Trade Unions and Unpaid Overtime in Britain

Michail Veliziotis

Department of Accounting, Economics and Finance
University of the West of England, Bristol, UK

Trade Unions and Unpaid Overtime in Britain

Michail Veliziotis*

Department of Accounting, Economics and Finance, University of the West of England, Bristol, UK

20 January 2013

Abstract

In this paper we use British Household Panel Survey data to examine the relationship between individual trade union status and unpaid overtime in Britain. The findings indicate that in the for-profit, non-caring sector of the economy, union covered employees supply fewer unpaid overtime hours than non-covered ones due to union protection and the weakening of economic incentives caused by union bargaining. On the other hand, in the non-profit, caring sector, union members offer more unpaid extra hours than covered non-members because of their specific pro-social motivations. Additional evidence is presented that confirms that union members are actually characterized by a specific pro-social ethos.

* Address for correspondence: Michail Veliziotis, Department of Accounting, Economics and Finance, University of the West of England, Bristol BS16 1QY, UK; e-mail: michail.veliziotis@uwe.ac.uk; phone: +441173282101.

1. Introduction

The 24th of February 2012 was declared by trade unions in Britain as the *Work Your Proper Hours Day*, "the day when the average person who does unpaid overtime finishes the unpaid days they do every year, and starts earning for themselves" (WorkSMART 2012; Trades Union Congress 2012). An annual campaign by British unions has been taking place for some years now with the aim to raise awareness among employees and the broad public of the incidence and extent of unpaid overtime and the possible harmful effects it can have on employees' overall welfare. These campaigns are, of course, consistent with the traditional interest of trade unions in working hours and their "fair remuneration", as well as their recent contribution to the overall political discourse in Britain concerning long working hours and "work-life balance".[1]

Unpaid overtime has increased in the UK during the last decades, though it seems that it has come to a halt lately. Campbell and Green (2002), using UK Labour Force Survey (LFS) data, report a rising proportion of employees working extra hours for no pay, from 12.8 percent in 1983 to 23.7 percent in 1998. Also using the LFS, we calculate that the incidence of unpaid overtime for fulltime employees has stabilized at over 20 percent since then, while the average usual weekly hours of unpaid overtime for those workers that do unpaid extra time has fluctuated around 6.5-7 hours since the '90s. The apparent increase in the incidence of unpaid work in the last decades is not only a feature of the UK labour market. Observers in Australia are also concerned with the extent of unpaid overtime and its relatively recent rise (Campbell 2005), while in Japan it has been linked to *karōshi* or "death by overwork", a legally recognized work-related cause of death in the country since the '80s (The Economist 2007).

The aim of this paper is to empirically examine the relationship between unionization and unpaid overtime in Britain, using individual-level data from the first 17 waves (1991-2007) of the British Household Panel Survey (BHPS). Our goal is to point to the specific channels through which the union effect on unpaid extra hours operates and to look for differential relationships that depend on the nature of the firm and the industry in which the employees work. The relationship between unionism and the extent of unpaid overtime working is a relatively empirically unexplored area in the literature of trade union effects on labour market outcomes.[2] Although some of the contributions to the literature of unpaid overtime provide evidence, the authors of these works are not directly interested in examining this specific relationship, something that means that a detailed examination of the issue is lacking. Bell and Hart (1999) use UK Labour Force Survey data to study the correlates of unpaid overtime, based on various theoretical hypotheses. They find a negative association between union membership and unpaid extra working hours. Gregg et al. (2011) view unpaid overtime as donated labour, driven by a pro-social motivation of employees working in the non-profit, "caring" sectors of the economy (education, health and social work). Using BHPS data, they find that employees in the non-profit, caring sector are more likely to offer unpaid overtime than comparable employees in the for-profit, caring sector. As regards the trade union effect, in their pooled ordinary least squares (OLS) model of unpaid overtime both the union coverage and membership coefficients are negative and statistically

---

[1] See Kodz et al. (2003) for a report on long working hours in the UK sponsored by the government and Bunting (2005) for a popularized account; see also Walsh (2010) for a more general consideration of the "work-life balance" issue.

[2] See Booth (1995) for an authoritative survey. For the relationship between unionization and *paid* overtime, see Trejo (1993) for the US and Kalwij and Gregory (2005) for Britain.

significant, while in their fixed effects model only the coverage coefficient remains so, though it is dropping in magnitude.

The fact that the relationship between unionism and unpaid overtime has been relatively under-researched seems quite odd, given the importance of the subject for a more complete understanding of the relationship between trade unions and workers' welfare and the availability of relevant microdata, at least for the developed economies of Western Europe, North America and Australasia. Also, trade unions themselves show interest in this issue and in working time aspects more generally, as the opening paragraph demonstrated for the British case. *All Work and No Pay* (Unison 2003) and *Something for Nothing* (Fear and Denniss 2009) are characteristic slogans/titles of union-related research on unpaid overtime in Britain and in Australia respectively. They are indicative of the interest that trade unions show in the impact of extra unpaid hours on the welfare of their members and employees in general.

Our paper, thus, contributes directly to this strand of the labour economics and industrial relations literature that examines the effects of British trade unions on various labour market outcomes, a traditional research area among academics in both disciplines. Moreover, the investigation of the relationship between union status and unpaid overtime can offer insights on different theoretical concepts and empirical questions. Such a theoretical and empirical issue is the one of the determinants of the union membership decision. The analysis that follows stresses important attitudinal aspects that can be validly thought to be behind the choice of individual employees to unionize and have thus far been relatively disregarded in the relevant literature.[3]

The structure of the remainder of this paper is as follows: the following section outlines our theoretical framework, while section 3 describes the testable predictions of our hypotheses, the econometric methods that are employed to estimate models of unpaid overtime and the distribution of unpaid overtime across various job characteristics. In section 4 we present the results and discuss our findings in detail, while we also briefly outline various checks of the robustness of our results. Finally, section 5 concludes.

2. Theory and Hypotheses

The incidence of unpaid overtime hours undertaken by employees in modern workplaces cannot easily be explained by reference to the simple labour-leisure choice model of economic theory. The fact that additional effort in the form of working time is undertaken without direct remuneration contradicts any simple textbook definition of the labour process, such as that given by Boeri and van Ours (2008): "In order to be in the labour market, there must be an exchange of a labour service for a wage" (*Ibid.*; 3). Why, then, do employees offer extra working hours if there is no direct payment for these?

First, explicit or implicit coercion from the part of employers can make the worker supply extra hours in fear of dismissal or other related retaliating behaviour. Second, workers may have career concerns and expectations that they think can be successfully advanced through exercising more effort in the form of unpaid extra hours. In this way, employees view unpaid work in the present

---

[3] See Schnabel (2003; 2012) for recent reviews of this literature. Charlwood (2002), Checchi et al. (2010) and Kirmanoğlu and Başlevent (2012) are examples of papers that focus on the relationship between attitudes and personal values and the individual decision to unionize.

as a form of investment for higher future rewards (Campbell and Green 2002; Anger 2005; Pannenberg 2005). This incentive is stronger in occupations or workplace settings where output or performance cannot be directly observed and measured. Employers in such cases can judge individual performance by reference to observable effort such as working hours and, then, make decisions about promotions or pay rises. The individual employee knows that and offers more, and even unpaid, hours in return for future rewards (van Echtelt et al. 2007; 42-43).[4]

Third, employees may not only be motivated by *extrinsic* rewards in their decision about offering extra unpaid hours. *Intrinsic* motivations may as well drive worker's behaviour (Serra et al. 2011). In this respect, unpaid overtime can be seen as a kind of pro-social behaviour arising as a result of a social service ethos in industries and workplace settings where such behaviours can be relevant, as is the case in education and healthcare (Gregg et al. 2011). According to Gregg et al. (2011), a not-for-profit character of the organization in which the employee works is also crucial for such behaviours to be present. This results from the mission-matching between pro-socially motivated individuals and non-profit organizations and/or the absence of expropriation of any donated labour from the part of employers in the non-profit sector.

Having outlined the above possible reasons for employees to undertake unpaid extra hours, we turn now to the question of interest: how can trade union organization and membership affect the incidence and amount of unpaid overtime? In theory, a plausible answer is that it depends on the reason unpaid work is observed and this is the main argument of the paper. The first two reasons above should be weakened under trade unionism. The managerial prerogative and arbitrariness within the workplace context is moderated under trade union presence, while career concerns are not as effective in inducing extra work as in the non-union sector, due to the standardization of pay and more regulated, collective decisions over pay rises or personnel promotions within the unionized firms (Metcalf et al. 2001). For example, objective rules for pay determination such as seniority are more likely to be followed in unionized establishments than in non-unionized ones. In the latter, individualistic rules like merit or performance related pay is more usually the norm (Zangelidis 2008; see also Williams 2009). Moreover, the fact that unions lower pay dispersion means that the incentive for working longer, even unpaid, hours is weaker in unionized settings (Bell and Freeman 2001; Campbell and Green 2002).[5] Thus, unpaid extra work that results from these two reasons should be *lower* for union employees.

On the other hand, the relationship between union membership and unpaid extra work that is the result of pro-social or altruistic behaviour by the individual is, at first sight, theoretically ambiguous. However, unobserved individual characteristics can play an important role for a more complete understanding of this relationship. Expanding on this, consider the union membership decision. Workers join a union for protection and advancement of their materialistic working conditions, such as pay and fringe benefits. But workers also join a voluntary organization like a trade union for reasons having to do with their overall social values, beliefs and ideology.[6] Apart

---

[4] Landers et al. (1996) study a specific case of this phenomenon. Though they do not refer explicitly to unpaid hours, they provide evidence that associates in large law firms in the US work inefficiently long hours in order to signal their propensity to work hard and, consequently, be promoted to partners.

[5] Bryson and Forth (2010) present recent evidence for Britain which shows that "the 'sword of justice' effect whereby unions compress pay differentials remains" (*Ibid.*; 14). They document a rise in pay dispersion among non-unionized employees relative to comparable unionized ones since the early '90s.

[6] See e.g. Deery and De Cieri (1991) for the case of Australian union members and Adams (1974) for an early account.

from economic organizations, trade unions are also social organizations related with specific social values and beliefs. Consistent with this, Kirmanoğlu and Başlevent (2012) present evidence that union members in European countries are more likely to be characterized by the value of "self-transcendence", something that is consistent with "the idea that societal interests also play a significant role in the membership decision" (*Ibid*.; 700). It is also well established in the empirical literature of union membership determinants that workers with more left-wing views are more likely to be union members, *ceteris paribus* (Schnabel 2003). If these values and beliefs are such that also lead to more pro-social behaviour, and if unpaid overtime or donated labour can be thought as a form of such behaviour in specific industries and organizations, as Gregg et al. (2011) argue, then union members can be expected to be *more likely* to offer unpaid overtime hours.

Two important points must be clarified here. First, we expand the concept of pro-social or altruistic behaviour by assuming membership in a voluntary organization like a trade union as being driven to some extent by attitudes and beliefs that are also consistent with a pro-social motivation. This is also in line with some studies in Britain that treat membership in a trade union as a measure of "associational social capital" (see e.g. Warde et al. 2003; Hall 1999). The crucial point here is to show empirically that union members are actually characterized by such a distinctive ethos compared to non-members.

Second, we assume that pro-social motivation and the consequent behaviour in the non-profit sector can only be expressed within firms in the broader "caring" sector (i.e. education, health and social work). Hence, in contrast with other studies of public sector motivation or ethos in Britain (see e.g. John and Johnson 2008), we distinguish the "caring" sector from the overall non-profit sector. In this way we can more easily rationalize our hypotheses concerning the union impact on unpaid overtime incidence: in firms in the for-profit, non-caring sectors, union status should be associated with *less* unpaid overtime because employer coercion and employees' career concerns are mitigated under trade unionism. On the other hand, in firms in the non-profit, caring sectors of the economy (where also employer coercion and career concerns are weaker, irrespective of union presence or not[7]), union membership should be correlated with *more* unpaid overtime because of the distinctive ethos of the union members that we hypothesize here. The implicit assumption, of course, is that this kind of pro-social behaviour in the form of unpaid overtime is relevant only in the caring sectors of the economy and in non-profit organizations. We, thus, assume there is no such behaviour in the first group of firms (for-profit, non-caring).

3. Econometric Methods and Data

Methods and Testable Predictions

We can summarize our hypotheses here and discuss them in relation to the econometric methods we use and the results we expect to find. The dependent variable we use in our analysis is the amount of *unpaid overtime hours* an employee works each week. Since this variable is censored at zero, a Tobit model is the appropriate choice (see Verbeek 2004; 218-227 and 377-378):

---

[7] For example, contingent pay systems such as "individual payment-by-results" schemes are traditionally less widespread in the public sector in Britain; see Pendleton et al. (2009) for a detailed descriptive analysis using the successive Workplace Industrial-Employment Relations Surveys (WIRS/WERS).

$$y_{it}^* = x_{it}'\beta + \alpha_i + \varepsilon_{it} \qquad (1)$$

and

$$
\begin{aligned}
y_{it} &= y_{it}^* \quad if \quad y_{it}^* > 0 \\
y_{it} &= 0 \quad if \quad y_{it}^* \leq 0
\end{aligned}
\qquad (2)
$$

where $i = 1, ..., N$ and $t = 1, ..., T_i$, y^* is the underlying latent variable (e.g. propensity to offer unpaid overtime hours), y is the observed variable of unpaid overtime hours, x is a vector of explanatory variables including trade union status, β a conformable vector of coefficients and ε_{it} is assumed to be *NID* (0, σ_ε^2) and uncorrelated with x. In order to estimate the model by maximum likelihood, we also have to make a distributional assumption for the unobserved heterogeneity component, α_i. The way we treat α_i is crucial for the testing of our hypotheses that were outlined in the previous section.

The individual heterogeneity component α_i represents factors influencing unpaid overtime that differ across individuals and are constant over time. These are unobserved and can bias the estimates of the model's coefficients if they are correlated with the observed variables included in x and are not properly accounted for in the estimation procedure. α_i can include factors such as an individual taste towards hard work, a personality type relevant to unpaid overtime working and/or, following our discussion in the previous section, values and beliefs related to pro-social motivations and a specific social service ethos.

Throughout the paper, we model unpaid overtime separately for two different samples of employees, one referring to workers in for-profit, non-caring sector workplaces and the other to those in non-profit, caring sector workplaces. We exclude workers in the non-profit, non-caring and for-profit, caring sectors of the British economy. The theoretical reasoning outlined in the previous section lies behind this choice: we did not offer explicit hypotheses concerning the relationship between unpaid overtime and union status in these excluded sectors. An account of the behaviour and incentives of workers in these sectors related to unpaid overtime working is more complicated, given the assumptions we have made and the hypotheses we want to test. Hence, our aim is to give an explanation for the above relationship in these two specific kinds of workplaces, the for-profit, non-caring and the non-profit, caring ones.

The empirical strategy we follow consists of three consecutive steps: first, we run pooled Tobit models for the two samples, ignoring the unobserved heterogeneity component.[8] The aim here is just to detect the correlation between union status and unpaid overtime hours, having controlled for various demographic and job characteristics. From the discussion in the previous section, we expect a negative coefficient on the union status variable in the model for the for-profit, non-caring sample and a positive union coefficient in the non-profit, caring sample. In the former sector, union status is expected to be associated with a lower amount of unpaid overtime hours

---

[8] In the pooled Tobit model, we relax the assumption about the distribution of ε_{it} and we allow for correlation of the error terms within each individual. For this reason, we use cluster-robust standard errors in all estimated pooled models.

since coercion and career concerns are mitigated under trade unionism, while the pro-social motivation of employees does not play a role in such workplaces. In the non-profit sector, we hypothesize that union members are characterized by a social service ethos that leads them to undertake more unpaid overtime than similar non-unionized workers.

Second, we use the panel character of our dataset to explicitly model α_i. In this way, we are trying to propose a causal interpretation of the union effect on unpaid overtime, having dealt with the unobserved characteristics that are an important part of our overall argument. The negative effect of union status is expected to also be found in the for-profit, non-caring sample once we control for unobserved individual effects. Getting rid of these effects should not drive the impact of unionism to zero, since we hypothesize that the reduction in unpaid overtime is a direct result of union bargaining and policies in the workplace. On the other hand, the union effect is expected to be zero in the non-profit sample following this second modeling strategy. This latter result follows from our discussion in the previous section, where we postulated that the positive relationship between membership and unpaid overtime in the non-profit, caring sector is due to unobserved individual characteristics (pro-social values and beliefs) that are now accounted for.

A *correlated random effects* (RE) Tobit specification (following Mundlak 1978, and Chamberlain 1982) instead of a simple RE Tobit approach will be used for modeling the α_i here, since our discussion points to a correlation between the union status of employees and unobserved individual values and beliefs that can bias the union coefficient in the pooled specification of the non-profit, caring sector model. The other constant unobserved factors mentioned above can also bias the coefficients in the for-profit model as well. The correlated RE model is in some sense a middle way between the simple RE and the fixed effects model. The latter cannot be implemented because of the non-linear nature of the Tobit model and the "incidental parameters problem" (see Wooldridge 2002; 484). The correlated RE model relaxes the simple RE model's assumption of zero correlation between the constant unobserved heterogeneity and the independent variables and imposes a specific form on this correlation.

Hence, in this approach, we assume the following specific form of relationship between the individual heterogeneity component α_i and the explanatory variables:[9]

$$\alpha_i = \bar{x}_i'\gamma + u_i \quad (3)$$

The $\bar{x}_i$'s are the individual means of time-varying regressors, while u_i is normally distributed with mean zero and variance σ_u^2 and assumed uncorrelated with the x's. Assuming that the unobserved heterogeneity is of this form, we take account of possible correlations between the independent variables and the error term that would bias both the pooled and the simple random effects estimates. Note that this method is simply a random-effects Tobit model where the means of time-varying regressors are included in the model as independent variables.

---

[9] For other empirical applications of the correlated RE specification, see Goerke and Pannenberg (2011), who use a correlated RE probit model to examine the relationship between trade unions and dismissal probability in Germany, and Cai (2010), who uses a (dynamic) correlated RE Tobit model for the analysis of working hours.

Finally, we estimate a simple linear probability model of membership in voluntary associations in order to show that union members are actually characterized by a pro-social motivation that leads to the behaviour of donating extra working time in the non-profit caring sector.

Data and Descriptive Statistics

In order to estimate the above mentioned models of unpaid overtime, we use data from the British Household Panel Survey (BHPS) covering the period 1991-2007 (BHPS waves 1-17). The BHPS is a panel dataset of a nationally representative sample of about 5,500 households (containing 10,000 individuals) that are interviewed annually since 1991. Only adults over 16 years old in each household are included in the sample. We use the original sample which covered England, Scotland and Wales, disregarding the extension samples of 1999 covering Scotland and Wales, and 2001, which added Northern Ireland. The BHPS is very suitable for our research question since it contains rich information on demographics, household structure and job characteristics that enables us to control for various factors in our unpaid overtime models.

We restrict attention in our sample to fulltime employees (≥30 hours normally worked each week) below state pension age (16-64 for men, 16-59 for women) only. In our raw data, part-time workers are substantially less likely to undertake any unpaid overtime (9% of part-timers versus 26% of fulltime employees). This may indicate that the process determining unpaid overtime working is different for part-time employees. Hence, in order to have a more homogeneous sample, we focus only on fulltime employees. We also drop workers that report more than 90 hours normally worked each week to get rid of extreme or invalid observations. Employees in the civil service, central or local government, NHS or higher education, nationalized industries and non-profit organizations are categorized as being employed in the not-for-profit (or non-profit) sector of the economy, while employees working in private firms/companies are assigned a for-profit employment status. People in the armed forces are excluded from the sample. Moreover, caring sector workers are defined as those employed in the education and health/social work industries and are identified through their SIC80 industry classification up to wave 11 and their SIC92 industry classification for the remaining BHPS waves.

The BHPS does not explicitly record the total amount of unpaid overtime hours worked each week. The respondent is asked to report her total usual weekly overtime hours and how many of them are paid. Thus, we derive usual unpaid overtime hours by subtracting paid overtime hours from the total overtime hours that are stated by the employee. This is the dependent variable in our models. Concerning the explanatory variables, we closely follow the specifications in Gregg et al. (2011) and Bell and Hart (1999) and include a range of demographic and job-related control variables. Appendix Table A1 lists all variables used in the models and their associated descriptive statistics.[10]

The variable of interest is the union status of the employee. The BHPS asks if the individual employee is covered by a trade union or staff association in the workplace (one, thus, that

---

[10] The hourly wage is not included in our models due to endogeneity concerns. However, because of the well-documented union-wage effect (see Blanchflower and Bryson 2010) which would also be a source of bias in our results, we account for the effect of earnings on unpaid overtime by using LFS data and calculating and putting in our models the yearly average and standard deviation of the hourly wage for each 3-digit occupation. More details on this procedure can be found in Veliziotis (2010).

determines employee's pay and working conditions through bargaining). If the answer is yes, the employee is then asked if she is a member of that union or staff association. We include two variables constructed by these questions: one that denotes union coverage and one that denotes union membership, conditional on coverage. This may reveal interesting findings concerning their impact on the amount of unpaid overtime worked and these are discussed in the following section. Recall that our hypothesis concerning the values and pro-social motivations of the employees have to do with their *membership* status.

After the above described sample selection procedure and the exclusion of person-year observations with missing information on any of the variables included in the models, we end up with 34,708 person-year observations for the for-profit, non-caring sample and 7,028 person-year observations for the non-profit, caring sample. Our two panel datasets are unbalanced: the number of individuals in the former sample is 6,695 with an average of 5.2 waves per person, while in the latter it is 1,587 with an average of 4.4 waves. Moreover, in the for-profit sample we have 967 (14.4% of the total) individuals with only one observation, as well as 445 (6.6% of the total) individuals with 17 observations (present in all waves). On the other hand, in the non-profit sample we have 168 (10.6% of the total) individuals appearing only once, while 144 (9.1% of the total) are present in all 17 waves.

Before proceeding with the presentation of the results, it is worth presenting some patterns of the unpaid overtime variable derived from our sample. Unpaid overtime incidence in our sample has increased steadily since 1991, rising from 22% of all fulltime employees to 30% in 2007. This increase has occurred in both the profit, non-caring sector and the non-profit, caring sector. The mean hours of unpaid overtime undertaken also increased from 1.8 in 1991 to 2.3 in 2007. This is the result of the growing incidence of unpaid extra hours among the employees in our sample, since the average number of hours undertaken by workers reporting supplying unpaid overtime declined from 8.5 to 7.8 in the same period. In contrast, paid overtime incidence followed the opposite trend, declining from 31% to 23%. This provides some evidence on the growing importance of unpaid overtime in the contemporary British labour market, at least as portrayed by the BHPS and the specific sample we use here. The occupational groups reporting higher incidence of weekly unpaid overtime are managers/administrators and professional workers (53% and 62% respectively). However, large minorities of "lower-ranking" occupational groups work extra hours for no pay: 15% of employees in personal services' occupations and 25% in sales mentioned that they usually work unpaid overtime in a given week.

We now turn to the distribution of unpaid overtime incidence and amount by our variables of interest, i.e. union membership status and sector of employment. Table 1 reports the relevant percentages and numbers and points to a first crude confirmation of our theoretical hypotheses. Union members in for-profit, non-caring sector workplaces are less likely to report working unpaid extra hours than non-members. This difference of 15 percentage points is statistically different from zero. When working unpaid overtime, union members also supply a slightly lower amount of hours than non-members (the difference is weakly significant with a *p*-value of 0.09). On the other hand, in the non-profit, caring sector, British trade union members are more likely to supply extra working hours for no pay and, when they do it, they work more hours than non-members (both differences are statistically different from zero at an 1% level of significance). These findings provide some first evidence in favour of our hypotheses. Of course, more sophisticated analysis is needed in order to reach a more robust conclusion and this is the subject of the following section of the paper.

[Place Table 1 about here]

4. Results

The Union Effect on Unpaid Overtime

Table 2 presents our estimates for the two union coefficients in all four models.[11] The results provide evidence consistent with our hypotheses. Starting from the for-profit, non-caring sector, being covered by a union in the workplace reduces the amount of unpaid overtime hours the employee works each week.[12] The coverage coefficient is large and statistically different from zero. Once we control for unobserved heterogeneity in the correlated RE Tobit specification, the coverage coefficient reduces in absolute value, but it is still negative and statistically significant. This provides evidence for a causal effect of trade unions on unpaid overtime hours. Covered employees are protected from employer coercion, while their extrinsic incentives to supply extra unpaid hours are weakened because of union bargaining and the standardization of intra-firm reward procedures. The reduction in the absolute value of the coefficient also implies that some of the observed differential in unpaid overtime between covered non-members and non-covered employees is the result of unobserved characteristics that lead covered workers to supply lower amounts of unpaid extra hours. Indeed, the coefficient on the individual means of union coverage in the correlated RE specification is negative (not reported). Hence, the negative association between coverage and unpaid extra hours is overstated in the pooled model.

[Place Table 2 about here]

A somehow different result is found for the membership coefficient. In the pooled Tobit specification, membership is negatively related with unpaid overtime hours, but this correlation disappears once we account for individual heterogeneity in the correlated RE specification (again, the coefficient of the individual means of membership in this specification is negative). We can interpret this in the following way: covered union members in the for-profit, non-caring sector are characterized by unobserved traits that lead them to offer lower amounts of unpaid overtime than comparable covered non-members and not covered employees. These traits also induce them to join the union in their workplace in the first place. A possible characterization of these traits can be a more confrontational attitude against the demands of the management of the firm regarding working hours. Because of these attitudes, employees that become union members are less likely than simply covered non-members to offer unpaid overtime hours. Hence, the negative effect of coverage is strengthened by the negative effect of membership (conditional on coverage) in the pooled specification. Recall that in the for-profit, non-caring sector any probable pro-social ethos of union members should not affect the amount of unpaid overtime (i.e. donated labour) worked.

---

[11] Full results are presented in Appendix Table A2. A detailed discussion concerning the estimates for all independent variables can be found in Veliziotis (2010).

[12] In the previous section we described how the union dummies are constructed from the BHPS variables. Employees in the BHPS are asked about their union coverage status and then, if they report being covered by a union in their workplace, they are additionally asked if they are members of that union. Hence, in order to make the discussion of results clearer, we should clarify here that the "union covered" coefficient in Table 2 captures *covered non-members*. On the other hand, the "union member" coefficient captures *covered union members*, while the base category is *non-covered employees* (either union members or non-members). The same also applies to the results reported in Tables 3 and 4 below.

Turning now to the non-profit, caring sector in columns (3) and (4), the pooled Tobit results reveal an opposite impact of coverage and membership on unpaid overtime hours. Covered non-members supply significantly fewer unpaid extra hours than non-covered employees, while covered members supply significantly more hours than covered non-members. In the correlated RE specification, neither coefficient is statistically different from zero. These results are also consistent with our hypotheses: union members in the non-profit caring sector are characterized by a social service ethos that leads them to work extra hours for no pay; this is not true for covered non-members. The same values that lead members to both join unions and donate their labour do not characterize covered employees who have not become union members. These "free-riders" appear to offer fewer unpaid hours than covered members and non-covered employees, because of a probable taste against hard work and a lack of pro-social beliefs and attitudes. Indeed, free-riding cannot be considered an altruistic behaviour in the workplace context. In the correlated RE model, these unobserved factors are taken into account and the coefficient of coverage becomes statistically insignificant.[13] Again, the estimated coefficients for the individual means variables in the correlated RE model (not reported) confirm the opposite bias in the two estimates in the pooled model: the coefficient on individual mean coverage is negative (although not statistically significant), while that on mean membership is positive and statistically different from zero.

Covered union members in the non-profit sector, however, do not supply more unpaid hours than non-covered employees. The negative coefficient of coverage is cancelled out by the positive membership one but it is not "reversed".[14] Nevertheless, this observation does not invalidate our overall argument for two main reasons: first, union coverage in the non-profit, caring sector of our sample is 91% (and union density is 68%), meaning that non-covered employees represent a very small proportion of all employees in the sector and, hence, covered non-members comprise a more important comparison group for covered union members. Second, we cannot really claim something about the attitudes towards union membership of non-covered employees. Membership, in the absence of union recognition in the workplace, is usually not a choice for British workers (Green 1990; Gregg and Naylor 1993). This again makes any comparison between covered union members and non-covered employees infeasible and nonsensical.

To get a picture of the magnitude of the union effect on unpaid overtime, we calculate the *absolute* and *relative* effect of union coverage on the probability of working any unpaid overtime and on the expected number of unpaid hours worked for a representative employee. We use the estimates of the correlated RE Tobit model for the for-profit, non-caring sample (column 2 in Appendix Table A2), the only model where a statistically significant union effect is found when we account for the bias caused by unobserved heterogeneity in the pooled models.

---

[13] Note also that the role of unions as protective institutions that also weaken career incentives through their impact on the internal organization of the firm is not as important in the non-profit sector as in the for-profit one (see discussion in the theoretical section and endnote 7). This is an additional reason for the insignificant coverage coefficient in the correlated RE model.

[14] Based on the estimates of the pooled Tobit model in the non-profit sector, we calculated the probability of undertaking unpaid overtime and the expected number of unpaid hours worked for a representative employee (by assigning specific values to our independent variables). The difference between the probabilities of working unpaid overtime and the difference between the expected number of unpaid extra hours for a representative employee that is a covered union member compared with an identical one that is not union covered were not statistically different from zero.

The representative employee that we consider in our calculations is a 37-year old married woman with two children who is living in London in 2007. She is contracted to work 36-40 weekly hours, holds a clerical job in wholesale or retail trade, has A-levels, has a permanent contract, does not hold a managerial or supervisory position in her firm and does not hold a second job. She also works in a medium-sized workplace (50-499 employees), has worked for 6 years in her firm, judges her job as having opportunities for promotion and is satisfied with its security. Finally, her pay does not include bonuses and does not have a disability affecting the type and amount of her work.[15]

Our calculations indicate that this representative employee, when covered by a trade union in her workplace, has a 9.6 percent probability of working any unpaid overtime, while an identical employee not covered by a union has a higher probability, equal to 12.2 percent. Hence, the absolute negative effect of coverage on the probability of supplying unpaid extra hours is 2.6 percentage points that corresponds to a proportionate (relative) reduction in unpaid overtime incidence of 21 percent. At the same time, the covered representative employee is expected to supply 0.31 hours of unpaid overtime each week compared with 0.41 hours for an identical not covered worker. This absolute difference of 0.10 hours corresponds to a 24 percent reduction in weekly unpaid overtime hours that is caused by union coverage. Both estimates reveal a substantial impact of trade unions on unpaid overtime for employees in the for-profit, non-caring sector, operating through the protection they offer against employer coercion and the weakening of individual extrinsic incentives.

The results reported above confirm our hypotheses concerning the impact of unionization on unpaid overtime. Various sensitivity checks were also undertaken to examine the robustness of these results to changes in the sample, the estimation procedure and the definition of our variables. Including the extension samples for Wales and Scotland that were added in the BHPS since 1999, estimating simple linear models of unpaid overtime hours (see Table 3 for pooled OLS and fixed effects estimates for both sectors), replacing our union membership variable with an alternative one available in the BHPS and using an alternative definition of "caring" occupations within the caring sector along the lines of Gregg et al. (2011, p.760), did not cause any substantial change to our conclusions.[16]

[Place Table 3 about here]

Social Behaviour of Union Members

We have, thus, found evidence consistent with our hypothesis concerning the role of unions in the for-profit sector and the pro-social motivation of union members in the non-profit, caring sector. The next step is to additionally show that union members are actually different than non-members in their altruistic motivations. To this end, in Table 4 we report OLS results of a model explaining membership in voluntary associations.

[Place Table 4 about here]

---

[15] We also assign the sample means as the representative values for the two earnings measures and the individual mean variables. u (see eq. 3 in Section 3) is set equal to zero.

[16] Full results for all sensitivity checks undertaken are available from the author on request.

The dependent variable in this model is a dummy taking the value of one if the individual is a member of any of the following social groups: political party, environmental group, parents association, tenants or residents group, religious group, voluntary service group, other community group, social group, sports club, women's institute, women's group and/or other organization. The rationale for this is that becoming a member of a social group or organization represents behaviour that is consistent with individuals with specific pro-social beliefs and attitudes. Alternatively, membership in such groups can enhance people's "social capital" and general social concerns (see, *inter alia*, Putnam 1995; Warde et al. 2003; and Hall 1999). Hence, if it is found that union members are more likely than non-members to belong in such groups, then we have evidence of the distinctive values that characterize union members and can explain their behaviour concerning donated labour in the non-profit, caring sector.

Indeed, as can be seen in Table 4, once we control for variables capturing time availability (working hours, marital status and number of children), earnings and political attitudes, as well as for various other socio-demographic and job characteristics, the membership coefficient is statistically different from zero and quite large in magnitude. A covered union member is almost 8 percentage points more likely to be a member of a social organization than a similar covered non-member or a similar non-covered worker. Note importantly that, on the other hand, covered non-members are equally likely to belong to a social group as non-covered employees. Hence, it is only members that show this distinctive social activity. This is in line with our findings in Table 2 concerning the non-profit, caring sector and the estimated coverage and membership coefficients, and provides additional evidence in favour of our overall argument.

Finally, in order to check if there is any difference in the social behaviour (as captured by membership in voluntary social groups) of union members employed in the two different sectors of our analysis, we estimated separate models for the employees in the for-profit, non-caring workplaces and those in the non-profit, caring ones. In both models the results were similar to those reported in Table 4 for the whole sample (results not reported here). Only the union membership coefficients were significantly positive and large, while their difference across the two samples was not statistically different from zero. This finding indicates that people that are union members are actually characterized by a specific pro-social ethos, irrespective of their sector of employment. The subsequent behaviour of donating their labour, however, depends crucially on the profit/non-profit character of the firm in which they are employed, as we discussed in the theoretical section above and as the results in this section indicate.

5. **Conclusion**

Trade unions have traditionally focused on working time aspects and have campaigned extensively against long working hours in Britain. An aspect of this long working hours "culture" (Bunting 2005) is the phenomenon of unpaid overtime, which has increased in incidence and importance in Britain during the last decades. In this paper, we tried to establish the relationship between unionization and unpaid overtime in Britain. We hypothesized on the impact of union status upon the amount of unpaid extra hours supplied and we noted a probable differential relationship, depending on the sector of employment.

Using data from the first seventeen waves of the BHPS, we found evidence consistent with our hypotheses: in the for-profit, non-caring sector, being covered by a trade union in the workplace

is associated with a lower amount of unpaid overtime hours due to the mitigation of employer coercion and the standardization of reward and promotion procedures resulting from union presence and bargaining. On the other hand, in the non-profit, caring sector, union members supply more unpaid extra hours than covered non-members. The latter is the result of specific pro-social beliefs and motivations that characterize union members and lead to the behaviour of donating working time in this kind of workplaces. Indeed, when we account for unobserved heterogeneity in the estimation, the positive relationship between membership and unpaid overtime in this sector disappears. Evidence in favour of a specific pro-social ethos of union members is also presented: being a union member is associated with a higher probability of belonging to any other social or interest group organization in Britain.

The above results are robust to changes in the sample, methodology and estimation procedures used and they are important for two different reasons: first, they enhance our understanding of what unions do in the contemporary British labour market, contributing to the broad literature of union effects on various aspects of the employment relationship (wages, employment, working hours etc.). Second, they can form the basis of further research on the overall attitudes and beliefs of union members, something that has been largely ignored in the economic analysis of the union membership decision and the impact of unions on employees' behaviour.

REFERENCES

Adams, R.J. (1974). Solidarity, Self-Interest and the Unionization Differential Between Europe and North America. *Industrial Relations/Relations Industrielles*, 29(3): 497-512.

Anger, S (2005). Working Time as an Investment? The Effects of Unpaid Overtime on Wages, Promotions, and Layoffs. Discussion Paper No. 535, DIW: Berlin.

Bell, D. and Hart, R (1999). Unpaid Work. *Economica*, 66(262): 271-290.

Bell, L. and Freeman, R. (2001). The Incentive for Working Hard: Explaining Hours Worked Differences in US and Germany. *Labour Economics*, 8(2): 181-202.

Blanchflower, D. and Bryson, A. (2010). The Wage Impact of Trade Unions in the UK Public and Private Sectors. *Economica*, 77(305): 92-109.

Boeri, T. and van Ours, J. (2008). *The Economics of Imperfect Labor Markets*. Princeton: Princeton University Press.

Booth, A. (1995). *The Economics of the Trade Union*. Cambridge: Cambridge University Press.

Bryson, A. and Forth, J. (2010). Trade Union Membership and Influence 1999-2009. CEP Discussion Paper No.1003. London: CEP.

Bunting, M. (2005). *Willing Slaves*. London: Harper Perennial.

Cai, L. (2010). Work Choices of Married Women: Drivers of Change. Visiting Researcher Paper. Canberra: Productivity Commission.

Campbell, D. and Green F. (2002). The Long-Term Payoff from Working Longer Hours. Studies in Economics, University of Kent.

Campbell, I. (2005). Long Working Hours in Australia: Working-Time Regulation and Employer Pressures. CASR Working Paper No.2005-2, Centre for Applied Social Research, RMIT University.

Chamberlain, G. (1982). Multivariate Regression Models for Panel Data. *Journal of Econometrics*, 18(1): 5-46.

Charlwood, A. (2002). Why Do Non-union Employees Want to Unionize? Evidence from Britain. *British Journal of Industrial Relations*, 40(3): 463-491.

Checchi, D., Visser, J. and van de Werfhorst, H.G. (2010). Inequality and Union Membership: The Influence of Relative Earnings and Inequality Attitudes. *British Journal of Industrial Relations*, 48 (1): 84-108.

Deery, S. and De Cieri, H. (1991). Determinants of Trade Union Membership in Australia. *British Journal of Industrial Relations*, 29(1): 59-73.

The Economist (2007). Jobs for Life: Death by Overwork in Japan. Accessed on 30/12/2012 at http://www.economist.com/node/10329261.

Fear, J. and Denniss, R. (2009). Something for Nothing: Unpaid Overtime in Australia. Policy Brief No.7, The Australia Institute.

Goerke, L. and Pannenberg, M. (2011). Trade union membership and dismissals. *Labour Economics*, 18(6): 810-821.

Green, F. (1990). Trade Union Availability and Trade Union Membership in Britain. *The Manchester School*, LVIII(4): 378-394.

Gregg, P., Grout, P., Ratcliffe, A., Smith, S. and Windmeijer, F. (2011). How Important is Pro-Social Behaviour in the Delivery of Public Services? *Journal of Public Economics*, 95(7-8): 758-766.

Gregg, P. and Naylor, R. (1993). An Inter-establishment Study of Union Recognition and Membership in Great Britain. *The Manchester School*, LXI(4): 367-385.

Hall, P.A. (1999). Social Capital in Britain. *British Journal of Political Science*, 29(3): 417-461.

John, P. and Johnson, M. (2008). Is There Still a Public Service Ethos? In Park, A., Curtice, J., Thomson, K., Phillips, M., Johnson, M.C. and Clery, E. (eds), *British Social Attitudes: The 24th Report*, London: Sage.

Kalwij, A.S. and Gregory, M. (2005). A Panel Data Analysis of the Effects of Wages, Standard Hours and Unionization on Paid Overtime Work in Britain. *Journal of the Royal Statistical Association: Series A*, 168(1): 207-231.

Karmanoğlu, H. and Başlevent, C. (2012). Using basic personal values to test theories of union membership. *Socio-Economic Review*, 10(4): 683-703.

Kodz, J., Davis, S., Lain, D., Strebler, M., Rick, J., Bates, P., Cummings, J. and Meager, N. (2003). Working Long Hours: A Review of the Evidence. Volume 1 – Main Report. Employment Research Series No.16, The Institute for Employment Studies, London: Department of Trade and Industry.

Landers, R.M., Rebitzer, J.B. and Taylor, L.J. (1996). Rat Race Redux: Adverse Selection in the Determination of Long Hours in Law Firms. *American Economic Review*, 86(3): 329-348.

Metcalf,D., Hansen, K. and Charlwood, A. (2001). Unions and the Sword of Justice: Unions and Pay Systems, Pay Inequality, Pay Discrimination and Low Pay. *National Institute Economic Review*, 176(1): 61-75.

Mundlak, Y. (1978). On the Pooling of Time Series and Cross-Section Data. *Econometrica*, 46(1): 69-85.

Pannenberg, M. (2005). Long-Term Effects of Unpaid Overtime: Evidence for West Germany. *Scottish Journal of Political Economy*, 52(2): 177-193.

Pendleton, A., Whitfield, K. and Bryson, A. (2009). The Changing Use of Contingent Pay at the Modern British Workplace. In Brown, W., Bryson, A., Forth, J. and Whitfield, K. (eds), *The Evolution of the Modern Workplace*. Cambridge: Cambridge University Press.

Putnam, R.D. (1995). Turning In, Turning Out: The Strange Disappearance of Social Capital in America. *PS: Political Science and Politics*, 28(4): 664-683.

Schnabel, C. (2003). Determinants of Trade Union Membership. In Addison, J.T. and Schnabel, C. (eds), *International Handbook of Trade Unions*, Cheltenham: Edward Elgar.

Schnabel, C. (2012). Union Membership and Density: Some (Not So) Stylized Facts and Challenges, IZA Discussion Paper No. 6792, IZA: Bonn.

Serra, D., Serneels, P. and Barr, A. (2011). Intrinsic Motivations and the Non-Profit Health Sector: Evidence from Ethiopia. *Personality and Individual Differences*, 51(3): 309-314.

Trejo, S.J. (1993). Overtime Pay, Overtime Hours, and Labor Unions. *Journal of Labor Economics*, 11(2): 253-278.

Trades Union Congress (2012). Surge in older workers doing unpaid overtime. Press release, accessed on 19/01/2013 at http://www.tuc.org.uk/workplace/tuc-20663-f0.cfm.

UNISON (2003). All Work and No Pay: A Survey of Unpaid Overtime. Accessed on 19/01/2013 at http://www.unison.org.uk/acrobat/13505.pdf.

Van Echtelt, P., Glebbeek, A.C., Wielers, R.JJ., and Lindenberg, S.M. (2007). The Puzzle of Unpaid Overtime: Can the Time Greediness of Post-Fordist Work Be Explained? In van der Lippe, T. and Peters, P. (eds), *Competing Claims in Work and Family Life*. Cheltenham: Edward Elgar.

Veliziotis, M. (2010). Trade Unions and Unpaid Overtime in Britain. ISER Working Paper No. 2010-43, ISER, University of Essex.

Verbeek, M. (2004). *A Guide to Modern Econometrics*. Chichester: John Wiley and Sons.

Walsh, J. (2010). Working Time and Work-Life Balance. In Wilkinson, A., Bacon, N., Redman, T. and Snell, S. (eds), *The Sage Handbook of Human Resource Management*, London: Sage.

Warde, A., Tampubolon, G., Longhurst, B., Ray, K., Savage, M. and Tomlinson, M. (2003). Trends in Social Capital: Membership of Associations in Great Britain, 1991-98. *British Journal of Political Science*, 33(3): 515-534.

Williams, N. (2009). Seniority, experience, and wages in the UK. *Labour Economics*, 16(3): 272-283.

Wooldridge, J. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

WorkSMART (2012). Work Your Proper Hours Day. Accessed on 19/01/2013 at http://www.worksmart.org.uk/workyourproperhoursday/

Zangelidis, A. (2008). Seniority Profiles in Unionized Workplaces: Do Unions Still Have the Edge? *Oxford Bulletin of Economics and Statistics*, 70(3): 327-345.

TABLE 1
Unpaid Overtime by Industry-Sector and Union Status

	For-Profit, Non-Caring Sector		Non-Profit, Caring Sector	
	Union	Non-Union	Union	Non-Union
Unpaid Overtime Incidence (% of employees)	13%	28%	46%	35%
Unpaid Overtime Amount in Hours (employees working unpaid overtime)	7.7	8.0	9.4	7.4
Sample Size (workers working unpaid overtime in parentheses)	7,474 (965)	27,234 (7,519)	4,757 (2,186)	2,271 (798)

Source: British Household Panel Survey (BHPS) 1991-2007; Author's calculations.
Note: See text for the specific sample used to calculate the numbers reported.

TABLE 2
Union Status and Unpaid Overtime by Sector – Non-linear Models

Dep. Variable: Unpaid Overtime Hours	For-profit, non-caring sector		Non-profit, caring sector	
	(1)	(2)	(3)	(4)
Independent Variables	**Pooled Tobit**	**Correlated RE Tobit**	**Pooled Tobit**	**Correlated RE Tobit**
Union Covered	-1.740***	-0.930***	-1.794**	0.280
	(0.335)	(0.267)	(0.788)	(0.573)
Union Member	-1.603***	-0.235	0.896*	-0.121
	(0.442)	(0.357)	(0.502)	(0.412)
Person-year Observations	34708	34708	7028	7028
Number of Individuals	6695	6695	1587	1587
Log-likelihood	-39028.316	-36329.156	-12473.171	-11555.541

Notes: *Statistically significant at the .10 level; **at the .05 level; ***at the .01 level; standard errors in parentheses; in the pooled specifications standard errors are robust to clustering at the individual level; all specifications include a range of control variables; full results are shown in Table A2 in the Appendix.

TABLE 3
Union Status and Unpaid Overtime by Sector – Linear Models

Dep. Variable: Unpaid Overtime Hours	For-profit, non-caring sector		Non-profit, caring sector	
	(1)	(2)	(3)	(4)
	Pooled OLS	Fixed Effects	Pooled OLS	Fixed Effects
Union Covered	-0.484***	-0.205***	-0.996***	0.182
	(0.095)	(0.073)	(0.375)	(0.265)
Union Member	-0.200*	-0.085	0.606***	-0.144
	(0.106)	(0.090)	(0.224)	(0.189)
Person-year Observations	34708	34708	7028	7028
Number of Individuals	6695	6695	1587	1587

Notes: *Statistically significant at the .10 level; **at the .05 level; ***at the .01 level; standard errors in parentheses; in the pooled OLS specifications standard errors are robust to clustering at the individual level; all specifications also include the controls that are outlined in Table A2 in the Appendix; the individual means of time-varying regressors that were used in the correlated RE Tobit specifications are excluded of course; in the fixed effects models, the time-invariant female dummy is omitted as well.

TABLE 4
Membership in Social and Interest Groups (Linear Probability Model)

Union Covered	0.011
	(0.012)
Union Member	0.079***
	(0.013)
Sample mean of dependent variable	0.51

Notes: R^2 is 0.08; sample size is 27,428 person-year observations; *Statistically significant at the .10 level; **at the .05 level; ***at the .01 level; the sample includes fulltime employees only; OLS results, robust to clustering standard errors in parentheses; regression also includes controls for political party supported, sex, age, age squared, marital status, number of children, 1-digit occupation, total working hours, profit sector, log hourly wage, health, region and year.

APPENDIX

Appendix Table A1: Variables and Descriptive Statistics

Variable	For-Profit, Non-Caring Sector				Non-Profit, Caring Sector			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Unpaid Overtime Hours	1.945	4.298	0	25	3.781	5.97	0	25
Union Coverage	0.362		0	1	0.910	0.286	0	1
Union Membership	0.215		0	1	0.677		0	1
Average Log Hourly Wage	2.078	0.348	1.027	3.108	2.246	0.34	1.149	3.085
St. Dev. Log Hourly Wage	0.396	0.075	0.030	1.122	0.360	0.072	0.127	0.828
Average Wage*Post2001	0.844	1.098	0	3.1070	0.955	1.173	0	3.085
St.Dev. Wage*Post2001	0.145	0.191	0	0.848	0.137	0.169	0	0.696
Hours 30-35	0.169		0	1	0.319		0	1
Hours 36-40	0.662		0	1	0.619		0	1
Hours 41-48	0.104		0	1	0.033		0	1
Hours >48 (r)	0.065		0	1	0.029		0	1
Female	0.319		0	1	0.723		0	1
Age	36.532	11.489	15	64	39.890	10.451	16	64
Age Squared	1466.645	888.390	225	4096	1700.461	837.731	256	4096
Married	0.716		0	1	0.707		0	1
Number of Children	0.537	0.902	0	7	0.471	0.820	0	4
Permanent	0.969		0	1	0.946		0	1
Manager/Foreman/Supervisor	0.412		0	1	0.489		0	1
Workplace Size 1-50	0.444		0	1	0.408		0	1
Workplace Size 50-499	0.388		0	1	0.301		0	1
Workplace Size >=500 (r)	0.168		0	1	0.291		0	1
Second Job	0.068		0	1	0.116		0	1
Tenure	5.307	5.849	1	51	5.714	5.658	1	41
Tenure Squared	62.378	155.088	1	2601	64.662	134.838	1	1681
Promotion Opportunities	0.524		0	1	0.575		0	1
Pay Includes Bonus	0.446		0	1	0.056		0	1
Dissatisfied with Security	0.072		0	1	0.059		0	1
Neither Sat. Nor Dissat. With Sec.	0.380		0	1	0.303		0	1
Satisfied with Security (r)	0.548		0	1	0.638		0	1
Health Limits Type/Amount of Work	0.062		0	1	0.069		0	1
Managers/Administrators	0.201		0	1	0.081		0	1
Professionals	0.062		0	1	0.346		0	1
Ass. Professional & Technical	0.091		0	1	0.279		0	1
Clerical & Secretarial	0.181		0	1	0.093		0	1

Craft & related	0.166	0	1	0.018	0	1
Personal & Protective Services	0.043	0	1	0.148	0	1
Sales	0.069	0	1	0.001	0	1
Plant & Machine Operatives	0.146	0	1	0.004	0	1
Other Occupations (r)	0.042	0	1	0.029	0	1
Degree	0.129	0	1	0.372	0	1
Further Education	0.288	0	1	0.405	0	1
A-levels	0.151	0	1	0.070	0	1
O-levels	0.219	0	1	0.095	0	1
Other Qualifications	0.091	0	1	0.019	0	1
No Qualifications (r)	0.122	0	1	0.039	0	1
South East	0.207	0	1	0.188	0	1
South West	0.094	0	1	0.042	0	1
East Anglia	0.045	0	1	0.034	0	1
East Midlands	0.093	0	1	0.073	0	1
West Midlands	0.088	0	1	0.088	0	1
Northwest	0.110	0	1	0.116	0	1
Yorkshire	0.093	0	1	0.095	0	1
North	0.060	0	1	0.082	0	1
Wales	0.048	0	1	0.055	0	1
Scotland	0.077	0	1	0.117	0	1
London (r)	0.085	0	1	0.109	0	1
Agriculture & Fishing	0.012	0	1			
Mining	0.006	0	1			
Manufacturing	0.351	0	1			
Electricity, Gas & Water	0.018	0	1			
Construction	0.054	0	1			
Wholesale & Retail Trade	0.176	0	1			
Hotels & Restaurants	0.042	0	1			
Transport & Communication	0.085	0	1			
Financial Intermediation	0.079	0	1			
Real Estate & Business Activities	0.140	0	1			
Public Administration & Defence	0.002	0	1			
Education				0.461	0	1
Health & Social Work				0.539	0	1
Social & Personal Services	0.030	0	1			
Private Households & Extra-Territorial (r)	0.007	0	1			
Wave 1 (1991)	0.068	0	1	0.062	0	1
Wave 2	0.060	0	1	0.058	0	1
Wave 3	0.056	0	1	0.057	0	1

Wave 4	0.057	0	1	0.054	0	1
Wave 5	0.059	0	1	0.060	0	1
Wave 6	0.063	0	1	0.062	0	1
Wave 7	0.066	0	1	0.062	0	1
Wave 8	0.067	0	1	0.064	0	1
Wave 9	0.057	0	1	0.055	0	1
Wave 10	0.066	0	1	0.060	0	1
Wave 11	0.064	0	1	0.060	0	1
Wave 12	0.059	0	1	0.053	0	1
Wave 13	0.056	0	1	0.061	0	1
Wave 14	0.046	0	1	0.053	0	1
Wave 15	0.051	0	1	0.059	0	1
Wave 16	0.053	0	1	0.062	0	1
Wave 17 (2007) (r)	0.051	0	1	0.059	0	1

Notes: Sample size is 34,708 for the for-profit sector and 7,028 for the non-profit one; (r) denotes the reference category for each set of dummies in the models; in the non-profit sector, "plant & machine operatives" are included in the "other occupations" category and together form the reference group for the set of occupation dummies.

Table A2: The Determinants of Unpaid Overtime by Sector – Full Results

Dep. Variable: Unpaid Overtime Hours	For-profit, non-caring sector		Non-profit, caring sector	
	(1)	(2)	(3)	(4)
Independent Variables	**Pooled Tobit**	**Correlated RE Tobit**	**Pooled Tobit**	**Correlated RE Tobit**
Union Covered	-1.740***	-0.930***	-1.794**	0.280
	(0.335)	(0.267)	(0.788)	(0.573)
Union Member	-1.603***	-0.235	0.896*	-0.121
	(0.442)	(0.357)	(0.502)	(0.412)
Average hourly wage	7.679***	2.746***	3.684**	-0.213
	(0.654)	(0.523)	(1.719)	(1.285)
St. dev. Hourly wage	10.320***	4.114***	-5.635*	-4.486**
	(1.782)	(1.463)	(3.054)	(2.178)
Average wage*post2001	0.234	0.250	2.196*	0.403
	(0.644)	(0.500)	(1.156)	(0.858)
Average wage*post2001	-5.613**	-5.469**	-0.601	3.178
	(2.842)	(2.287)	(5.391)	(3.649)
Normal Hours 30-35	3.774***	7.675***	8.918***	11.507***
	(0.560)	(0.399)	(1.344)	(0.755)
Normal Hours 36-40	4.719***	7.759***	8.879***	10.892***
	(0.504)	(0.335)	(1.312)	(0.731)
Normal Hours 41-48	3.725***	5.706***	3.353**	5.259***
	(0.549)	(0.372)	(1.494)	(0.871)
Female	-1.122***	-0.200	1.337**	1.036**
	(0.310)	(0.313)	(0.580)	(0.504)
Age	0.565***	1.129***	0.630***	0.583***
	(0.090)	(0.116)	(0.173)	(0.198)
Age squared	-0.007***	-0.010***	-0.008***	-0.006***
	(0.001)	(0.001)	(0.002)	(0.002)
Married or Cohabiting	0.606**	0.068	-1.196**	0.029
	(0.294)	(0.265)	(0.496)	(0.440)
Number of children in hhold	-0.473***	-0.424***	-0.467*	-0.800***
	(0.157)	(0.124)	(0.270)	(0.211)
Managers & Administrators	3.684***	1.687**	5.071**	2.031
	(0.823)	(0.778)	(2.004)	(1.769)
Professionals	1.652*	0.965	6.683***	2.575
	(0.882)	(0.822)	(1.977)	(1.710)
Ass. Professional & Technical	1.367*	0.604	1.504	1.286
	(0.829)	(0.793)	(1.730)	(1.652)
Clerical & Secretarial	1.345*	0.078	1.938	0.764
	(0.739)	(0.752)	(1.587)	(1.723)
Craft & related	-3.553***	-1.241	-0.540	0.895
	(0.818)	(0.792)	(2.961)	(2.463)
Personal & Protective Services	2.454**	1.822*	0.865	-0.360
	(0.985)	(0.936)	(1.461)	(1.614)
Sales	3.469***	1.407*	-2.011	2.523
	(0.831)	(0.785)	(4.950)	(4.947)
Plant & Machine Operatives	-2.739***	-0.689		
	(0.826)	(0.780)		
Permanent	2.541***	2.565***	1.321*	1.791***

	(0.631)	(0.578)	(0.731)	(0.589)
Manager/Foreman/Supervisor	4.559***	2.633***	3.218***	1.170***
	(0.270)	(0.196)	(0.394)	(0.306)
Workplace Size 1-50	-0.349	0.005	2.805***	0.021
	(0.368)	(0.282)	(0.552)	(0.483)
Workplace Size 50-499	-0.013	0.210	0.983*	0.497
	(0.335)	(0.254)	(0.565)	(0.466)
Holding Second Job	-0.622	-0.291	-0.668	-0.326
	(0.422)	(0.339)	(0.535)	(0.395)
Tenure in Years	-0.193***	-0.157***	0.006	-0.029
	(0.053)	(0.042)	(0.092)	(0.067)
Tenure squared	0.003*	0.001	-0.006	-0.000
	(0.002)	(0.002)	(0.004)	(0.003)
Promotion Opportunities	0.882***	0.347*	0.470	0.341
	(0.242)	(0.177)	(0.380)	(0.274)
Pay Includes Bonus	1.120***	0.446***	-0.250	-0.116
	(0.212)	(0.158)	(0.715)	(0.489)
Dissatisfied with Security	-0.797*	-0.935***	0.253	0.386
	(0.422)	(0.322)	(0.891)	(0.535)
Neither Sat. nor Disat. With Sec.	-0.302	-0.184	-0.000	0.171
	(0.200)	(0.158)	(0.369)	(0.270)
Health Limits Type/Amount of Work	-0.233	-0.248	-1.865**	-1.625***
	(0.465)	(0.370)	(0.756)	(0.520)
Degree	6.676***	2.573*	7.390***	-0.353
	(0.681)	(1.321)	(1.656)	(2.694)
Further Education	4.307***	1.756*	4.977***	-0.931
	(0.624)	(1.030)	(1.588)	(2.632)
A Levels	4.016***	1.436	3.192*	-1.406
	(0.669)	(1.096)	(1.830)	(2.773)
O Levels	2.157***	1.101	0.235	-3.527
	(0.665)	(1.119)	(1.735)	(2.762)
Other Qualifications	1.507*	0.666	1.365	0.545
	(0.791)	(1.346)	(2.092)	(4.214)
Constant	-50.022***	-44.545***	-47.293***	-40.146***
	(2.654)	(3.903)	(5.253)	(6.068)
Person-year Observations	34708	34708	7028	7028
Number of Individuals	6695	6695	1587	1587
Log-likelihood	-39028.316	-36329.156	-12473.171	-11555.541

Notes: *Statistically significant at the .10 level; **at the .05 level; ***at the .01 level *; standard errors in parentheses; in the pooled specifications standard errors are robust to clustering at the individual level; all specifications also include region, industry and year/wave dummies; in the correlated RE Tobit models, the individual means of time-varying regressors (except for the year/wave dummies) are included as well.

Recent UWE Economics Papers

See http://www1.uwe.ac.uk/bl/bbs/bbsresearch/economics/economicspapers.aspx for a full list

<u>**2013**</u>

1304   **Trade unions and unpaid overtime in Britain**
        Michail Veliziotis

1303   **Why do students study economics?**
        Andrew Mearman, Aspasia Papa and Don J. Webber

1302   **Estimating regional input coefficients and multipliers: The use of the FLQ is not a gamble**
        Anthony T. Flegg and Timo Tohmo

1301   **Liquidity and credit risks in the UK's financial crisis: How QE changed the relationship**
        Woon Wong, Iris Biefang-Frisancho Mariscal, Wanru Yao and Peter Howells

<u>**2012**</u>

1221   **The impact of the quality of the work environment on employees' intention to quit**
        Ray Markey, Katherine Ravenswood and Don J. Webber

1220   **The changing influence of culture on job satisfaction across Europe: 1981-2008**
        Gail Pacheco, De Wet van der Westhuizen and Don J. Webber

1219   **Understanding student attendance in Business Schools: an exploratory study**
        Andrew Mearman, Don J. Webber, Artjoms Ivļevs, Tanzila Rahman & Gail Pacheco

1218   **What is a manufacturing job?**
        Felix Ritchie, Andrew D. Thomas and Richard Welpton

1217   **Rethinking economics: Logical gaps – empirical to the real world**
        Stuart Birks

1216   **Rethinking economics: Logical gaps – theory to empirical**
        Stuart Birks

1215   **Rethinking economics: Economics as a toolkit**
        Stuart Birks

1214   **Rethinking economics: Downs with traction**
        Stuart Birks

1213   **Rethinking economics: theory as rhetoric**
        Stuart Birks

1212   **An economics angle on the law**
        Stuart Birks

1211   **Temporary versus permanent employment: Does health matter?**
        Gail Pacheco, Dominic Page and Don J. Webber