Union Mediation and Adaptation to Reciprocal Loyalty Arrangements[⊥]

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Abstract:

This study evaluates behavioural differences between union and non-union workers in their preferences regarding reciprocal loyalty in the employment relationship. It uses a vignettes approach to elicit preferences and a novel dataset with unusually rich information on semi-skilled employees from four European countries. It focuses on reciprocal employer-employee arrangements stating that if the employee exerts higher effort, the employer reciprocates by offering higher job security. Such reciprocal arrangements are found to be valued more highly by unionized workers. The evidence suggests that the norm-enhancing role of union membership is the key candidate explanation of this pattern. Union workers are also found more likely to exercise the 'voice' rather than the 'exit' option in their current job.

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1. Introduction

Human interaction and collective behaviour are often shaped by social norms, *i.e.* behavioural regularities that are based on a socially shared belief about how one ought to behave. Social norms are enforced by informal social sanctions (Akerlof, 1980; Fehr and Gächter, 1998). Furthermore, Hirschman (1982) suggests that institutions can induce specific behaviours which may finally become part of the behavioural profile of the individual. Such profiles may entail self-centered, opportunistic, reciprocal and cooperative behaviour. Moreover, Dunlop (1944) suggests that "*the institutionalized form of collective action may introduce new preferences in the same way the household modifies individual preferences*". In addition, "*interaction patterns of a given form of collective action could alter preferences and in addition various forms of collective action can obviously affect the choice of the group even if preferences remain stable*" (Duncan and Stafford, 1980). A key mechanism for the establishment of social norms and collective behaviour is reciprocity, particularly in environments where the relations and obligations are not governed by explicit agreements (Fehr, Gächter and Kirchsteiger, 1997; Fehr and Gächter, 2000). In some occasions, acquired preferences can be internalized and become constraints on behaviour (Ariely, Loewenstein and Prelec, 2003; 2006; Carpenter, 2005).

The industrial relations literature, suggests that unionized workers exhibit distinct behavioural profiles. A prominent application is the loyalty-exit-voice framework. Hirschman (1970) explains why dissatisfied citizens do not leave their countries or dissatisfied customers a given product or firm. Freeman and Medoff (1984) apply this idea to workplace relations to show that unionized workers are more loyal to their employers than non-union workers. Their loyalty differs from unswerving faith to the firm and is more likely to be paternalistic[1] and mediated by the union. Akerlof (1982) emphasized that loyalty is based on employer-employee reciprocity and points out that the concepts of Exit, Voice, and Loyalty can be expressed in terms of norms and gift exchange which are partially endogenously determined. He also notes that the analysis of labour contracts as partial gift exchange can relate to the view on trade unions as collective voice. However, Akerlof (1983) also explains value-changing processes that can bring about the endogenous emergence of loyalty, labeled as "loyalty filters".

The literature also shows that there may be a variable impact of workplace relations and management practices on performance in terms of output per worker (Katz, Kochan and Gobeille, 1983; Freeman and Medoff, 1984; Harter, Schmidt and Hayes, 2002; Kleiner, Leonard and Pilarski, 2002; Bartel, Freeman*, et al.*, 2003. Furthermore, Krueger and Mas (2004) and Mas (2008) provide evidence on expressions of negative reciprocity by unionized workers, in terms of output quality, defective

[1] Paternalism has been described in the context of internal labour markets as the practice of building loyalty and fostering individual worker dependence on the employer as an alternative to financial incentives (Doeringer, 1986).

production and formal complaints. It is shown that such punishment behaviour takes place when concessions are demanded during bargaining and when replacement workers are hired next to returning union workers.

The above imply that union membership is related to particular types of social preferences, which involve both positive and negative expressions of reciprocity towards the employer, *i.e.* gift exchange and retaliation. Unionised workers are more likely to exercise "voice" and raise their concerns or even reciprocate in a negative way. However, the negative expressions do not result in unionized workers utilising the option to "exit" an unpleasant situation and quit their job. The union literature provides ample empirical evidence regarding the voice and exit functions of unionised workers (Lewin, 2005). However, empirical evidence on the attribute of loyalty and its link to reciprocity is scarce (Cahuc and Kramarz, 1997).

In view of the above, this paper investigates the preferences for arrangements involving reciprocity and mutual loyalty in the labour force. A dataset with very rich information on semi-skilled employees from four European countries and conjoint analysis are employed. Conjoint analysis is essentially a stated preference technique which involves evaluation of hypothetical job scenarios. It is shown that the unionised workers exhibit a greater preference for reciprocal loyalty compared to their non-union counterparts. The evidence is consistent with a norm enforcing aspect of union membership and with the view that unionised workers are more likely to exercise the 'voice' rather than the 'exit' option.

The structure of the remaining of this paper is as follows: *Section 2* introduces the dataset, and *Section 3* reviews the literature background and the empirical strategy adopted. *Section 4* discusses some methodological issues, *Section 5* reports and discusses the empirical results, and *Section 6* concludes.

2. The Data

2.1 The Questionnaire, the Database and the Sample

The data used in this study is part of the *EPICURUS* database, a multi-country project funded by the European Commission. The data was collected during the 4th quarter of 2004, in Denmark, Finland, France, Greece, the Netherlands, Spain and the United Kingdom. Identical questionnaires were administered in all countries and were translated in several rounds by native speakers, experienced in survey design. Four European companies specializing in surveys were employed for the task. They reported no complains from the respondents or other problems associated with the survey. The questionnaires were administered to a homogenous group of individuals. The target group was unskilled/semi-skilled employees between the ages of 18 and 65. The survey included only

individuals with low or middle education (*i.e.* it excluded individuals with a 5 or 6 education level in the 1997 ISCED International Classification scale)[2]. Students, self-employed and employees in fishery and agriculture were also excluded. Around 1,000 individuals per country were interviewed, with the exception of Greece (800), Spain and Finland (300), due to budgetary constraints.

The dataset contains the essential demographic information and extensive information at the individual and the household level. A large number of questions address issues related to current and past job outcomes, job satisfaction and well-being. The second part of the questionnaire is designed to elicit workers preferences about jobs and job attributes. The definitions and summary statistics of the variables used are reported in the *Appendix A*[3].

Due to very high rates of unionisation in the Nordic and Scandinavian countries, and the small sample size in Spain, this study utilises the data from France, Greece, Netherlands and the United Kingdom. Thus, the sample used comprises of 3,817 individuals, 800 union members, and 3,017 non-union workers. The descriptive statistics in *Table 1* suggest that the sample is fairly representative of the actual unionisation rate per country.

[Insert Table 1 about here]

Table 2 reports the means of selected variables for the union and non-union worker sub-sample, along with significance levels from a t-test of differences in the means. Moreover, *Table A1* in appendix A presents all variable definitions and their means. It is shown that union workers are more likely to earn higher wages compared to non-union workers[4]. They are also more likely to be older, with more experience and job tenure, more likely to be male, in permanent jobs, in the public sector, in large firms, and more likely to have received some form of training during the last year. Moreover, union workers are more likely to be found in the industries of Public Administration and Defense, Health and Social Work, Transportation and Communications, Manufacturing and Utilities. They are also more likely to be found in Technical and Associate Professional occupations, Crafts and Related, Plant and Machine Operatives.

[Insert Table 2 about here]

Table 3 reports the summary statistics for the variables that are related to the perception of conditions at work which are relevant to the issues regarding the 'voice' and 'exit' functions in this paper. The levels of significance for mean differences between union and non-union workers are also displayed. Compared to non-union workers, unionised workers are less satisfied with their job

[2] *A posteriori* analysis of background variables shows that the sample successfully represents the targeted population.
[3] An extensive analysis of the questionnaire and the obtained database is available from the authors on request and are also available in the reports to the European Commission (EPICURUS Project, 2004; 2005).
[4] Wages are divided by the purchasing power parity in each country.

overall, their relationship with the employer, and his/her behaviour, the work load and work tension, the level of stress, and the physical risk of the job. However, they are more likely to be satisfied with job security in terms of likelihood of job loss. Measures of job conditions such as the occurrence of work-related injuries and sicknesses reflect the 'voice' function. Union workers are more likely to report a work-related sickness or injury than their non union counterparts, although the number of individual injuries or illnesses reported does not differ significantly between those who have experienced such spells. Union workers are also more likely to find their job to be tiring, of low quality in terms of work environment, dangerous, and physically demanding[5].

The last row of *Table 3* indicates that unionised workers are much less likely to report that they intend to quit their job compared to non-union workers, which is in contrast to the above differences in the "voiced" expressions of dissatisfaction. 34.6% of the employees report that they intend to quit their job[6], 23% of the unionised workers and 38% of the non-unionised.

[Insert Table 3 about here]

2.2 The Vignette Questionnaire

The second part of the questionnaire is designed to elicit preferences for job attributes utilising job vignettes that enable the use of a conjoint analysis approach. The main objective of conjoint analysis is to identify how individuals value the various attributes of a good or service, such as a job, a house, health care or the environment[7]. This technique essentially involves four main steps. These are: (1) Identification of the relevant characteristics - attributes of the good to be evaluated; (2) Quantification – level assignment to the characteristics; (3) Design of scenarios (vignettes), as a combination of the former two steps; (4) Preference identification of the respondents, by ranking, rating, or discrete choice (Louviere, Hensher and Swait, 2000). Since the number of scenarios increases with the number of characteristics and levels, not all of the scenarios generated can be included in a questionnaire as the respondents have a finite attention span. Thus, quasi-experimental designs are used to reduce the number to a convenient level. The selection of job attributes in the *EPICURUS* questionnaire is based on the literature and prior analysis of the determinants of perceived quality at work[8].

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[5] The differences in the summary statistics presented in Tables 2 and 3 are remarkably robust in each country sub-sample. This feature and the homogeneity of the targeted population allowed the pooling of the data in one sample.

[6] The intention to quit is captured by the response "*I will quit myself*" to the question: "*What would be the main reason to stop working with your current employer in your main job?*

[7] The first studies using conjoint-analysis came from marketing research. There are several applications in economics (van Beek, Koopmans and van Praag, 1997; Lindeboom and van Doorslaer, 2004; Ferrer-i-Carbonell, van Praag and Theodossiou, 2007; van Soest, Delaney*, et al.*, 2007; Pouliakas and Theodossiou, 2008, *inter alia*)

[8] That analysis used available datasets for the countries in the sample, such as the European Community Household Survey (ECHP).

The approach followed assumes that a job *j* may be adequately described by a vector of *n* attributes a_n, contained in a job vignette. Thus, each vignette is defined by ten job attributes that were identified as highly important in determining the perception of quality at work. The 10 attributes of each vignette are: (1) Net wage (as a percentage increase from the current wage); (2) type of contract (e.g., permanent or temporary); (3) working hours; (4) working times; (5) access to training opportunities; (6) work organization; (7) control over own work; (8) work intensity; (9) age of retirement; (10) and loyalty from the side of the firm and the side of the employee. The latter is discussed in detail in the next section.

Respondents are asked to evaluate the vignettes on a scale from 0 to 10, where 0 represents the least and 10 the most satisfactory job[9]. Thus, the respondents are induced to trade off some characteristics for others and to incorporate the notion of opportunity cost into their decision-making process. Each respondent is asked to evaluate 5 hypothetical job offers (vignettes), involving different levels for each of the attributes. The respondents are also alerted to the fact that all other attributes of the hypothetical job are identical to their actual current job. Moreover, the values of the ten attributes are distributed at random, in order to eliminate the correlation of individual characteristics and vignette attributes. Orthogonality and large variance of the vignettes is ensured in the design phase. A typical vignette is reported in *Figure 1*. *Table A2* in the Appendix presents the whole range of attributes along with their frequencies of occurrence. Differences in the frequency of all attributes between union and non-union workers are statistically insignificant, as ensured in the design phase (not shown).

[Insert Figure 1 about here]

A great benefit of this approach is its ability to yield multiple observations per respondent on hypothetical decision contexts. Of primary importance is that respondents understand, are committed to and can respond to the relevant hypothetical scenarios. Care is also taken to avoid any possible framing effects. For this reason nowhere in the vignette questionnaire is the union identity issue mentioned to respondents[10].

[9] Furthermore, they are asked to reply whether such a job would be acceptable by them. While the analysis in the next section uses vignette evaluation as a cardinalised continuous dependent variable, all findings in this paper are robust to the use of vignette acceptability as an alternative form of job evaluation.

[10] A framing effect occurs when choices made under the influence of institutionally determined framing may later be repeated even in the absence of the framing effect if the effects of exposure to the object of choice, or dissonance reduction effects are strong (Bowles, 1998). In the 1st part of the questionnaire, there are only two questions related to union membership. For the typical respondent there is a ten minutes time interval between responding to these questions and evaluating the vignettes.

3. Background and Empirical Strategy

Freeman and Medoff (1984) suggest that unionised workers are more loyal to their employers compared to non-unionised employees. They suggest that as a result of organizational loyalty, union workers are less likely to quit in response to workplace conflict. They are also more likely to exercise 'voice', through formal and efficient dispute resolution arrangements. Unions provide their employees with a more effective voice to communicate their concerns, partly by promoting legitimacy at the workplace (Freeman, 1976; Freeman, 1980). Legitimacy is related to reciprocal employer-employee arrangements, mediated by the union (Doeringer, 1984).

This study investigates the aspects related to the aforementioned literature as follows: *First*, it examines differences between union and non-union workers in the preference for reciprocal loyalty in the employment relationship. The empirical evidence on this attribute is scarce[11] and this study follows a novel empirical strategy. Preferences regarding various attributes of a job are elicited using conjoint analysis. One of the included attributes is reciprocal employer-employee loyalty, defined as the exchange of job security provisions by the employer for higher effort or no shirking by the employee. Some of the vignettes offer the option: "Loyalty from both sides (employer and employee) is required; shirking and low performance is impossible", while others: "The firm requires no loyalty; Shirking and low performance is possible"[12].

This approach assumes that the utility a worker derives from a job stems from specific attributes that describe the job, rather than the job *per se*. It is a stated preference methodology rooted in the random utility theory (McFadden, 1973; Hanemann, 1984). The underpinnings of this approach originate in Lancaster (1966; 1971) and Rosen (1974). Thus, the stated utility from a job *j*:

$$U_j = U(a_{jn})$$

[11] As an exception, Cahuc and Kramarz (1997) empirically investigate a mechanism, where power is exchanged for loyalty, and where there is the delegation of authority from a firm to a collective of workers. This operation turns out to stabilize employment and decrease turnover in a similar fashion to efficiency wages. In a related empirical study, Boroff and Lewin (1997) define loyalty as organizational commitment or "the *degree to which a person identifies with an organization*". They link loyalty to 'exit' and 'voice' functions of the trade union. However, their empirical study does not fully support the proposition that unionized workers are more loyal to their employers than non-union workers. Other expressions of loyalty operationalized include: "*giving private and public support to the organization*" (Rusbult, Farrell*, et al.*, 1988) and "*organizational citizenship*" (Cappelli and Rogovsky, 1998).

[12] The "Loyalty-No Shirking" attribute is explained to the respondent as follows: "The firm treats you with the same norms as the other firms operating in the same labour market, except for the specific attributes mentioned above. Loyalty to your employer is required. Thus, you cannot get away with shirking (e.g. by taking longer coffee breaks than allowed, by working slowly) and low performance work. The employer has loyalty to you. Thus the employer will not fire you for the duration of your contract whatever its length (including lifetime contracts)". The "No Loyalty-Shirking" attribute is also explained as: "The firm treats you with the same norms as the other firms operating in the same labour market, except for the specific attributes mentioned above. No loyalty to your employer is required. Thus, you can get away with shirking (e.g. by taking longer coffee breaks than allowed, by working slowly) and low performance work. The employer has no loyalty to you. Thus the employer can fire you at any time and you can leave the job at any time too".

where a_{jn} is a vector of *n* job characteristics describing a job *j*. Individuals are indifferent between two jobs *1* and *2*, if $U(a_{1n}) = U(a_{2n'})$. Knowledge of the function *U(.)* makes it possible to calculate trade-off ratios, defined as the extent to which an individual may accept less of one job characteristic when compensated by an increase in another characteristic, without the overall evaluation of a job being affected. Thus, the trade-off ratio between attributes 1 and 2 of a given job is:

$$\frac{\partial U}{\partial a_{j1}} \Big/ \frac{\partial U}{\partial a_{j2}}$$

The derived trade-off ratios provide a relative measure of the importance of a job attribute, such as 'loyalty' for the union and non-union worker samples.

Second, the potential explanations for any differences in preferences for 'loyalty' between union and non-union workers are also investigated. A number of propositions can explain social preferences for reciprocal 'loyalty' among population groups. We distinguish between three main categories: (a) First reciprocal behaviour may be generated by an innate desire to be kind or hostile in response to kindness or hostility. This, along with perceptions of process-related justice (Fuller and Hester, 2001) and relative concerns (Farber and Saks, 1980) can induce union formation and membership. (b) An appreciation of reciprocal arrangements can rise with exposure and experience, without a shift in tastes, in line with Stigler and Becker (1977). Moreover, in situations of repeated interaction with incomplete contracts, reputation can deter selfish behaviour. In that sense, the mediating role of the union and its ability to facilitate communication, information, and reputation can induce cooperative or non-cooperative outcomes (Simon, 1951; Milgrom and Roberts, 1992; Ostrom, 1998). (c) Finally, the union can be thought to have a norm-enforcing role to its members. People might not have a very good idea of certain preferences, until they experience a certain situation, in line with the notion of "*coherent arbitrariness*" (Ariely et al., 2003; 2006)[13]. Membership in a social group can also transform individuals, leading to internalized roles, norms and values that affect behaviour (Akerlof, 1980; Booth, 1985; Bowles, 1998; Akerlof and Kranton, 2000; Goette, Huffman and Meier, 2006). Finally, the dominance of a 'trait' in a group may enhance replication via 'conformist' behaviour and cognitive dissonance, independently of the payoff to those exhibiting the 'trait'.

The empirical strategy used in this paper creates testable analogues of the above three sets of ideas. First, in order to account for self-selection into union status, an endogenous switching model of vignette evaluation is estimated. Second, in order to examine the exposure and repeated interaction

[13] A relevant evolutionary view suggests that "*cognitive adaptations for social exchange*" can generate patterns of reciprocal behavior under the influence of environmental stimulae (Cosmides and Tooby, 1992; Ben-Ner and Putterman, 2000).

explanation, interaction variables between the 'loyalty' attribute and variables for tenure, age and experience are introduced in the evaluation regressions. Positive interaction terms with these variables and the loyalty attribute would favour a repeated interaction explanation for the preference for loyalty. Finally, the norm enhancement proposition is examined by including interactions with recent unemployment experience, number of unemployment spells in the last year and firm size. Unemployment experience in the last year identifies new workers/union members. Furthermore, it can be thought of as a shock to cognitive dissonance[14]. Employment in small firms where anonymity is less likely and interaction more common, can be thought to increase the conformist replication propensities of individuals.

Finally, the study examines the 'voice' and 'exit' expressions of union and non-union workers. In the literature, loyalty is shown to be positively correlated with the exercise of 'voice' and negatively correlated with exit behaviour. Following Hersch and Stone (1990) the 'voice' function is related to the expressed job satisfaction[15]. The 'exit' function of workers is revealed by the worker's intention to quit the firm in the near future. As it can be seen in the summary statistics presented at the previous section unionized workers are less likely to be satisfied with most aspects of their jobs, but they are also less likely to declare that they intend to quit their job in the near future. Four possible reasons are offered in the literature pertaining to explain the relative dissatisfaction among the union workers (Borjas, 1979; Duncan and Stafford, 1980; Kochan and Helfman, 1981; Hersch and Stone, 1990). First, there may be a flatter wage-tenure profile in the union sector. Second, compensating differentials may give rise to a union premium for less favourable working conditions. Third, there may be an outcome of a reverse causation in the relationship between unionization and job satisfaction. Finally, the lower job satisfaction of union workers may be an expression of the exit-voice mechanism. As a byproduct of loyalty, union workers are more likely to express dissatisfaction rather than seek for employment elsewhere. Thus, their dissatisfaction is not genuine in the sense that it does not lead to quits, but it is instead a device through which the expressed dissatisfaction of the unionized workers can offer arguments to strengthen the trade union case in its negotiation with the employer for achieving more favourable terms of employment. The strategy adopted aims to exclude the explanations of high tenure, compensating differentials and reverse causality. Finally,

[14] Cognitive dissonance involves a situation where people are confronted with a phenomenon that conflicts with their previously held beliefs, thus creating internal pressure for an after-the-fact rationalization of the unexpected phenomenon (Festinger, 1957). In Akerlof and Dickens (1982), individuals choose their beliefs and then process information to reinforce those beliefs.

[15] Most of the literature interprets the lower job satisfaction of unionized workers as 'voice'. A different view would question whether job satisfaction as expressed in surveys, is the same as that expressed to managers and supervisors. An alternative measure of 'voice' is the incidence of formal grievances. However, job satisfaction and grievances are found to be negatively related and the empirical evidence indicates that the grievance rates of non-union workers are half of that of union workers (Lewin, 2005). A measure of grievance is not available in our dataset.

voice is linked to the exit behaviour and the main hypothesis examined suggests that ceteris paribus, unionized workers will be less likely to quit their jobs.

4. Methodological Issues

4.1 The COLS Approach for Ordinal Dependent Variables

The empirical approach followed in this study is to assume that an individual *i*'s latent evaluation of a job *j*, U_{ij}, depends on the values of the job's *n* attributes, a_{jn}, as specified in the vignettes, and on *k* individual and current job characteristics, denoted by X_k. Hence:

$$U_{ij} = U_i(a_{jn}; X_k) \qquad (1)$$

Since individuals evaluate each job vignette on a discrete scale from 0 to 10, their true evaluation is a latent variable, *i.e.* its true value is not observed exactly. The observed evaluation U^* is an ordered categorical variable. In the empirical equivalent of (1), if it is assumed that U_{ij}^* is a linear function of the *n* attributes, the *k* individual characteristics, and a random error term, ε_i, then:

$$U_{ij}^* = \gamma' a_{ij,n} + \delta' X_{ik} + \varepsilon_{ij} \qquad (2)$$

However, cardinal evaluations facilitate the computation of the trade-off ratios between the attributes. Hence, in this study, U_{ij}^* is transformed by linearising the ordinal evaluation responses. The methodology adopted is the Cardinal OLS (COLS) approach (van Praag and Ferrer-i-Carbonell, 2004, Ch. 2). This assumes that respondents are supplying a cardinal evaluation, but it takes into account that they are unable to give precise information about their evaluation, due to the categorical format of the response scale. Thus, any observed value of the discrete variable U_{ij}^* represents a transformation of the latent evaluation U_{ij} belonging to one of the intervals: [0, 0.5], (0.5, 1], …, (9.5, 10]. Normalizing the scale to the [0,1]-interval, the COLS approach replaces the inexactly known value of U_{ij} by its conditional expectation $\overline{U}_{ij}$, according to the following formula (Maddala, 1983, p.366):

$$\overline{U}_{ij} = E(U_{ij} \mid \lambda_{n-1} < U_{ij} \leq \lambda_n) = \frac{n(\lambda_{n-1}) - n(\lambda_n)}{N(\lambda_n) - N(\lambda_{n-1})} \qquad (3)$$

where $n(.)$ and $N(.)$ stand for the normal density and distribution functions, respectively, and λ takes its values in {0, 0.05, 0.15, …, 0.95, 1}.

After the observed evaluation of the vignette is transformed into the conditional mean of the latent evaluation, OLS can be applied to the transformed linear model:

$$\overline{U}_{ij}^{*} = \gamma' a_{ij,n} + \delta' X_{ik} + \varepsilon_{ij} \qquad (4)$$

where ε_i is a symmetric error term with mean zero. COLS is shown to yield consistent parameter estimates (Ferrer-i-Carbonell and Frijters, 2004), identical to those obtained by ordered probit (except for a factor of proportionality), as efficient as probit estimates (Stewart, 1983), but computationally much easier.

The examination of vignette evaluation requires the creation of a pseudo-panel, based on the 5 consecutive responses to the vignettes by each individual. Hence, taking into account the probable correlation structure between the five individual vignette evaluations, the error term ε_{ij} is decomposed into an individual-specific effect θ_i and a white noise component ζ_{ij}, where $E(\zeta_{ij})=0$ and $E(\theta_i, \zeta_{ij})=0$. Both fixed-effects and random-effect models are utilized in the analysis of the vignette evaluation. However, the random-effects model has the advantage of allowing the incorporation of controls for individual and current job characteristics that are invariant across responses, such as gender, education etc. This model also allows the inclusion of interaction terms between the loyalty attribute and individual characteristics of intuitive interest. The equivalent of (4) is estimated for union and non-union workers, by fixed effects, then after incorporating individual characteristics by random effects, and finally by controlling for endogenous switching into union membership.

4.2 Selection into Union Status

Estimating versions of equation (4) is subject to an endogenous sample selection issue, as long as the unobserved determinants of union membership are correlated with unobservables in the vignette evaluation equations. Thus, estimates for union and non-union workers are also presented after self-selection in union membership is taken into account. This is accomplished via using a Heckman-type endogenous switching model (Heckman, 1978; 1979; Lee, 1978; Maddala, 1983). The model takes into account the latent propensity of an individual to become a member of a trade union, as follows:

$$S_i^{*} = \gamma' a_{ij,n} + \beta' X_{im} + \omega_i \qquad (5)$$

where S indicates union membership and ω is a normally distributed error term, with $E(X_i, \omega)=0$. At least one variable in X must be identifying the selection equation, while excluded

from the evaluation equation (4), *i.e.* $k \leq m$. The modified version of equation (4) that controls for endogenous union status is then estimated for union and non-union workers separately via maximum likelihood. This is an efficient estimator that allows for robust standard errors, clustered at the individual level.

5. Results and Discussion

5.1 The Impact and Nature of the Reciprocal Loyalty Attribute

Table 4 presents results from the estimation of vignette evaluation, for the samples of union and non-union employees respectively. The coefficients and standard errors of the wage attribute and the loyalty attribute are displayed, along with a point estimate and standard error for the trade-off ratio between wages and loyalty. The latter reflects the wage compensation that the average worker would require in exchange for the loss of the employer-employee loyalty. *Table B1* in the appendix B provides estimates for the whole range of attributes. In both tables, *Panel (A)* presents estimates from a COLS model with fixed-effects. *Panel (B)* displays estimates from a COLS model with random effects that includes control variables for individual and work-related characteristics[16]. The results in Table 4 reveal an interesting and persistent pattern. The effect of the loyalty attribute is much higher for the sample of union workers compared to the non-union ones. The wage compensation required for the loss of loyalty is consistently close to 18% of the current wage for union workers and close to 11% for non-union workers[17]. The ratios suggest that unionized workers would have to be compensated by at least 50% more than non-union workers in order to give up the employer – employee loyalty in a job. The figures are 51.8% in the fixed-effects models, and 57.4% in the random effects model. The latter model also controls for the current wage level among the observables. A Wald χ^2 test for the difference between the two coefficients, equal to $\frac{(\gamma_1^U - \gamma_1^{NU})^2}{(S.E._{\gamma_1^U})^2 + (S.E._{\gamma_1^{NU}})^2}$, reveals statistical significance at the 1% level for the difference in the loyalty attribute, and the trade-off ratios.

[Insert Table 4 about here]

[16] A Breusch-Pagan test for random effects at the bottom of *Table B1* rejects the null hypothesis of non-significance of the random unobserved individual component. A Hausman χ^2 test with 25 degrees of freedom, comparing the fixed effects model specification of Panel (A) with the respective specification in the context of a random effects model suggests the random effects model would be consistent and efficient for the union sample. However, it would be inconsistent for the non-union sample. Thus, both models are used.

[17] The ratios and their standard errors are obtained as point estimates for the nonlinear combination of the parameter estimates for the loyalty and wage attributes.

The results in panels A and B of Table 4 suggest that the employer-employee loyalty is valued more highly by union workers compared to their non-union counterparts. However, such preferences might be formed *ex-ante* i.e. they might be valued by the individual before he/she joins the union. Alternatively, they might be induced or strengthened ex-post due to membership in a trade union which mediates for such arrangements and hence, internalized via adaptation. The persistence of the higher effect of the loyalty attribute in the union sample after accounting for self selection may be interpreted as in favour of ex-post adaptation.

A model which allows for endogenous switching into union status is estimated in order to investigate this issue. *Panel (C)* of *Table 4* presents the results of interest from a COLS model with a Heckman correction for selection into union status. The detailed results are presented in *Table B2* in the Appendix B. The identifying variables in the selection equation are 1-digit industry codes. A Wald χ^2 test with 14 degrees of freedom indicates that all identifying restrictions used are insignificant in predicting vignette evaluation for both sub-samples (shown in the bottom of *Table B2*). They are jointly significant in the selection equation. Furthermore, a Lagrange multiplier (LM) test showing whether the industry dummy variables should be included in the evaluation equations is used. The LM tests for union and non-union workers are not significant at conventional levels. This tentatively suggests that the restrictions for identifying the selection effects are adequate. Finally, a Wald test accepts the independence of the two equations and thus the model can be consistently estimated with COLS. The estimation results, after controlling for endogenous switching into the union, show that the difference in the impact of the loyalty attribute between union and non-union workers persists. Union members need to be compensated by 62% more than non-unions workers in order to accept forgoing the loyalty attribute. The difference in the coefficients and trade-off ratios between union and non-union members is significant at the 1% level[18].

The higher impact of the loyalty attribute among union workers is further investigated by incorporating interaction terms between this attribute and individual characteristics of intuitive interest in the random effects model of vignette evaluation. First, interactions with tenure, age and experience are included, in order to examine whether the higher impact of the loyalty attribute arises due to exposure and repeated interaction. Panels (A), (B), and (C) of *Table 5* present the results of these estimations. All three interaction terms between the loyalty attribute and the logarithms of job tenure, age, and experience in the labour market exert an insignificant impact on the evaluation of a

[18] In order to examine the robustness of the findings, vignette acceptability was examined as an alternative form of job evaluation. The results are available upon request and indicate that the difference in the impact of the loyalty attribute is robust. It bears a higher weight in the acceptability of a vignette among union workers compared to non-union employees. The trade-off ratios between wages and loyalty are also significantly higher for union workers and their magnitude is very similar to those in Table 4.

job. These interaction terms are statistically insignificant for both union and non-union workers. These results suggest that the higher preference for the loyalty attribute, observed among unionised workers is not due to more years of tenure or experience in the firm.

In panel (D) of *Table 5*, an interaction term between the loyalty attribute and unemployment experience during the last year is included. This unemployment experience-loyalty interaction term exerts a large negative impact on the evaluation of a job only for union workers but it is insignificant for the non-union workers. Thus, unemployment has a negative impact in the loyalty of unionised workers only. Recent unemployment experience might be expected to identify new union membership or alternatively serve as a negative shock to worker loyalty if that loyalty is the outcome of cognitive dissonance. Such a shock can be thought to give rise to motives of retaliation. This is consistent with the evidence of retaliatory acts by returning union workers during strikes and the hiring of replacement workers (Krueger and Mas, 2004; Mas, 2008). Moreover, in panel (E) an interaction term between the loyalty attribute and the logarithm of weeks in unemployment during the last year is incorporated in the specification. The results suggest that the more the weeks in unemployment the smaller is the impact of the reciprocal loyalty attribute for the unionised workers. On, the contrary, non-union workers with more weeks in unemployment in the last year give a slightly higher valuation to jobs that involve loyalty. The results in these last two panels favour the explanation of adaptation to reciprocal arrangements by union workers due to cognitive dissonance. A shock to the latter gives rise to negative reciprocity.

Finally, estimates of an interaction term between the loyalty attribute and employment in a small firm (between 1 and 10 employees) are presented in panel (F). The results show that the interaction between loyalty and employment in a small firm has a positive impact, significant at the 10% level among non-union workers. The impact is large but insignificant among the union sample. This result may be interpreted as evidence on the "loyalty filtering" role of the labour union. In small firms, where the communication between the employer and workers is easy without any third part mediation (such as a trade union), the appreciation of loyalty is high among both union and non-union workers. In such settings anonymity is lower and communication is easier. In small firms workers are more likely to know their employer personally compared to large firms, and thus the environment is conducive to workers identifying with the firm. Replication and conformist transmission of a 'trait' is also more likely to arise in a small firm without third party mediation.

[Insert Table 5 about here]

The above results suggest that reciprocal arrangements involving loyalty are valued more highly by union workers, and this finding is not the outcome of self-selection and/or repeated interaction. The empirical tests presented favour the explanation of adaptation to such arrangements due to cognitive

dissonance and conformist transmission. The next sections examine the voice and exit behaviour of workers in their current job. First, differences between unionised and non unionised workers in 'voice' expressions mirrored in the reported job satisfaction are examined. Second, differences between these groups in the intention to quit the job and its determinants are studied.

5.2 The Exit-Voice Function

The summary statistics of Table 3 have suggested that union workers are less satisfied with their jobs on average, compared to non-union employees. In this section, the potential explanations of this finding are examined using regression analysis. Hence, *Table 6* presents COLS estimates from job satisfaction regressions. Coefficients and standard errors are reported. The list of explanatory variables includes the logs of PPP adjusted monthly wage rate, and hours of work, union membership, a vector of personal and job characteristics (gender, cohabitation/marriage status, and the log of the number of children aged less than 16) and a vector of work-related characteristics (firm-size, sector of activity, log of tenure, experience, permanent job, training during the last year, occupation (1-digit)). *Column (1)* presents estimates from a standard job satisfaction regression, in which no explicit working conditions are accounted for. In accordance with the literature, unionised workers are less satisfied with their job overall, *ceteris paribus*. The coefficient is -0.095, statistically significant at the 1% level. Job tenure is negatively related to job satisfaction. The wage rate and experience, marital status, training and the permanent contract are positively related to job satisfaction but being a male worker has a negative effect on job satisfaction. The education turns out to be insignificant which is expected, since the survey targets the low-skilled, with low levels of education. Finally, civil servants appear to draw the highest job satisfaction from their job compared to the other four occupational categories.

[Insert Table 6 about here]

Then, *Column 2* presents a specification that examines whether the difference in job satisfaction can be explained by the higher tenure of unionised workers which is also shown in Table 2. Hence, an interaction term between the log of job tenure and union membership is introduced. Job satisfaction is U-shaped in job tenure, as revealed by the negative coefficient of the log of tenure. The coefficient of the interaction term is small, positive, and statistically insignificant. The effect of union status is marginally insignificant at the 10% level when the interaction term is included. However, the magnitude of the coefficient increases. This is an indication that the high job tenure alone can not explain the lower job satisfaction of unionised workers.

The alternative explanation of the lower job satisfaction of union members compared to non-union workers is that although the former enjoy higher wages, these reflect compensating differentials for

jobs of lower quality and unfavourable working conditions. *Columns 3 and 4* investigate this explanation. In *Column 3*, two additional variables which account for work conditions namely, the log of number of work related injuries and illnesses during the past two years that caused the employee to take at least one day off-work are introduced in the job satisfaction regression. Interestingly, both variables exhibit a negative impact on job satisfaction but their inclusion does not reduce the magnitude of the union and the wage effect[19]. Yet, union workers report a greater incidence of work-related illnesses and injuries compared to the non unionized ones. Overall, this might be interpreted as evidence that although work-related injuries and illnesses do reduce job satisfaction, they are not sufficient to explain neither the lower job satisfaction nor the higher wages of union workers. To further examine the compensating differentials explanation the approach of Hersch and Stone (1990) is used which amounts to add in the regression the working condition variables that are identified by Duncan and Stafford (1980) as most important in explaining the union wage premium. The variables introduced capture whether the employee performs machine operation, the effort at work, and the ability of the employee to put own ideas into practice at work[20]. *Column 4* shows that former two variables are negatively related to job satisfaction, while freedom to put own ideas in practice exerts a positive impact. The inclusion of the three variables reduces the magnitude of both the union status and wage coefficients. However, the negative union status coefficient remains significant. The interpretation is that the compensating differentials explanation is also not sufficient to account for the lower job satisfaction reported by the union members. Overall, the above results suggest that union membership has an impact on job satisfaction that is independent of wages and working conditions.

As a third explanation, the reverse causality between job satisfaction and union membership is examined in Table 7. This reports results from the analysis of the membership-satisfaction link conducted using propensity score matching. Consistency of the effects estimated with propensity scores hinges upon the assumption that selection into union membership is captured by observables. However, unlike regression techniques, it computes the differential within the 'common support', *i.e.* by comparing members and non-members that are similar with respect to observable attributes (Blundell and Costa-Dias, 2000). Regression analyses use functional form assumptions to project the

[19] As another test, interaction terms between injury/illness rates and union membership were introduced. The effect of the interaction terms was statistically insignificant. Results are available upon request.

[20] The variables introduced are: (1) MACHINE: a categorical variable equal to 1 for workers who state that the speed of machine or assembly line if very important or the most important factor for the amount of effort they put in their job; (2) INTENSITY: an index in the [0, 1] interval, created as a summation of workers' stated opinion for the intensity of the factors that make their job hard. Replies ranged from 1 to 5, and the options were: (a) high speed or high rhythm, (b) tight deadlines, (c) relationship with the boss or supervisor, (d) colleagues or co-workers. Thus, the index is 0 for a worker for whom none of these factors make his/her job hard, and 1, for a worker for whom all of these factors make it tough; (3) IDEAS: equal to 1 if the employee is frequently, nearly always or always allowed to put own ideas into practice at work.

differential outside the common support, potentially biasing the results (Dehejia and Wahba, 2002). Therefore, it seems important to look at the membership satisfaction puzzle within the common support. The estimate shown is the effect of treatment on the treated for the whole sample, i.e. the mean difference in satisfaction across members and their matched non-member counterparts. The first panel uses nearest neighbour matching, while the second panel a kernel-based matching (the latter requires bootstrapped standard errors based on 100 replications). The matching estimates tend to corroborate the regression analysis in Table 6. The results remarkably resemble the earlier findings *i.e.* the lower job satisfaction among union members. In both Panels of Table 7, union membership exhibits a negative and statistically significant effect, similar in magnitude to that of Table 6. This confirms the earlier analysis, though one should bear in mind that the parameter of interest is different.

[Insert Table 7 about here]

Finally, the exit-voice tradeoff as an explanation of the lower job satisfaction that results from the higher loyalty of union workers is investigated. One should surmise that if union workers report genuinely lower job satisfaction compared to their non-union counterparts then this should be reflected on their intention to quit the current job. Using an approach similar to Hersch and Stone (1990), logit estimates of the determinants of the intention to quit are presented in *Table 8*. The regressors are union status, job satisfaction, wages, and a set of personal and work characteristics. *Column 1* presents the estimates for the whole sample, where an interaction term between union status and job satisfaction is also introduced. *Columns 2 and 3* present the results for the union and non-union workers respectively. The coefficients, robust standard errors, and the respective marginal effects are reported.

[Insert Table 8 about here]

For the whole sample, the coefficient of union membership is negative, statistically significant, and large. The marginal effect is -0.133, indicating the union membership reduces quitting intentions by 13.3%. The magnitude of the effect is large, comparable to that of an individual having a permanent contract. Job satisfaction exerts a negative impact on the propensity to quit. The marginal effect is -0.044, significant at the 1% level. Thus, an increase of job satisfaction from approximately 6 to 8 (½ standard deviations below the mean to ½ standard deviations above the mean) reduces the propensity to quit by 4.4%. The coefficient of the interaction between union status and job satisfaction is insignificant, suggesting that the lower job satisfaction of unionized workers does not increase their quitting propensity. In the separate estimates by union status in *Columns 2 and 3*, the marginal effect of job satisfaction is -0.024 for unionized workers and -0.047 for non-union workers. Both effects are statistically significant at the 1% level, and the difference between the two

coefficients is not statistically significant (Wald χ^2 test=0.23). Thus, the results suggest that unions do lead to greater expressions of dissatisfaction among union workers, even when objective measures of job characteristics are held constant, but this dissatisfaction does not lead to increased chances of quitting compared to non-union workers.

5. Concluding Remarks

This study discusses employment relation outcomes that are likely to result from adaptation to union-mediated cooperation. It first evaluates the prevalence of a particular type of social preferences, i.e. for reciprocity in the employment relationship. Differences between unionised and non-unionised workers are examined using a unique database with rich information on low-skilled workers from four European countries. The evidence links the loyalty-exit-voice conjecture to differences in preferences for employer-employee reciprocity by union and non-union workers. The empirical investigation suggests that these differences are enforced by union mediation. The evidence suggests union workers exhibit a significantly higher preference for reciprocal arrangements in an employment relationship that is based on employer-employee loyalty. In this paper the employer-employee arrangement is that higher effort is exchanged for a more stable employment relationship and job security provisions. The results are robust when controlling for unobserved heterogeneity, endogenous union membership and age, tenure and experience effects.

The results also suggest a higher likelihood of negative reciprocity expressions by unionised workers compared to their non unionised counterparts. Unionised workers who recently experience unemployment spells are less likely to consider loyalty as important compared to established union members with uninterrupted employment. Furthermore, the results show a "loyalty filtering" role of the labour union. In small firms where the communication between the employer and workers is easy to occur without any third part mediation, the prevalence of a loyalty preference is equally likely to arise among union or non union workers. Finally, the loyalty observation is compatible with the exit and voice functions that have been extensively examined in the literature. Union workers express greater dissatisfaction with most facets of their current job. This lower job satisfaction can not be explained by high tenure, compensating differentials, or reverse causality of union membership. However, unionised workers are less likely to intend to quit their jobs, consistent with their aforementioned loyalty observation. The impact of job satisfaction on job quit intension is consistently with the exit-voice explanation of the lower job satisfaction of union workers.

Overall, the evidence indicates that unionised workers are more likely to value reciprocal loyalty more highly as a desirable job attribute. Their appreciation of this attribute is also more likely to be affected

by a shock such as recent unemployment experience. The evidence highlights cognitive dissonance and conformist transmission as the key candidate explanations of this persistent pattern. Reciprocity is a key mechanism for the enforcement of social norms and the enhancement of collective action in environments where the relations and obligations are not governed by explicit agreements. Economic institutions can induce specific behaviours and often acquired preferences can be internalized and become constraints on behaviour.

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Figure 1
Typical Vignette

Imagine that, for some reason, you had to stop with your current job and had to look for a new one. Imagine that after a short time you get several offers. We will list them on the following screen. These listed job offers do not differ from your current job except for some points we specifically mention.

Can you please evaluate these offers on a scale from 0 to 10, where 0 means the worst possible and 10 the best possible offer? And indicate if they are acceptable?"

Wage:	20 % more than now per hour
Type of contract:	Permanent with risk of losing the job with no severance pay
Working hours:	20 hours a week
Working times:	Rotating shift system
Training opportunities:	The employer will offer you a 10-workday training program in the course of the year
Work organization:	The job involves working in a varying team
Work conditions:	No one controls your work
Work speed:	The job is fairly demanding, which means that sometimes you may have to work at high speed
Retirement:	You can retire at age 55
Behavioral norms:	Same working conditions as in other firms. No loyalty from both sides. Shirking and low performance is possible

- How would you rate this offer? …… *Please, evaluate this offer on a scale from 0 to 10, where 0 means the worst possible and 10 the best possible job*
- Would this job offer be acceptable to you?..... *Yes/No*

Table 1
The Sample

	EPICURUS DATA			OFFICIAL STATISTICS[a]
	Sample Size	Union Workers	Non-Union Workers	% Union Members
France	1,008	12.6% (127)	87.4% (881)	8.0%
Greece	800	22.9% (183)	77.1% (617)	20.0%
Netherlands	1,007	28.4% (286)	71.6% (711)	25.0%
United Kingdom	1,002	19.4% (194)	82.6% (808)	29.0%
Pooled Sample	3,817	800	3,017	21.0%

[a] Source: European Commission, 2006, p.25.

Table 2
Selected Summary Statistics for the Pooled Sample

	UW	NUW		UW	NUW
Individual Characteristics:			**Occupation:**		
Male	64.0%***	45.0%	Managers	2.0%	3.2%*
Age	42.21***	36.36	Professional	2.6%	2.0%
Experience	24.18***	18.30	Technical & Assoc. Prof.	12.5%*	10.3%
Tenure	14.22***	8.04	Clerical & Secretarial	21.6%	26.1%**
- 1-2 years	8.8%	25.7%***	Craft & Related Trades	4.5%*	3.1%
- 3-5 years	17.3%	28.1%***	Personal & Protective Service	5.0%	4.1%
- 5-10 years	19.0%	20.2%	Labouring in mining, construction, manufacturing & transport	5.6%	4.6%
- More than 10 years	55.0%***	26.0%	Sales and Services	8.3%	17.8%***
Permanent contract	90.4%***	83.3%	Plant & Machine Operators and Assemblers	7.1%***	2.7%
Training in last year	42.8%***	35.2%	Armed Forces	2.9%*	1.9%
Net Monthly Wage	1,751***	1,547	Other Occupations	27.9%**	24.2%
S.D. (Net Monthly Wage)	(851)	(1,516)	**Industry:**		
Weekly Hours of Work	35.8***	34.8	Mining & Quarrying	0.0%	0.1%
S.D. (Hours)	(7.7)	(9.2)	Utilities	3.0%***	1.0%
			Manufacturing	8.6%*	6.8%
Sector:			Construction	6.1%	5.0%
Private	41.3%	65.7%***	Trade & Repairs	6.4%	15.8%***
Non-Profit	9.5%	8.0%	Hotels & Restaurants	2.0%	4.6%***
Civil Service	31.1%***	14.4%	Transport, Storage & Communication	10.4%***	6.8%
Public Sector	18.1%***	11.9%	Financial Intermediation	3.1%	4.6%*
			Real Estate & Business	0.6%	1.7%**
Firm Size:			Other Services	10.8%	11.4%
- 1-10 employees	10.0%	24.7%***	Public Administration & Defence	15.4%***	7.4%
- 10-24 employees	9.8%	15.4%***	Education	3.9%	4.0%
- 25-99 employees	21.6%	20.7%	Health and Social Work	11.6%*	9.5%
- 100-499 employees	28.9%***	18.3%	Community, Social and Personal Service	5.3%	4.0%
- More than 500 employees	29.8%***	21.0%	Private Households	0.0%	1.0%***
			Extra-Territorial Org.	0.4%	0.8%
			Other Activities	12.5%	15.6%**

Notes: $p<0.10$, ** $p<0.05$, *** $p<0.01$: From a t-test of mean differences between union and non-union workers.

Table 3
Sample Averages and Mean Differences between Union and Non-Union Workers

	UW	NUW		UW	NUW
Satisfaction with:			*Finds job to be:*		
Job Overall	6.73	6.79***	Tiring	70.6%***	63.0%
Promotion Prospects	4.11	4.29	Of low environ. quality	56.5%***	45.6%
Total Pay	5.14**	5.06	Dangerous	47.0%***	32.5%
Relations with Boss	6.60	6.92**	Physically demanding	34.0%	28.8%
Job Security	7.00**	6.85	Incidence of injury	17.5%***	12.2%
Use of Initiative	6.47	6.80	Incidence of illness	26.8%***	19.9%
The Work Itself	6.83	7.04	No. of Injuries (≠0)	1.88	1.80
Hours of Work	6.84***	6.79	No. of Illnesses (≠0)	2.94	2.64
Times of Work	6.66	6.92	Other Characteristics:		
Employer's Behaviour	5.78	6.47***	Unemployment in last year	5.3%	12.3%***
Work Load	5.78	6.21*	Weeks Unemployed $_{t-1}$ ((≠0))	13.7	17.9*
Work Tension	5.33	5.81**	Propensity to Quit	23.3%	37.6***
Level of Job Stress	5.10	5.61*	Vignette Evaluation	3.81	4.06***
Physical Risk	5.88	6.64***	Vignette Acceptability	28.5%	30.9%***

Notes:
* p<0.10, ** p<0.05, *** p<0.01: From a t-test of mean differences between union and non-union workers.

Table 4
Vignette Evaluation
Conjoint Analysis Selected Coefficients* and Trade-Off Ratios

Vignette Evaluation	(A) COLS with Fixed Effects			(B) COLS with Random Effects & Individual Characteristics			(C) Endogenous Switching Heckman ML		
	UW	***NUW***	***Wald χ^2 test***	***UW***	***NUW***	***Wald χ^2 test***	***UW***	***NUW***	***Wald χ^2 test***
v(WAGE)	1.005***	1.071***	1.73*	1.019***	1.091***	0.10	1.014***	1.095***	1.75**
	[0.044]	[0.024]		[0.046]	[0.025]		[0.054]	[0.029]	
v(LOYALTY)	0.174***	0.122***	2.16**	0.184***	0.126***	2.56***	0.186***	0.124***	2.72***
	[0.031]	[0.017]		[0.032]	[0.017]		[0.033]	[0.018]	
Loyalty/Wage Ratio	0.173***	0.114***	2.59***	0.181***	0.115***	3.24***	0.183***	0.113***	3.25***
	[0.033]	[0.016]		[0.033]	[0.016]		[0.035]	[0.017]	
# Observations	3,923	14,793		3,522	13,109		3,522	13,265	
# Individuals	794	2,992		712	2,650		712	2,653	

Notes:
* p<0.10, ** p<0.05, *** p<0.01. Analytical results from full specifications are provided in *Tables B1* and *B2* in Appendix B. Loyalty/Wage Ratio provides a point estimate and standard error from non-combination of the loyalty and wage attribute estimates is equal to 1. Finally, the Wald χ^2 test is of the form $\frac{(\gamma_1^U - \gamma_1^{NU})^2}{(S.E._{\gamma_1^U})^2 + (S.E._{\gamma_1^{NU}})^2}$.

Table 5
Conjoint Analysis Interaction Effects
Vignette Evaluation; COLS with Random Effects

Interaction with:	**(A)** ***Log(Tenure)***		**(B)** ***Log(Age)***		**(C)** ***Log(Experience)***	
	UW	NUW	UW	NUW	UW	NUW
v(WAGE)	1.019***	1.089***	1.019***	1.090***	1.020***	1.091***
	[0.046]	[0.025]	[0.046]	[0.025]	[0.046]	[0.025]
v(LOYALTY)	0.180**	0.155***	0.226	0.108	0.292**	0.087*
	[0.072]	[0.028]	[0.370]	[0.167]	[0.135]	[0.050]
LTENURE	-0.024	-0.013	-	-	-	-
	[0.031]	[0.015]				
LTENURE*v(LOYALTY)	0.002	-0.018	-	-	-	-
	[0.028]	[0.014]				
LNAGE	-	-	-0.164	-0.208***	-	-
			[0.112]	[0.051]		
LNAGE*v(LOYALTY)	-	-	-0.011	0.005	-	-
			[0.099]	[0.047]		
LEXPERIENCE	-	-	-	-	-0.060	-0.090***
					[0.048]	[0.019]
LEXPERIENCE*v(LOYALTY)	-	-	-	-	-0.035	0.015
					[0.043]	[0.018]
# Observations	3,522	13,129	3,522	13,129	3,522	13,109
# Individuals	712	2,654	712	2,654	712	2,650

Interaction with:	**(D)** ***Unemployment experience in last year***		**(E)** ***Log(Weeks Unemployed) in last year***		**(F)** ***Employment in a small firm***	
	UW	***NUW***	***UW***	***NUW***	***UW***	***NUW***
v(WAGE)	1.019***	1.090***	1.019***	1.090***	1.021***	1.091***
	[0.046]	[0.025]	[0.046]	[0.025]	[0.046]	[0.025]
v(LOYALTY)	0.195***	0.122***	0.195***	0.118***	0.174***	0.111***
	[0.033]	[0.018]	[0.033]	[0.018]	[0.033]	[0.019]
UNEMPLOYMENT	0.108	0.046	-	-	-	-
	[0.121]	[0.041]				
UNEMPLOYMENT*v(LOYALTY)	-0.196*	0.031	-	-	-	-
	[0.113]	[0.042]				
LWEEKSUNEMP	-	-	0.041	-0.006	-	-
			[0.053]	[0.016]		
LWEEKSUNEMP*v(OYALTY)	-	-	-0.100**	0.028*	-	-
			[0.049]	[0.016]		
FIRM1_10	-	-	-	-	-0.036	-0.053*
					[0.089]	[0.032]
FIRM1_10*v(LOYALTY)	-	-	-	-	0.091	0.060*
					[0.086]	[0.032]
# Observations	3,522	13,129	3,502	13,001	3,522	13,109
# Individuals	712	2,654	708	2,627	712	2,650

Notes:
* p<0.10, ** p<0.05, *** p<0.01. Coefficients and Standard errors are presented. The rest of the specification is similar to that presented in Table B1 in the appendix.

Table 6
The Voice Function: Job Satisfaction

Dependent variable: Overall Job Satisfaction; COLS; EPICURUS Data (2004)

	(1) *Baseline*	*(2)* *High-Tenure*	*(3)* *Compensating*	*(4)* *Differentials*
LMWAGE	0.076***	0.076***	0.072**	0.059**
	[0.029]	[0.029]	[0.029]	[0.028]
LHOURS	-0.056	-0.056	-0.042	-0.030
	[0.051]	[0.051]	[0.051]	[0.049]
MALE	-0.062**	-0.062**	-0.067**	-0.047*
	[0.029]	[0.029]	[0.029]	[0.028]
MARRIED	0.050*	0.050*	0.043	0.052*
	[0.029]	[0.029]	[0.029]	[0.027]
LCHILDLT16	0.031	0.031	0.034	0.013
	[0.027]	[0.027]	[0.026]	[0.025]
LEXPERIENCE	0.066***	0.066***	0.064***	0.057***
	[0.021]	[0.021]	[0.021]	[0.020]
LTENURE	-0.057***	-0.057***	-0.058***	-0.055***
	[0.016]	[0.017]	[0.016]	[0.015]
TRUNION	-0.092***	-0.102	-0.070**	-0.065**
	[0.032]	[0.076]	[0.032]	[0.031]
TRUNIONxLTENURE	-	0.004	-	-
		[0.031]		
LINJURED	-	-	-0.135***	-
			[0.039]	
LSICK	-	-	-0.151***	-
			[0.026]	
MACHINE	-	-	-	-0.050**
				[0.025]
INTENSITY	-	-	-	-0.742***
				[0.063]
IDEAS	-	-	-	0.331***
				[0.024]
TRAINING	0.059	0.059	0.051	0.072**
	[0.037]	[0.037]	[0.037]	[0.036]
PERMANENT	0.130***	0.130***	0.126***	0.095***
	[0.027]	[0.027]	[0.027]	[0.026]
FRANCE	0.117***	0.117***	0.121***	0.062*
	[0.038]	[0.038]	[0.037]	[0.036]
GREECE	0.241***	0.241***	0.212***	0.327***
	[0.044]	[0.044]	[0.044]	[0.044]
NETHERLANDS	0.290***	0.290***	0.276***	0.249***
	[0.039]	[0.039]	[0.038]	[0.037]
CONSTANT	-0.042	-0.043	0.006	0.188
	[0.211]	[0.211]	[0.209]	[0.202]
No. of Observations	3,379	3,379	3,379	3,360
R^2	0.053	0.053	0.070	0.147
F-statistic	5.66***	5.49***	7.19***	15.93***

Notes:
* p<0.10, ** p<0.05, *** p<0.01; Robust standard errors. Specifications also include dummy variables as controls for: EDUCATION [4], FIRMSIZE [5], SECTOR [4], and OCCUPATION [11].

Table 7
Propensity Score Estimates of Membership/Satisfaction Differentials

	Nearest Neighbour Matching		Kernel-based Matching	
	No Common Support	Common Support	No Common Support	Common Support
ATT	-0.101	-0.102	-0.077	-0.078
[S.E.]	[0.045]	[0.045]	[0.029]	[0.030]
|t|	2.24	2.27	2.68	2.62
# Treated	800	717	800	717
# Control	834	487	3,017	2,529

Notes:
Bootstrapped standard errors based on 100 replications are displayed for kernel-based matching.
The probit estimator used to generate the propensity scores conditions on X's that, we argue, are exogenous with respect to membership and are liable to affect both membership propensities and job satisfaction. These are: LNMWAGE, LHOURS, MALE, EDUCATION [4], MARRIED, LCHILDLT16, LEXPERIENCE, LTENURE, TRAINING, CONTRACT [6], SECTOR [4]; FIRMSIZE [4], OCCUPATION [10], INDUSTRY [17], UNEMPLOYMENT, COUNTRY [4]. The results from the probit equation are available by the authors upon request.

Table 8
The Exit Function: Quitting Intentions

Dependent variable: Propensity to Quit, Logit, EPICURUS Data (2004)

	Pooled	***UW***	***NUW***
	Coef. [SE]	Coef. [SE]	Coef. [SE]
	M.Eff.	*M.Eff.*	*M.Eff.*
JOBSATISFACTION	-0.203 [0.022]	-0.174 [0.054]	-0.202 [0.022]
	*-0.044****	*-0.024****	*-0.047****
TRUNION	-0.657 [0.348]	-	-
	*-0.133***		
TRUNIONxSATISFACTION	0.030 [0.051]	-	-
	0.007		
LMWAGE	0.152 [0.096]	0.476 [0.294]	0.079 [0.103]
	0.033	*0.065*	*0.018*
LHOURS	-0.660 [0.165]	-0.895 [0.545]	-0.630 [0.174]
	*-0.144****	*-0.122**	*-0.146****
LSECEDUC	0.026 [0.172]	-0.350 [0.438]	0.198 [0.194]
	0.006	*-0.043*	*0.047*
HSECEDUC	0.242 [0.151]	-1.157 [0.360]	0.542 [0.174]
	0.053	*-0.140****	*0.127****
PSECEDUC	0.138 [0.147]	-0.522 [0.320]	0.317 [0.171]
	0.030	*-0.068**	*0.074**
MALE	0.310 [0.095]	0.536 [0.270]	0.281 [0.104]
	*0.068****	*0.070***	*0.065****
MARRIED	-0.330 [0.095]	-0.498 [0.269]	-0.333 [0.103]
	*-0.072****	*-0.070**	*-0.077****
LCHILDLT16	0.309 [0.088]	0.923 [0.239]	0.219 [0.097]
	*0.067****	*0.126****	*0.051***
LEXPERIENCE	-0.429 [0.069]	-0.427 [0.216]	-0.412 [0.073]
	*-0.094****	*-0.058***	*-0.095****
LTENURE	-0.319 [0.053]	-0.861 [0.152]	-0.239 [0.058]
	*-0.070****	*-0.117****	*-0.055****
PERMANENT	0.784 [0.128]	1.857 [0.491]	0.701 [0.135]
	*0.152****	*0.152****	*0.149****
TRAINING	0.120 [0.088]	0.222 [0.232]	0.108 [0.097]
	0.026	*0.031*	*0.025*
FRANCE	-0.751 [0.123]	-1.078 [0.370]	-0.714 [0.132]
	*-0.152****	*-0.115****	*-0.157****
GREECE	-0.967 [0.151]	-1.203 [0.405]	-0.977 [0.166]
	*-0.186****	*-0.131****	*-0.202****
NETHERLANDS	0.230 [0.126]	-0.341 [0.314]	0.392 [0.141]
	*0.051**	*-0.045*	*0.093****
CONSTANT	3.319 [0.694]	2.287 [2.127]	3.408 [0.744]
No. of Observations	3,379	717	2,662
Pseudo R^2	0.142	0.230	0.129
Log-Likelihood	-1,880.4	-297.9	-1,545.0
LR χ^2	623.7***	177.7***	458.3***

Notes: * p<0.10, ** p<0.05, *** p<0.01
Marginal Effects for discrete change of dummy variable from 0 to 1, evaluated at the mean of continuous variables. Robust standard errors.

Appendix A: Variable Definitions and Summary Statistics

Table A1
Variable Definitions and Key Summary Statistics

Variable	Definition	Mean	(S.D.)
TRUNION	Dummy variable (DV) equal to 1 if respondent is a member of a trade union, 0 if not	21.0%	(0.41)
FRANCE	DV=1 if respondent is an employed sample member in France, 0 if not	26.41%	(0.44)
GREECE	DV=1 if respondent is an employed sample member in Greece, 0 if not	20.96%	(0.41)
NETHERLANDS	DV=1 if respondent is an employed sample member in the Netherlands, 0 if not	26.38%	(0.44)
UNITEDKINGDOM	DV=1 if respondent is an employed sample member in the United Kingdom, 0 if not	26.25%	(0.44)
JOBSAT	All things considered, how satisfied or dissatisfied are you with your present main job, using a 0-10 scale?	6.78	(2.09)
JOBSAT_COLS	Job satisfaction measure, transformed into a cardinal variable	0.54	(0.72)
QUIT	DV=1 if respondent replies "I will quit myself" in the question "What would be your main reason to stop working with your current employer in your main job?"	34.6%	(0.48)
MNWAGE	Monthly Wage after taxes from main job, divided by the PPP conversion factor to official exchange rate ratio (World Development Indicators).	1590.0	(1404.7)
HOURS	How many hours are you formally obliged to work during a working week as part of your contract of employment in your main job?	35.00	(8.88)
NOPREDUC	DV=1 if highest education qualification is: "No Education", "Pre-Primary", or "Primary Education"	14.3%	(0.35)
LSECEDUC	DV=1 if highest education qualification obtained is: "Lower Secondary Education"	13.3%	(0.34)
HSECEDUC	DV=1 if highest education qualification obtained is: "Upper Secondary Education"	37.5%	(0.48)
PSECEDUC	DV=1 if highest education qualification obtained is: "Post Secondary Non-Technical Education"	34.9%	(0.48)
MARRIED	DV=1 if respondent is married, 0 if not.	50.1%	(0.50)
CHILDLT16	Number of children aged less than 16	0.66	(0.98)
MALE	DV=1 if respondent is male, 0 if female	48.8%	(0.50)
AGE	Age in years	37.59	(10.74)
EXPERIENCE	Number of years since getting the first job after leaving school/full-time education	19.53	(11.51)
TENURE	Number of years since stated working with current employer/firm	9.34	(8.73)
TENURE 1_2	DV=1 if respondent has been employed with current firm for less than 2 years	22.2%	(0.42)
TENURE 3_5	DV=1 if respondent has been employed with current firm between 2 and 5 years	25.8%	(0.44)
TENURE 5_10	DV=1 if respondent has been employed with current firm between 5 and 10 years	20.0%	(0.40)
TENURE _mt10	DV=1 if respondent has been employed with current firm for more than 10 years	32.1%	(0.47)
TRAINING	DV=1 if current employer has provided any training during the last 12 months	36.8%	(0.48)
PERMANENT	DV=1 if respondent has a permanent contract (with no fixed ending time) in main job	84.8%	(0.36)
CT_PNORISK	DV=1 if respondent has a permanent contract with no risk of loosing job	58.8%	(0.49)
CT _PRISK	DV=1 if respondent has a permanent contract with risk of loosing job, but compensated	17.5%	(0.38)
CT _PHIGHRISK	DV=1 if respondent has a permanent contract with risk of loosing job, not compensated	8.5%	(0.28)
CT_TTERM	DV=1 if respondent has a temporary contract with possibility of continuation to a permanent one	2.4%	(0.15)
CT_TTEMP	DV=1 if respondent has a temporary contract with possibility of continuation to temporary contract	4.1%	(0.20)
CT_TFIRED	DV=1 if respondent has a temporary contract with no possibility of continuation	1.8%	(0.13)
PRIVATE	DV=1 if respondent is: Employed by a private company	60.6%	(0.49)
NONPROFIT	DV=1 if respondent is: Employed by a non-profit institution	8.3%	(0.28)
CIVIL	DV=1 if respondent is: A civil servant	17.9%	(0.38)
PUBLIC	DV=1 if respondent is: Employed in a public company	13.2%	(0.34)
FIRM1_10	DV=1 if respondent is employed in a firm employing: Less than 10 employees	21.6%	(0.41)
FIRM 10_24	DV=1 if respondent is employed in a firm employing: 10-24 employees	14.2%	(0.35)
FIRM 25_99	DV=1 if respondent is employed in a firm employing: 25-99 employees	20.9%	(0.41)
FIRM 100_499	DV=1 if respondent is employed in a firm employing: 100-499 employees	20.5%	(0.40)
FIRM _mt500	DV=1 if respondent is employed in a firm employing: More than 500 employees	22.9%	(0.42)
MINEQUARRY	DV=1 if industry of is "Mining and quarrying"	0.1%	(0.02)
UTILITIES	DV=1 if industry is "Electricity, gas and water supply"	1.4%	(0.12)
MANUFACTURING	DV=1 if industry is "Manufacturing industries"	7.2%	(0.26)
CONSTRUCTION	DV=1 if industry is "Construction"	5.2%	(0.22)
TRADE	DV=1 if industry is "Wholesale and retail trade; repair of motor vehicles and other consumer goods"	13.9%	(0.35)
SERVICES	DV=1 if sector of activity is:"Hotels and restaurants"	4.1%	(0.20)
TRANSCOM	DV=1 if sector of activity is:"Transport, storage and communications"	7.5%	(0.26)
FINANCIAL	DV=1 if sector of activity is:"Financial intermediation"	4.3%	(0.20)
REALBUSINESS	DV=1 if sector of activity is:"Real estate, renting and business activities"	1.5%	(0.12)
OTHERSERV	DV=1 if sector of activity is:"Other services"	11.2%	(0.32)
PUBADMINDEF	DV=1 if sector of activity is:"Public administration and defence"	9.1%	(0.29)
EDUCATION	DV=1 if sector of activity is:"Education"	4.0%	(0.20)
HEALTHSOCIAL	DV=1 if sector of activity is:"Health and social work"	9.9%	(0.30)
SOCPERSONAL	DV=1 if sector of activity is:"Other community, social and personal service activities"	4.2%	(0.20)
PRIVATHH	DV=1 if sector of activity is:"Private households with employed persons"	0.8%	(0.09)
MULTINATIONAL	DV=1 if sector of activity is:"Extra-territorial organizations and bodies"	0.7%	(0.09)
OTHER	DV=1 if sector of activity is:"Other activities"	14.9%	(0.36)
MANAGER	DV=1 if occupation is: "Managers in private and public sector (e.g. chief executives)"	2.9%	(0.17)
PROFESSIONAL	DV=1 if occupation is: "Professional occupations (e.g. architects, teaching professionals and doctors)"	2.1%	(0.14)
TECHASSOC	DV=1 if occupation is: "Technical occupations & associate professional (e.g. ship and aircraft controllers, nursing professionals)"	10.8%	(0.31)
CLERICAL	DV=1 if occupation is: "Clerical & secretarial occupations (e.g. library clerks, cashiers and tellers)"	25.1%	(0.43)
CRAFT	DV=1 if occupation is: "Craft and related trades workers (e.g. painters, construction workers, and printing	3.4%	(0.18)

	workers)"		
PERSPROTECT	DV=1 if occupation is: "Personal & protective service occ. (e.g. travel attendants, personal care)"	4.3%	(0.20)
LABOURINGMCMT	DV=1 if occupation is: "Labouring in mining, construction, manufacturing and transport (e.g. freight handlers)"	4.9%	(0.21)
SALESERVIC	DV=1 if occupation is: "Sales and services occupations (sales and services, building caretakers, window cleaners, messengers, porters, doorkeepers and garbage collectors)"	15.8%	(0.37)
PLANTMACHINE	DV=1 if occupation is: "Plant and machine operators and assemblers (e.g. mining, mineral and metal, glass, wood, chemical plant operators and machine operators, assemblers, drivers and mobile plant operators, motor and ship-deck crew)"	3.6%	(0.19)
ARMED	DV=1 if occupation is: "Armed forces"	2.1%	(0.14)
OTHER	DV=1 if occupation is: "Other occupations"	25.0%	(0.43)
MACHINE	DV=1 if a machine or assembly line is "very important" or "important" in the effort respondent puts in his/her job	20.1%	(0.40)
INTENSITY_INDEX	Index created as an average of the intensity of the following factors making one's job hard and initially valued on a scale from 1 to 5: (1) "High Speed or High Rhythm"; (2) "Tight Deadlines"; (3) "Relationship with the Boss or Supervisor"; (4) "Colleagues or co-workers".	53.2%	(0.20)
IDEAS	DV=1 if respondent replies he/she can put own ideas into practice into work	50.7%	(0.50)
PUNEMPLOYED	DV=1 if respondent spent any weeks unemployed during last year	10.79%	(0.31)
LPUNEMPLOYED	Log of number of weeks in unemployment during last year	0.25	(0.81)
WK_SAME	DV=1 if working time in main job is: "The same every day"	54.1%	(0.50)
WK_SHIFTS	DV=1 if working time in main job is: "Changing with rotating shifts"	14.8%	(0.36)
WK_EMPLOYEE	DV=1 if working time in main job is: "Variable day to day, chosen by the employer"	10.8%	(0.31)
WK_BOTH	DV=1 if working time in main job is: "Variable day to day, chosen by the employee"	11.7%	(0.32)
WK_EMPLOYER	DV=1 if working time in main job is: "Variable day to day, chosen by both employer and employee"	8.2%	(0.27)
ORG_ALONE	DV=1 if work organization involves: "Working Always with the Same People"	17.8%	(0.38)
ORG_VARYING	DV=1 if work organization involves: "Working with Teams, that are Changing"	16.3%	(0.37)
ORG_TEAM	DV=1 if work organization involves: "Woking mostly on my own"	65.8%	(0.47)
FIXED_ROUTINE	DV=1 if job described as: "Having a Completely Fixed Routine"	30.7%	(0.46)
TASK_CHOICE	DV=1 if job described as: "Involving a Variety of Duties, on which the respondent is responsible and can choose when to do what"	60.9%	(0.49)
OWN_CONTROL	DV=1 if job described as: "No One Controls my Work"	6.7%	(0.25)
HIGH_SPEED	DV=1 if "High Speed" is valued by 4 or 5, on a scale from 1 to 5, among the factors making job hard	36.1%	(0.48)
MEDIUM_SPEED	DV=1 if "High Speed" is valued by 2 or 3, on the same scale	37.8%	(0.48)
LOW_SPEED	DV=1 if "High Speed" is valued by 1, on the same scale	26.2%	(0.44)
DEAD_OFTEN	DV=1 if "Tight Deadlines" is valued by 4 or 5, on the same scale	41.5%	(0.49)
DEAD_SOME	DV=1 if "High Speed" is valued by 2 or 3, on the same scale	36.3%	(0.48)
DEAD_NEVER	DV=1 if "High Speed" is valued by 1, on the same scale	22.2%	(0.42)
LFRETIRE	Logarithm of formal age of retirement in one's job	4.15	(0.06)
RETIRELT65	DV=1 if formal age of retirement in the job is less than 65	39.5%	(0.49)

Table A2
Vignette Attributes: Variable Names and Sample Averages

Type of contract (dummy variables)		
(v)CT_PNORISK	Permanent contract with no risk of being fired	0.19
(v)CT_PRISK	Permanent contract with risk of being fired & with economic compensation	0.12
(v)CT_PHIGHRISK	Permanent contract with risk of being fired & with no economic compensation	0.19
(v)CT_TPERM	One-year contract with high probability of continuation with a permanent contract	0.24
(v)CT_TTEMP	One-year contract with high probability of continuation with a temporary contract	0.15
(v)CT_TFIRED	One-year contract with no probability of continuation (Reference Group)	0.12
Ln(Working hours)		
(v)LHOURS	Logarithm of working hours (ranged from 20 to 50)	3.54
(v)LHOURSQ	Square of logarithm of working hours	12.64
Net wages per hour:		
(v)WAGE	(Expressed as a percentage of wage at the current job)	-0.01
Working schedules (dummy variables)		
(v)WK_FLEXIBLE	Flexible working hours	0.18
(v)WK_OFFICE	Office working hours (you can choose which days your work)	0.28
(v)WK_ROTATE	Rotating shifts (system)	0.32
(v)WK_EMPLOYER	Employer decides (Reference Group)	0.22
Training (dummy variables)		
(v)TRAIN_30-90	1 month training / 3 months training	0.29
(v)TRAIN_5-10	5 days training / 10 days training	0.45
(v)TRAIN_0-1	No training / 1 day training (Reference Group)	0.26
Work organization (dummy variables)		
(v)ORG_ALONE	Job not in teamwork	0.29
(v)ORG_VARYING	Job in varying teamwork	0.30
(v)ORG_TEAM	Job in fixed team (Reference Group)	0.41
Control over own work (dummy variables)		
(v)JB_FIXROUTINE	Job has a fixed routine	0.41
(v)JB_TASKCHOICE	Can choose order tasks: fixed job tasks, but you may decide when & how things are done	0.33
(v)JB_OWNCONTROL	No one controls your work (Reference Group)	0.26
Intensity due to high speed (dummy variables)		
(v)HIGHSPEED	Often high speed	0.28
(v)MEDIUMSPEED	Sometimes high speed	0.13
(v)LOWSPEED	Never working at high speed (Reference Group)	0.17
Intensity due to tight deadlines (dummy variables)		
(v)DEADOFTEN	Often tight deadlines	0.17
(v)DEADSOME	Sometimes tight deadlines	0.16
(v)DEADNEVER	Never working with tight deadlines (Reference Group)	0.09
Retirement & Labour disability (dummy variables)		
(v)RETIRE65	Have to stop before 65 (because the job is physically very demanding)	0.12
(v)RETIRE60	Early retirement 55 (firm has early retirement plans)	0.25
(v)RETIRE55	Early retirement 60 (firm has early retirement plans)	0.20
(v)RETIRENO	The firm has no early retirement plans (Reference Group)	0.43
Loyalty-no shirking(dummy variables)		
(v)LOYALTY	Loyalty from both sides; shirking & low performance impossible	0.56
(v)NOLOYALTY	The firm requires no loyalty; shirking & low performance is impossible	0.44

Notes:
Mean differences in attribute incidence are not statistically significant, with the only exception of (v)CT_PHIGHRISK. 18% of union workers received this attribute, versus 19% of non-union workers. A student's t-test for the difference between the two gives a value of -2.59.

Appendix B: Analytical Output

Table B1
Vignette Evaluation: Longitudinal Analysis

Vignette Evaluation	Panel (A) COLS with Fixed Effects				Panel (B) COLS with Random Effects and Individual Characteristics			
	Union		***Non-Union***		***Union***		***Non-Union***	
Vignette Attributes	Coef.	[S.E.]	Coef.	[S.E.]	Coef.	[S.E.]	Coef.	[S.E.]
(v)CT_PNORISK	0.482***	[0.062]	0.411***	[0.033]	0.499***	[0.063]	0.400***	[0.033]
(v)CT_PRISK	0.329***	[0.067]	0.237***	[0.036]	0.325***	[0.068]	0.212***	[0.036]
(v)CT_PHIGHRISK	0.144**	[0.069]	0.145***	[0.037]	0.123*	[0.068]	0.113***	[0.036]
(v)CT_TPERM	0.398***	[0.071]	0.296***	[0.038]	0.387***	[0.068]	0.290***	[0.036]
(v)CT_TTEMP	0.223***	[0.059]	0.289***	[0.032]	0.200***	[0.057]	0.278***	[0.031]
(v)LHOURS	8.499***	[1.464]	7.288***	[0.807]	8.028***	[1.364]	7.113***	[0.735]
(v)LHOURSQ	-1.257***	[0.210]	-1.097***	[0.116]	-1.192***	[0.196]	-1.075***	[0.106]
(v)WAGE	1.005***	[0.044]	1.071***	[0.024]	1.019***	[0.046]	1.091***	[0.025]
(v)WK_FLEXIBLE	0.118**	[0.057]	0.109***	[0.030]	0.155***	[0.054]	0.166***	[0.028]
(v)WK_OFFICE	0.041	[0.049]	0.090***	[0.026]	0.042	[0.047]	0.139***	[0.025]
(v)WK_ROTATE	-0.101**	[0.046]	-0.089***	[0.024]	-0.092**	[0.046]	-0.037	[0.024]
(v)TRAIN_30-90	0.051	[0.043]	0.122***	[0.023]	0.011	[0.041]	0.086***	[0.022]
(v)TRAIN_5-10	0.129***	[0.039]	0.083***	[0.021]	0.082**	[0.037]	0.064***	[0.020]
(v)ORG_ALONE	0.132***	[0.036]	0.110***	[0.019]	0.100***	[0.036]	0.113***	[0.019]
(v)ORG_VARYING	0.050	[0.036]	0.028	[0.019]	0.069*	[0.036]	0.027	[0.019]
(v)JB_FIXROUTINE	-0.097**	[0.040]	-0.092***	[0.021]	-0.105***	[0.038]	-0.128***	[0.020]
(v)JB_TASKCHOICE	-0.073*	[0.044]	-0.008	[0.023]	-0.085**	[0.042]	-0.043*	[0.022]
(v)HIGHSPEED	-0.189***	[0.042]	-0.142***	[0.022]	-0.182***	[0.041]	-0.113***	[0.021]
(v)MEDIUMSPEED	0.097*	[0.051]	-0.033	[0.026]	0.085*	[0.051]	-0.005	[0.027]
(v)DEADOFTEN	-0.231***	[0.043]	-0.121***	[0.023]	-0.246***	[0.044]	-0.122***	[0.023]
(v)DEADSOME	-0.017	[0.044]	-0.023	[0.024]	-0.017	[0.045]	-0.004	[0.024]
(v)RETIRE65	0.116*	[0.061]	0.137***	[0.033]	0.128**	[0.060]	0.140***	[0.032]
(v)RETIRE60	0.242***	[0.048]	0.236***	[0.025]	0.245***	[0.048]	0.241***	[0.025]
(v)RETIRE55	0.121**	[0.047]	0.158***	[0.025]	0.112**	[0.048]	0.157***	[0.025]
(v)LOYALTY	0.174***	[0.031]	0.122***	[0.017]	0.184***	[0.032]	0.126***	[0.017]
Individual Characteristics								
LMWAGE	-		-		0.008	[0.057]	0.005	[0.025]
LHOURS	-		-		0.426***	[0.111]	0.096**	[0.042]
PERMANENT_NORISK	-		-		-0.111	[0.102]	-0.080**	[0.038]
PERMANENT_RISK_COMPENS.	-		-		-0.013	[0.109]	-0.096**	[0.045]
PERMANENT_RISK_NOCOMPENS.	-		-		-0.081	[0.124]	-0.056	[0.051]
TEMPORARY_TO PERMANENT	-		-		0.054	[0.185]	-0.055	[0.077]
TEMPORARY_TO TEMPORARY	-		-		0.235	[0.157]	0.025	[0.060]
WORK_SAMETIMES	-		-		-0.128	[0.079]	-0.036	[0.041]
WORK_ROTSHIFTS	-		-		-0.07	[0.083]	0.008	[0.048]
WORK_VARIABLE_EMPLOYEE	-		-		-0.145	[0.103]	0.043	[0.050]
WORK_VARIABLE_BOTH	-		-		-0.159	[0.098]	-0.025	[0.049]
TRAINING	-		-		0.008	[0.046]	-0.039*	[0.023]
SOLO_WORK	-		-		-0.011	[0.060]	-0.003	[0.029]
VARYING_TEAMS	-		-		0.053	[0.054]	-0.045	[0.031]
FIXED_ROUTINE	-		-		-0.054	[0.083]	0.06	[0.042]
TASK_CHOICE	-		-		0.031	[0.079]	0.049	[0.038]
HIGH_SPEED	-		-		-0.022	[0.068]	-0.034	[0.034]
MEDIUM_SPPED	-		-		0.049	[0.062]	0.002	[0.031]
DEADLINES_OFTEN	-		-		0.113*	[0.067]	0.102***	[0.034]
DEADLINES_SOMETIMES	-		-		0.133**	[0.064]	0.049	[0.033]
LFRETIRE	-		-		1.031*	[0.534]	0.060	[0.354]
RETIRE<65	-		-		0.022	[0.064]	0.026	[0.041]
MALE	-		-		-0.019	[0.051]	0.027	[0.025]
EDUCPRIM	-		-		-0.023	[0.081]	-0.072*	[0.043]
EDUCSEC	-		-		-0.028	[0.066]	-0.049	[0.039]
EDUCVOC	-		-		-0.035	[0.062]	-0.063	[0.039]
MARRIED	-		-		0.063	[0.051]	0.031	[0.024]
LCHILDLT16	-		-		-0.052	[0.046]	-0.02	[0.023]

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LEXPERIENCE	-		-		-0.082*	[0.046]	-0.082***	[0.018]
LTENURE	-		-		0.001	[0.030]	0.001	[0.013]
NONPROFIT	-		-		-0.066	[0.079]	-0.080*	[0.043]
CIVILSERV	-		-		-0.047	[0.057]	-0.042	[0.035]
PUBLIC	-		-		-0.087	[0.061]	0.059*	[0.034]
FIRM10_24	-		-		0.084	[0.093]	0.044	[0.034]
FIRM25_99	-		-		-0.068	[0.083]	0.015	[0.032]
FIRM100_499	-		-		-0.002	[0.082]	0.008	[0.035]
FIRM_MT500	-		-		-0.072	[0.084]	0.001	[0.036]
MANAGERS	-		-		-0.101	[0.154]	0.077	[0.068]
PROFESSIONAL	-		-		0.194	[0.142]	0.059	[0.079]
CLERICAL	-		-		0.140*	[0.076]	-0.048	[0.040]
CRAFT	-		-		0.075	[0.112]	0.151**	[0.068]
PERSONAL	-		-		-0.008	[0.116]	0.155**	[0.064]
LABOURING	-		-		0.066	[0.109]	0.028	[0.059]
SALESERVICE	-		-		0.168*	[0.093]	0.025	[0.042]
MACHINE	-		-		0.055	[0.098]	0.098	[0.072]
ARMY	-		-		0.022	[0.155]	-0.03	[0.093]
OTHEROCC	-		-		0.064	[0.072]	-0.002	[0.040]
FRANCE	-		-		-0.083	[0.078]	-0.105***	[0.035]
GREECE	-		-		-0.023	[0.081]	-0.038	[0.042]
NETHERLANDS	-		-		0.031	[0.065]	0.079**	[0.034]
CONSTANT	-15.096***	[2.558]	-12.722***	[1.411]	-19.753***	[3.249]	-12.760***	[1.977]
# Observations [# Individuals]	3,923	[794]	14,793	[2,992]	3,522	[712]	13,109	[2,650]
R^2 (Within, Between, Overall)	0.295; 0.070; 0.211		0.277; 0.074; 0.208		0.303; 0.209; 0.264		0.282; 0.138; 0.231	
E[(α,X), θ]	-0.017		-0.001		0.000		0.000	
σ_0, σ_ξ	0.560	0.720	0.546	0.749	0.413	0.719	0.401	0.745
ϱ	0.377		0.347		0.248		0.224	
Goodness of fit	F=51.86***		F=180.50***		χ^2=1,841.3***		χ^2=4,496.9***	
Breusch-Pagan LM $\chi^2_{(1)}$ test for R.E.					362.3***		1,262.3***	
Hausman $\chi^2_{(25)}$ test (F.E. vs. R.E.)	7.83		66.2***					

Notes:
* p<0.10, ** p<0.05, *** p<0.01

Table B2
Vignette Evaluation: Endogenous Switching Analysis

Source: EPICURUS Data (2004); Conjoint Analysis

Vignette Evaluation	***Union***		***Non-Union***		***Selection Equation***	
	Coef.	*[S.E.]*	*Coef.*	*[S.E.]*	*Coef.*	*[S.E.]*
Vignette Attributes						
(v)CT_PNORISK	0.475***	[0.068]	0.406***	[0.036]	0.009	[0.046]
(v)CT_PRISK	0.313***	[0.068]	0.210***	[0.039]	-0.04	[0.053]
(v)CT_PHIGHRISK	0.099	[0.073]	0.119***	[0.039]	-0.094	[0.062]
(v)CT_TPERM	0.363***	[0.075]	0.298***	[0.040]	0.011	[0.070]
(v)CT_TTEMP	0.194***	[0.059]	0.267***	[0.032]	0.009	[0.052]
(v)LHOURS	7.647***	[1.525]	7.317***	[0.835]	-2.578*	[1.451]
(v)LHOURSQ	-1.137***	[0.219]	-1.105***	[0.120]	0.376*	[0.209]
(v)WAGE	1.014***	[0.054]	1.095***	[0.029]	0.003	[0.028]
(v)WK_FLEXIBLE	0.171***	[0.059]	0.213***	[0.030]	0.079	[0.054]
(v)WK_OFFICE	0.050	[0.053]	0.173***	[0.028]	0.052	[0.046]
(v)WK_ROTATE	-0.072	[0.047]	-0.002	[0.025]	0.005	[0.036]
(v)TRAIN_30-90	-0.010	[0.044]	0.067***	[0.023]	-0.051	[0.040]
(v)TRAIN_5-10	0.053	[0.037]	0.051**	[0.020]	-0.030	[0.035]
(v)ORG_ALONE	0.067*	[0.037]	0.106***	[0.020]	-0.028	[0.029]
(v)ORG_VARYING	0.066*	[0.038]	0.027	[0.020]	-0.033	[0.030]
(v)JB_FIXROUTINE	-0.129***	[0.039]	-0.149***	[0.021]	0.001	[0.038]
(v)JB_TASKCHOICE	-0.099**	[0.042]	-0.061***	[0.023]	-0.022	[0.042]
(v)HIGHSPEED	-0.167***	[0.041]	-0.093***	[0.023]	0.031	[0.035]
(v)MEDIUMSPEED	0.086	[0.053]	0.008	[0.029]	-0.008	[0.040]
(v)DEADOFTEN	-0.230***	[0.043]	-0.115***	[0.024]	-0.003	[0.035]
(v)DEADSOME	0.004	[0.046]	0.023	[0.024]	-0.015	[0.033]
(v)RETIRE65	0.130**	[0.064]	0.123***	[0.035]	0.094*	[0.057]
(v)RETIRE60	0.265***	[0.052]	0.229***	[0.027]	-0.016	[0.040]
(v)RETIRE55	0.119**	[0.049]	0.138***	[0.027]	0.023	[0.039]
(v)LOYALTY	0.186***	[0.033]	0.124***	[0.018]	0.039*	[0.022]
Individual Characteristics						
LMWAGE	0.016	[0.050]	0.003	[0.028]	0.097	[0.064]
LHOURS	0.425***	[0.113]	0.093**	[0.040]	0.071	[0.117]
PERMANENT_NORISK	-0.109	[0.087]	-0.081**	[0.039]	0.069	[0.117]
PERMANENT_RISK_COMPENSATION	-0.004	[0.094]	-0.102**	[0.046]	0.240*	[0.131]
PERMANENT_RISK_NOCOMPENSATION	-0.076	[0.105]	-0.056	[0.050]	0.076	[0.145]
TEMPORARY_TO PERMANENT	0.084	[0.197]	-0.066	[0.079]	0.407*	[0.229]
TEMPORARY_TO TEMPORARY	0.259*	[0.151]	0.02	[0.061]	0.321*	[0.187]
WORK_SAMETIMES	-0.147*	[0.082]	-0.028	[0.048]	-0.342***	[0.108]
WORK_ROTSHIFTS	-0.07	[0.081]	0.008	[0.047]	-0.055	[0.119]
WORK_VARIABLE_EMPLOYEE	-0.174*	[0.105]	0.054	[0.061]	-0.505***	[0.134]
WORK_VARIABLE_BOTH	-0.181*	[0.097]	-0.018	[0.057]	-0.446***	[0.130]
TRAINING	0.019	[0.047]	-0.041*	[0.024]	0.133**	[0.061]
SOLO_WORK	-0.016	[0.059]	-0.002	[0.030]	-0.045	[0.078]
VARYING_TEAMS	0.048	[0.049]	-0.044	[0.032]	-0.09	[0.078]
FIXED_ROUTINE	-0.054	[0.085]	0.055	[0.046]	0.104	[0.108]
TASK_CHOICE	0.02	[0.080]	0.047	[0.042]	-0.096	[0.099]
HIGH_SPEED	-0.017	[0.071]	-0.035	[0.034]	0.036	[0.094]
MEDIUM_SPPED	0.049	[0.062]	0.002	[0.030]	-0.001	[0.085]
DEADLINES_OFTEN	0.104	[0.067]	0.104***	[0.038]	-0.104	[0.091]
DEADLINES_SOMETIMES	0.120*	[0.064]	0.050	[0.035]	-0.101	[0.088]
LFRETIRE	1.046**	[0.478]	0.050	[0.377]	0.032	[0.837]
RETIRE<65	0.035	[0.060]	0.019	[0.042]	0.186*	[0.099]
MALE	-0.006	[0.050]	0.02	[0.030]	0.238***	[0.067]
EDUCPRIM	-0.037	[0.087]	-0.065	[0.047]	-0.207*	[0.109]
EDUCSEC	-0.033	[0.067]	-0.046	[0.040]	-0.031	[0.093]
EDUCVOC	-0.041	[0.064]	-0.058	[0.039]	-0.033	[0.093]
MARRIED	0.065	[0.048]	0.032	[0.025]	-0.040	[0.065]
LCHILDLT16	-0.049	[0.043]	-0.021	[0.023]	0.042	[0.058]
LEXPERIENCE	-0.074	[0.049]	-0.086***	[0.021]	0.174***	[0.057]
LTENURE	0.021	[0.037]	-0.006	[0.023]	0.289***	[0.038]
NONPROFIT	-0.045	[0.079]	-0.087*	[0.045]	0.213*	[0.121]
CIVILSERV	-0.01	[0.069]	-0.062	[0.063]	0.524***	[0.103]

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PUBLIC	-0.066	[0.065]	0.052	[0.039]	0.282***	[0.084]
FIRM10_24	0.098	[0.085]	0.043	[0.033]	0.124	[0.108]
FIRM25_99	-0.041	[0.087]	0.009	[0.037]	0.353***	[0.099]
FIRM100_499	0.035	[0.089]	-0.005	[0.049]	0.540***	[0.102]
FIRM_MT500	-0.043	[0.091]	-0.006	[0.044]	0.433***	[0.107]
MANAGERS	-0.113	[0.113]	0.083	[0.083]	-0.291	[0.188]
PROFESSIONAL	0.194	[0.146]	0.057	[0.073]	0.069	[0.203]
CLERICAL	0.138*	[0.080]	-0.049	[0.043]	-0.041	[0.105]
CRAFT	0.102	[0.111]	0.135**	[0.068]	0.363**	[0.159]
PERSONAL	-0.005	[0.110]	0.154**	[0.063]	-0.008	[0.163]
LABOURING	0.099	[0.108]	0.018	[0.067]	0.292**	[0.148]
SALESERVICE	0.157*	[0.091]	0.027	[0.046]	-0.101	[0.122]
MACHINE	0.078	[0.101]	0.081	[0.073]	0.404***	[0.155]
ARMY	-0.008	[0.166]	-0.022	[0.111]	-0.526**	[0.216]
OTHEROCC	0.063	[0.073]	-0.003	[0.042]	0.019	[0.101]
UTILITIES	-		-		0.464**	[0.213]
MANUFACTURING	-		-		0.005	[0.131]
CONSTRUCTION	-		-		0.308**	[0.149]
TRADE	-		-		-0.203	[0.123]
HOTELS	-		-		0.23	[0.176]
TRANSCOM	-		-		0.334***	[0.118]
FINANCE	-		-		-0.082	[0.164]
BUSINESS	-		-		0.11	[0.277]
SERVICES	-		-		0.011	[0.115]
PBADMIN	-		-		0.138	[0.134]
EDUCATION	-		-		0.136	[0.163]
HEALTH	-		-		0.133	[0.128]
MUNICIPAL	-		-		0.132	[0.151]
MULTINATIONAL	-		-		-0.186	[0.399]
FRANCE	-0.116	[0.094]	-0.089*	[0.049]	-0.628***	[0.102]
GREECE	-0.021	[0.076]	-0.036	[0.042]	-0.016	[0.112]
NETHERLANDS	0.033	[0.060]	0.076**	[0.034]	0.096	[0.088]
Constant	-19.382***	[3.147]	-13.035***	[2.120]	1.05	[4.370]
ϱ	0.110	[0.142]	0.094	[0.241]		
σ	0.820	[0.017]	0.847	[0.010]		
λ	0.091	[0.117]	0.080	[0.205]		
# Observations [# Individuals]	16,787	[3,365]	16,679	[3,364]		
Wald $\chi^2_{(75)}$	1,220.5***		3,787.5***			
$LM_{(14)}$ test for omitted variables (COLS)	16.9 (p-value=0.258)		13.5 (p-value=0.485)			
Wald $F_{(14)}$ for joint sig. of excluded	1.06 (p-value=0.356)		0.93 (p-value=0.527)			
Wald $\chi^2_{(14)}$ test for joint sig. of restrictions					30.34 (p-value=0.007)	
Wald χ^2 test of independent equations	0.74		0.45			

Notes: * p<0.10, ** p<0.05, *** p<0.01.
The estimation method is maximum likelihood, with robust standard errors, clustered at the individual level.