095 [0.114]		-0.041 [0.104]		0.078 [0.114]	
Union coverage within the next year & become member in the 1 <sup>st</sup> year	-0.021 [0.104]		-0.140 [0.099]		-0.119 [0.090]		-0.003 [0.099]	
Union coverage union 0-1 year & member 0-1 year		0.125 [0.043]**		-0.046 [0.043]		0.041 [0.038]		0.154 [0.041]**
Union coverage 1-2 years & member 1-2 years		0.149 [0.049]**		-0.047 [0.049]		0.053 [0.043]		0.189 [0.047]**
Union coverage 2-3 years & member 2-3 years		0.195 [0.054]**		-0.039 [0.053]		-0.011 [0.048]		0.102 [0.051]*
Union coverage 3 years or more & member 3 years or more		0.164 [0.045]**		-0.018 [0.045]		-0.032 [0.040]		0.113 [0.043]**
Non-member, i.e. $\beta$ parameter								
Union coverage 4 years hence & remain non-member	0.094 [0.099]		0.140 [0.094]		0.057 [0.085]		0.049 [0.094]	
Union coverage 3 years hence & remain non-member	-0.098 [0.085]		0.191 [0.081]*		0.090 [0.073]		0.078 [0.081]	
Union coverage 2 years hence & remain non-member	-0.101 [0.072]		-0.168 [0.068]*		-0.103 [0.062]+		-0.067 [0.068]	
Union coverage within the next year & remain non-member	-0.103 [0.061]+		-0.179 [0.058]**		-0.047 [0.053]		-0.042 [0.058]	
Union coverage union 0-1 year & non-member		0.106 [0.035]**		-0.015 [0.035]		0.033 [0.032]		0.091 [0.033]**
Union coverage 1-2 years & non-member		0.056 [0.047]		0.021 [0.047]		-0.026 [0.042]		0.091 [0.045]*
Union coverage 2-3 years & non-member		0.039 [0.059]		-0.032 [0.059]		-0.027 [0.053]		0.048 [0.056]
Union coverage 3 years or more & non-member		0.041 [0.046]		0.046 [0.045]		-0.031 [0.041]		0.076 [0.043]+

### A4b: Women

	Satisfaction with pay		Satisfaction with job security		Satisfaction with work itself		Satisfaction with hours worked	
	Leads	Lags	Leads	Lags	Leads	Lags	Leads	Lags
Union member, i.e. the sum of $\beta + \theta + \lambda$ parameters								
Union coverage 4 years hence & become member in the 1 <sup>st</sup> year	-0.289 [0.183]		-0.035 [0.164]		0.076 [0.155]		0.166 [0.165]	
Union coverage 3 years hence & become member in the 1 <sup>st</sup> year	0.076 [0.157]		-0.092 [0.141]		-0.057 [0.133]		0.217 [0.142]	
Union coverage 2 years hence & become member in the 1 <sup>st</sup> year	0.238 [0.131]+		-0.080 [0.117]		0.091 [0.111]		0.193 [0.118]	
Union coverage within the next year & become member in the 1 <sup>st</sup> year	-0.008 [0.109]		-0.228 [0.098]*		-0.156 [0.092]+		-0.033 [0.099]	
Union coverage union 0-1 year & member 0-1 year		0.069 [0.043]		-0.076 [0.041]		-0.023 [0.038]		0.098 [0.040]**
Union coverage 1-2 years & member 1-2 years		0.111 [0.049]*		0.017 [0.046]		-0.011 [0.043]		0.066 [0.045]
Union coverage 2-3 years & member 2-3 years		0.122 [0.053]*		0.057 [0.051]		-0.042 [0.047]		0.079 [0.049]
Union coverage 3 years or more & member 3 years or more		0.144 [0.045]**		0.125 [0.043]**		-0.119 [0.039]**		0.075 [0.042]
Non-member, i.e. $\beta$ parameter								
Union coverage 4 years hence & remain non-member	0.245 [0.111]*		0.185 [0.100]+		-0.007 [0.094]		0.087 [0.101]	
Union coverage 3 years hence & remain non-member	0.116 [0.096]		-0.066 [0.087]		0.087 [0.081]		-0.022 [0.087]	
Union coverage 2 years hence & remain non-member	0.094 [0.082]		0.077 [0.074]		0.068 [0.069]		-0.008 [0.074]	
Union coverage within the next year & remain non-member	-0.029 [0.070]		-0.055 [0.063]		-0.074 [0.059]		-0.043 [0.063]	
Union coverage union 0-1 year & non-member		0.193 [0.035]**		0.066 [0.034]+		0.078 [0.031]**		0.122 [0.033]**
Union coverage 1-2 years & non-member		0.184 [0.045]**		0.049 [0.042]		0.053 [0.039]		0.106 [0.042]**
Union coverage 2-3 years & non-member		0.204 [0.054]**		0.108 [0.052]*		0.026 [0.048]		0.119 [0.050]**
Union coverage 3 years or more & non-member		0.178 [0.044]**		0.098 [0.042]*		-0.036 [0.039]		0.086 [0.041]*

**Note:** + sig. at 10%, \* sig. at 5%, \*\* sig. at 1%. Standard errors are in parentheses. Same control variables as Table 2.