Where is the Warm Glow?

Donated Labour and Nonprofit Wage Differentials

in the Health and Social Work Industries

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Where is the Warm Glow? Donated Labour and Nonprofit Wage Differentials in the Health & Social Work Industries[1]

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The "Warm Glow" theory of worker motivation in nonprofit organisations predicts that wages will be lower in the voluntary sector than for equivalent workers in the private and public sectors. Empirical findings, however, are mixed. Focussing on the Health & Social Work industries, we examine differences in levels of unpaid overtime between the sectors to test for the existence of a warm-glow effect. Although levels of unpaid overtime are significantly higher in voluntary sector, we find that this is insufficient to explain the wage premiums earned in this sector. [3]

Introduction

Comparisons of the differing characteristics of the private and public sectors have a long history in both theoretical and empirical literatures. However, there is a relatively small but growing third sector, made up of charities, voluntary organisations and other nonprofits, that demands further research interest. In the UK in 2005/06 the voluntary sector had an income of £31 billion (National Council of Voluntary Organisations, 2008) which makes up about 2.5% of GDP.

One of the areas in which voluntary organisations may differ from private and public organisations is their behaviour in the labour market. How do voluntary organisations set wages for their workers, and is employment in this sector different from the other sectors? With an increasing number of social care services contracted out by government to nonprofit organisations, understanding key components of the costs involved, such as labour, is critical. "Warm Glow" theories of nonprofit organisations

predict that we should expect wages to be lower than in the other sectors, but relatively little empirical work has been carried out to investigate this issue, particularly outside the USA.

The biggest challenge in analysing the voluntary sector is the availability of data, particularly as the sector currently accounts for only 4% of the UK workforce. For over ten years now the UK Labour Force Survey has asked respondents which sector their employer operates in, and this is sufficient to identify voluntary organisations. Despite the relatively small proportion of voluntary sector workers, it is now possible to assemble a sufficiently large sample to investigate many questions about voluntary sector employment even at the detailed industry level.

This paper uses ten years of pooled cross-sectional data from the UK Quarterly Labour Force Survey (LFS) in order to examine levels of unpaid overtime at a disaggregated industry level in industries where voluntary sector concentration is relatively high. We focus on the Health & Social Work industries for two reasons: firstly, to reduce the unobserved heterogeneity between organisations and jobs by narrowing the activities undertaken; secondly, to examine the caring industries where theory predicts that warm glow should be strongest.

We begin by examining whether there are significant levels of "donated labour" observed in the voluntary sector. Next, we test whether donated labour explains the voluntary sector wage premium found in the caring industries. Evidence is found of donated labour through significantly higher levels of unpaid overtime for voluntary sector workers at all industry detail levels. Wage equations are estimated with wages adjusted for these additional hours of unpaid work. Although the voluntary sector wage premium is reduced it is still positive, and does not provide support for the warm-glow theory of nonprofit wage-setting.

Empirical Literature on Sectoral Differentials and Donated Labour

There is an extensive literature on the apparent wage premium earned by workers in the public sectors (see Bender (1998) for a review). The stylised facts from this literature are that there is a public sector premium, it is greatest for women and minorities, but it has generally been decreasing over time. Disney & Gosling (1998) used the General Household Survey (GHS) and British Household Panel Survey (BHPS) to estimate the public sector premium in the UK after taking worker characteristics into account. They found that for men the premium fell from 5% in 1983 to only 1% by the mid-1990's. However, for women the public sector premium increased over the same period from 11% to 14%.

Relatively little empirical work has been done where the voluntary sector is examined separately as a third sector. There has been some past research attempting to estimate

nonprofit or voluntary sector wage differences as a measure of warm glow, primarily using US data. Weisbrod (1983) examined wage differences between lawyers employed by nonprofit and for-profit firms, and found evidence of a nonprofit wage discount of ~20%. His analysis of a job choice equation suggested that lawyers in the nonprofit sector held different preferences to those employed in the private sector.

Preston (1989) conducted an analysis of the nonprofit sector wage differential for white-collar workers using Current Population Survey (CPS) in the US, and found a significant nonprofit sector discount of 18% even after controlling for differences in human capital and other worker and job characteristics. She found a larger differential for male workers than female workers. It is suggested that a selectivity bias might be present, and this is tested for using a two-stage sector choice model, and also analysing a limited sector switching model. She concludes that a "donative labour" hypothesis is supported by the findings, but that the presence of unobserved heterogeneity in worker characteristics that might affect their productivity has not been completely ruled out.

Leete (2001) used US census data for 1990 and found little evidence of a difference between the private and voluntary sectors overall. However, she did find some significant differences at the disaggregated industry level. Although the industry categories used in Leete's paper differ from those in the UK LFS, it is possible to identify some that are relevant to the industry classifications examined in this paper.

Industry	Nonprofit Premiums (t-statistic)	% Nonprofit (Sample Size)
Nursing & Personal Care Facilities	2.22% (3.5)	19.40% (60,120)
Hospitals	5.02% (18.87)	43.70% (171,612)
Day-care services	6.72% (6.54)	35.40% (21,505)

Figure 1 – Estimated Nonprofit Wage Premiums from US Census 1990
(Source: (Leete, 2001)

Figure 1 shows that Leete found significant nonprofit sector premiums of between 2.2% - 6.7% in caring industries in the US. The table also shows that these were in industries with a relatively high concentration of nonprofit organisations. Examining similar sectors, Mocan & Tekin (2003) used employer-employee matched data on child care workers in the USA, and found evidence of a nonprofit wage premium of between 6% - 15%.

Ruhm & Borkoski (2003) undertake both a cross-sectional and longitudinal analysis of nonprofit compensation using the 1994-88 Current Population Survey Outgoing Rotation Groups. They find little evidence of wage differentials, with industry and worker heterogeneity playing a larger role. They conclude that nonprofit wages are

set primarily by competitive markets, with little evidence of donated labour observed in wages.

These papers produce contradictory results – two provide evidence of a nonprofit wage discount, while the others support a wage premium in the health and care industries where most nonprofits operate. Little work has been done to analyse equivalent wage differentials in a three sector model using UK data. This paper examines unpaid overtime and wage differences at the industry level to examine whether this discount stands up to disaggregation, or whether a wage premium is found instead as per Leete.

Theoretical Explanations for Voluntary Sector Donated Labour

The term "warm glow" was used by Andreoni (1990) to describe the utility received by a donor from the act of giving, rather than the outcome itself. It was proposed as a solution to the low levels of free-riding observed in charitable contributions, and the apparent absence of a crowding-out effect on private contributions when public contributions to nonprofit organisations are increased. A similar concept was then extended to ideological entrepreneurs (Rose-Ackerman, 1997) to describe the decision of an entrepreneur to start a voluntary organisation. Frey (1997) suggests that 'intrinsic motivation' to carry out some tasks can be crowded out by financial compensation and reward structures, leading to higher effort at lower pay in some situations. More recently, the warm-glow concept was extended to the principal-agent framework (Besley & Ghatak, 2005) to explain matching between motivated principals and agents in the labour market. This formalised the predicted warm-glow effect on wages in the voluntary sector. As has been discussed above, the empirical findings have been mixed in their support for this theory.

The literature on unpaid overtime (see (Bell & Hart, 1999)) suggests an alternative outlet for warm-glow effects. Workers can adjust their effective wage by working additional hours of unpaid overtime. Workers who receive a warm glow from their work could engage in unpaid overtime, which would lower their effective salary, whilst apparently receiving the same compensation as other workers. Alternatively unpaid overtime can form part of an implicit bargain between worker and employer, where additional hours of unpaid overtime are expected and compensation is paid through a higher hourly wage for the "official" paid hours of work.

Bell & Hart suggest a method of controlling for those, by calculating an adjusted wage which is then used as the explanatory variable in a wage equation. First, we test for the existence of a sector difference in unpaid overtime. Second, we test its impact in an adjusted-wage equation on the warm-glow sector difference.

The Dataset

This paper uses the UK Quarterly Labour Force Survey (UK LFS) between 1998 and 2007 to create a pooled cross-section dataset with a large enough voluntary sector sample size to permit detailed analysis. The UK LFS is a quarterly rotating panel survey of 60,000 households per year in the UK, conducted on a random sample and carried out by the UK Office of National Statistics (ONS). Each household is followed for one year, with five quarterly observations, collecting a wide range of data on wages, job characteristics, education, employers and household make-up.

In order to remove some of the unobserved heterogeneity between jobs this paper estimates sector wage equations at three detailed industry levels, coded using the UK Standard Industrial Classification Of Economic Activities (SIC(92)).[4] The industry classifications analysed are:

- SIC(92) N 85.31 Social Work Activities with Accommodation
- SIC(92) N 85.3 Social Work Activities
- SIC(92) N 85 Health & Social Work

As the Industry Classification gets more detailed, the sample size decreases, but greater restrictions are placed on the activities of the organisations within the classification. The results at these three levels are presented and compared in order for a detailed picture of voluntary sector employment to be built up.

SIC(92) 85.31 Social Work Activities with Accommodation

This most-detailed classification includes:

- activities provided on a round-the-clock basis directed to provide social assistance to children, the aged and special categories of persons with some limits on ability for self-care, but where medical treatment or education are not important elements:

- activities provided by orphanages, children's boarding homes and hostels, residential nurseries, homes for the aged, homes for the physically or mentally handicapped, rehabilitation homes (without medical treatment) for people addicted to drugs or alcohol, homes for the homeless, institutions that take care of unmarried mothers and their children, etc.

SIC(92) 85.3 Social Work Activities

This classification includes the Social Work Activities With Accommodation detailed above, plus Social Work Activities Without Accommodation: Social, counselling, welfare, refugee, referral and similar activities, welfare and guidance activities for

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[4] SIC(92) is a hierarchical 5-digit Industry Classifications code that conforms with and corresponds directly to the European Community Classification of Economic Activities (NACE) Version 1 codes

children and adolescents, day care activities for handicapped adults, day facilities for homeless and other socially weak groups, and more.

SIC(92) 85 Health & Social Work

This broad industry classification includes:

- Human health activities: Hospitals, Nursing Homes, Dental practices, opticians, etc.

- Veterinary activities: Vets and veterinary hospitals

- Social work activities: Social work services with and without accommodation, as detailed above

Exploring a Three Sector Workforce

Since the mid-1990's the questions asked in the LFS allow the identification of organisations which operate in the Voluntary sector, permitting an analysis of a three sector model.[5]

Although the voluntary sector as a whole accounts for only around 4% of the UK workforce, 60% of the sector operates within the industry classification SIC(92) "85 Health & Social Work". In contrast, 29% of the Public Sector and 5% of the Private Sector is engaged within this industry classification. Figure 2 below shows the sample sizes by sector for each of the three levels of industry classification. It shows that although the voluntary sector makes up significantly more of the industry than the 2%, the private and public sectors are both major players within each category.

SIC(92)	85 Health & Social Work			85.3 Social Work Activities			85.31 Social Work Activities with Accommodation	
Sector	**Freq**	**Percent**		**Freq**	**Percent**		**Freq**	**Percent**
Private	9,061	26.1%		4,845	36.1%		2,801	58.3%
Public	21,850	62.9%		5,163	38.5%		1,420	29.5%
Voluntary	3,842	11.1%		3,403	25.4%		585	12.2%
Total	34,753			13,411			4,806	

Figure 2 –Sample by Sector and SIC(92)
(Source: UK Quarterly Labour Force Survey 1998 – 2007)

Estimating Working Hours Equations

The average total weekly number of hours worked, including paid and unpaid overtime, is shown in Figure 3 below by sector and industry. Although the figures are broadly similar, is does appear that in the more detailed industry classifications the number of hours worked by those in the voluntary sector is slightly higher.

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[5] See Appendix One for more detail on sector classifications in the UK LFS
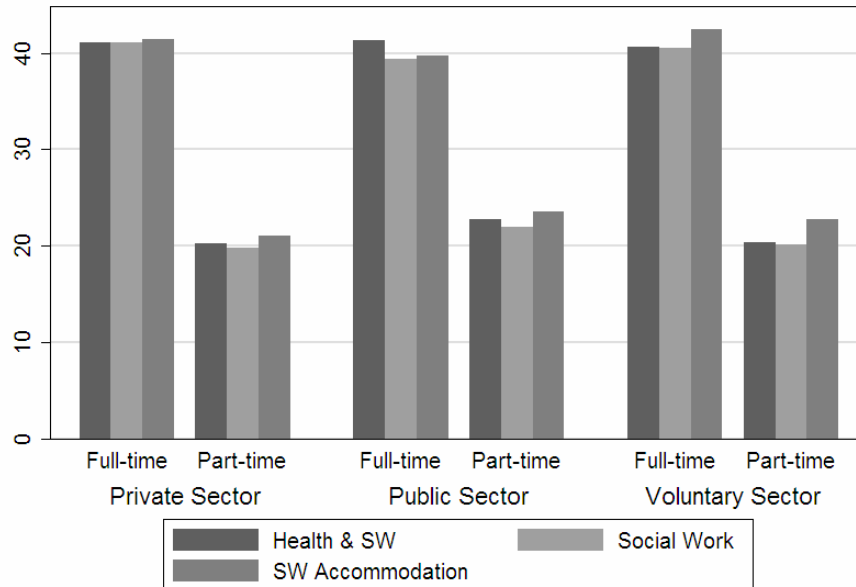
Figure 3 – Average Total Weekly Hours by Sector and Industry
(Source: UK Quarterly Labour Force Survey 1998 – 2007)

In order to investigate this, working hours equations (Bell & Hart, 1999) were estimated to attempt to explain the observed unpaid overtime. These Tobit equations were estimated on a range of explanatory variables for each industry level in order to compare the outcome.

$$hours_{uo} = CONS + \beta_{EDUC}EDUC + \beta_{EDUC}EMPL + \beta_{INDV}INDV + \beta_{TIME}TIME + \beta_{PUBS}PUBS + \beta_{VOLS}VOLS + \varepsilon$$

Where:

CONS	Constant Term
EDUC	Education variables (level of highest qualification held)
EMPL	Characteristics of jobs e.g. organisation size, FT/PT, permanent/temporary, length of tenure
INDV	Characteristics of the workers e.g. age, experience
TIME	Time Dummies for year and quarter
PUBS	Sector Dummy for Public Sector workers
VOLS	Sector Dummy for Voluntary Sector workers

The coefficients on the sector dummies for the public and voluntary sector relative to the private sector are shown below in Figure 4.

These estimates suggest that male workers work slightly more unpaid overtime in the voluntary sector than the private at 1 to 2 hours per week. This is significant for the two broader industry classifications, but not at the most detailed industry level. It should be noted however that the number of male workers in this detailed classification is very small. We find that female workers work an extra 2.25 to 2.7

hours of weekly unpaid overtime in the voluntary sector and this is significant at all three industry levels.

These results appear to support a donated labour theory – workers in the voluntary sector are providing additional hours of work unpaid, compared to those in the private sector. To what extent can this be seen as evidence of a "warm glow"?

The literature on unpaid overtime offers an alternative explanation. Workers can use additional hours of unpaid work to adjust rigid wage contracts. Workers need only care about the number of hours they work, and the total that they get paid, and not about exactly how this is recorded. A contract with a low wage and fixed hours could be equivalent to a contract with a higher wage, but where additional hours unpaid are an implicit part of the contract. As voluntary sector workers in the HSW industries are paid a premium, this could in part be explained by the additional hours worked unpaid. Is there still a sector difference after accounting for these additional hours?

This can be tested by calculating an "Adjusted" hourly wage for each worker based on the wage per actual hour worked. Calculating this wage for each worker and then using it as the dependent variable in the wage equations will provide a test for the presence of a "warm glow" through additional unpaid hours a drop in the estimated sector premium if these hours are unrewarded through basic pay.

	Male Workers			Female Workers		
	(1)	(2)	(3)	(1)	(2)	(3)
	85: Health & SW	85.3: Social Work	85.31: Soc. Work w. Accomm'n	85: Health & SW	85.3: Social Work	85.31: Soc. Work w. Accomm'n
Public Sector	-0.687	0.297	-0.100	0.833	0.881	1.540
	(0.505)	(0.666)	(1.465)	(0.153)***	(0.270)***	(0.491)***
Voluntary Sector	1.997	1.419	2.175	2.713	2.535	2.258
	(0.614)***	(0.661)**	(1.452)	(0.208)***	(0.294)***	(0.635)***
Years Experience	0.135	0.0872	0.276	0.156	0.165	0.286
	(0.0561)**	(0.0848)	(0.222)	(0.0203)***	(0.0373)***	(0.0763)***
Years Experience Squared	-0.00102	-0.000581	-0.00248	-0.00196	-0.00210	-0.00403
	(0.00117)	(0.00171)	(0.00433)	(0.000432)***	(0.000772)***	(0.00151)***
Married	0.311	1.900	0.570	0.429	0.563	0.662
	(0.391)	(0.548)***	(1.350)	(0.125)***	(0.226)**	(0.466)
Part-time Work	-3.447	-3.290	-6.194	-9.813	-9.843	-9.743
	(0.745)***	(0.809)***	(2.408)**	(0.540)***	(0.847)***	(1.311)***
Org. Size: 1-10 emp.	0.856	-0.0517	-1.730	1.166	1.085	1.050
	(0.571)	(0.664)	(1.848)	(0.170)***	(0.295)***	(0.696)
Org. Size: 11-24 emp.	-0.982	-1.151	-2.563	-0.342	-0.819	-0.380
	(0.491)**	(0.626)*	(1.645)	(0.167)**	(0.298)***	(0.612)
Org. Size: 25-49 emp.	-0.952	-0.365	-1.343	0.0975	-0.281	-0.387
	(0.524)*	(0.681)	(1.775)	(0.172)	(0.309)	(0.606)
_cons	1.633	1.736	0.231	-0.285	-0.0722	-1.752
	(1.323)	(1.825)	(4.326)	(0.629)	(1.021)	(1.982)
sigma _cons	8.488	6.978	8.647	5.940	6.554	7.377
	(0.148)***	(0.198)***	(0.548)***	(0.0174)***	(0.0499)***	(0.236)***
N	3,859	1,206	411	15,156	5,556	2,189

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
(Also included: Education, Occupation, Temporary Job, No. Children, Disability)

Figure 4 - Hours of Unpaid Overtime for Male and Female Workers

Estimating the Wage Equations

In Figure 5 below the sector average hourly wages can be seen in each of the three samples.

In all three industries the public sector wages are the highest, followed by the voluntary sector, and with wages in the private sector lowest. There appears to be a significant gap between the private sector wages and the other two sectors, while the public and voluntary sector wages seem broadly similar.

Although this does not take account of differences in individuals' characteristics, such as age, education and experience, this suggests that there may be a voluntary sector premium paid to workers in this sector when compared to the private sector.

Accounting for unobserved heterogeneity between individuals, employers and jobs is a recurring issue facing the estimation of wage differentials. Are observed sector wage differences explained by differences between organisational form, or sector selection by workers? We control for the former by restricting the sample to detailed industry classifications to allow comparison between similar job activities and roles. This reduction to more detailed job classification comes at a cost of reduced sample size.

The effect of the additional unpaid overtime was estimated using standard Mincer Wage Equations (see (Heckman, Lochner, & Todd, 2006) for a review). Separate equations were estimated for male and female workers, regressing log hourly pay on a range of explanatory variables with sector dummies for the public and voluntary sectors, for each of the three samples.

$$\ln(wage) = CONS + \beta_{EDUC}EDUC + \beta_{EMPL}EMPL + \beta_{INDV}INDV + \beta_{TIME}TIME + \beta_{PUBS}PUBS + \beta_{VOLS}VOLS + \varepsilon$$

In order to correct for potential selectivity bias due to non-participation (Heckman, 1979) a sample selection equation was estimated jointly with the wage equations. This probit model of labour force participation included age, marital status current study, and disability as independent variables. With the exception of age, these variables were chosen as having an effect on the decision to enter the workforce, but not to directly affect the wage earned.
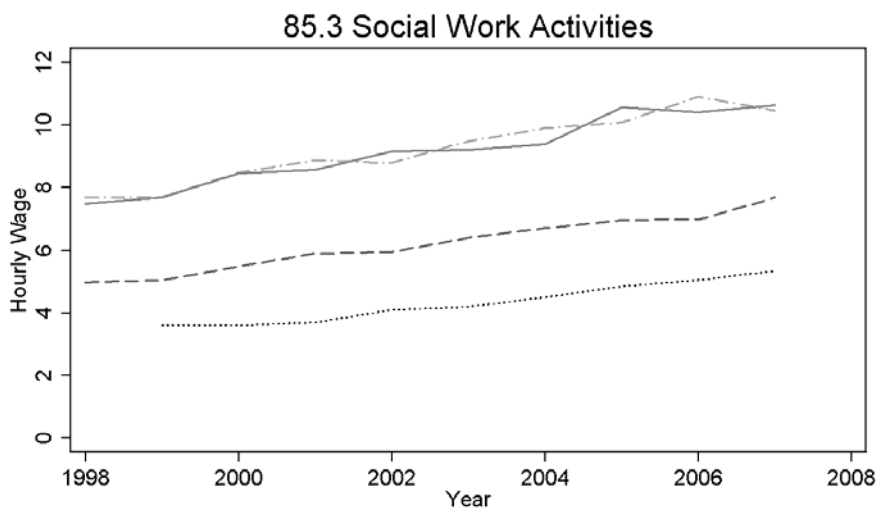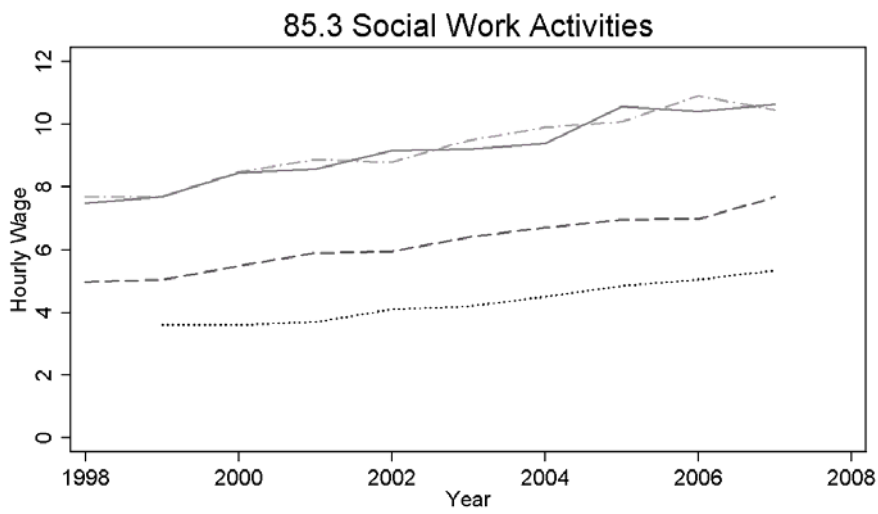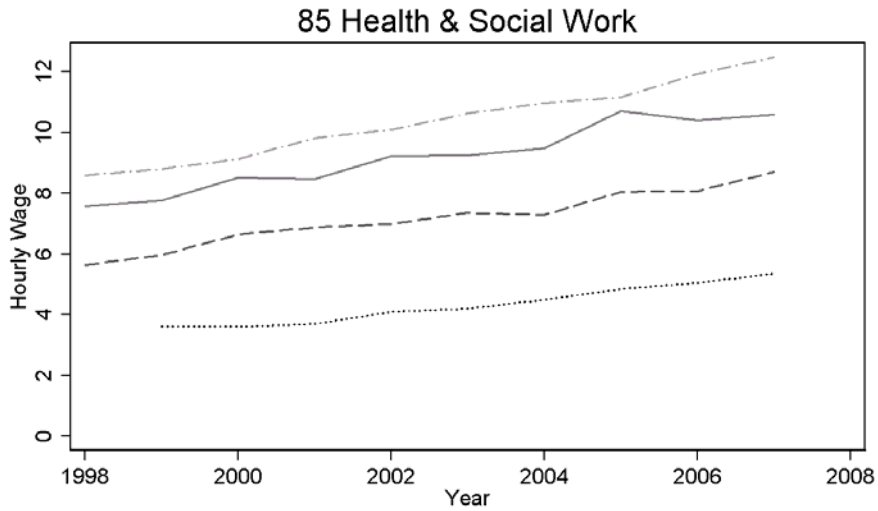
Figure 5 - Average Gross Hourly Pay by Sector & Industry between 1998 – 2007
(Source: UK Quarterly Labour Force Survey 1998 – 2007)

The adjusted hourly wage, taking account of unpaid overtime, is calculated as follows:

$$w_a = \frac{w_h.h_b + \pi.w_h.h_{po}}{(h_b + h_{po} + h_{uo})}$$

Where w_a is the Adjusted Hourly Wage, w_h is the contracted hourly wage, h_b is the contracted basic hours per week, h_{po} is the number of hours of paid overtime, h_{uo} is the number of hours unpaid overtime, and π is the premium paid for overtime working. As the Labour Force Survey does not provide data on wages for paid overtime an average premium of $\pi=1.28$ was used as per the findings of Bell & Hart (2003) from the British New Earnings Survey.

The adjusted wage was calculated, and the Mincer wage equations estimated, along with the sample selection equations. The wage equation coefficient estimates for the Male and Female workers are shown in Figure 6 and Figure 7 below.

We find evidence of significant wage differences between the sectors, but the cross-sectional analysis does not allow this estimate to be apportioned between unobserved worker heterogeneity and sector compensating differentials. However, this is in line with the methodology of previous empirical studies providing evidence for 'warm glow' effects, and this paper shows that the wage-setting behaviour underlying sector wage differences is more complicated than that predicted by a 'warm glow' explanation.

It can be seen that at all three industry levels a significant wage premium was found for both the public and voluntary sectors after accounting for observed individual differences, with the exception of male workers in the broadest industry classification.

Male	Basic Hourly Pay			Adjusted Log Hourly Pay		
	(1)	(2)	(3)	(1)	(2)	(3)
	85:	85.3:	85.31:	85:	85.3:	85.31:
	Health & SW	Social Work	Soc. Work w. Accomm'n	Health & SW	Social Work	Soc. Work w. Accomm'n
Public Sector	0.0775	0.165	0.198	0.0928	0.178	0.197
	(0.0152)***	(0.0238)***	(0.0387)***	(0.0160)***	(0.0250)***	(0.0406)***
Voluntary Sector	0.0317	0.115	0.115	0.0250	0.105	0.0899
	(0.0189)*	(0.0240)***	(0.0425)***	(0.0198)	(0.0252)***	(0.0449)**
Years Experience	-0.0104	-0.0160	-0.321	-0.0111	-0.0164	-0.0132
	(0.00162)***	(0.00258)***	(0.136)**	(0.00170)***	(0.00271)***	(0.00458)***
Experience Squared	0.000180	0.000295	-0.0131	0.000193	0.000300	0.000199
	(0.0000314)***	(0.0000485)***	(0.00437)***	(0.0000331)***	(0.0000510)***	(0.0000828)**
No. Months Tenure	0.000302	0.000276	0.000393	0.000158	0.000333	0.000765
	(0.000164)*	(0.000323)	(0.000637)	(0.000173)	(0.000340)	(0.000669)
Part-time	0.0741	0.0292	0.0963	0.0522	0.0242	0.0958
	(0.0183)***	(0.0251)	(0.0465)**	(0.0192)***	(0.0263)	(0.0489)*
Org. Size: 1-10 emp.	0.146	0.122	0.171	0.161	0.134	0.205
	(0.0180)***	(0.0245)***	(0.0490)***	(0.0189)***	(0.0258)***	(0.0515)***
Org. Size: 11-24 emp.	0.0685	0.0672	0.0979	0.0815	0.0784	0.135
	(0.0161)***	(0.0240)***	(0.0446)**	(0.0169)***	(0.0253)***	(0.0468)***
Org. Size: 25-49 emp.	0.0140	0.000800	-0.00841	0.0194	0.00895	0.0229
	(0.0165)	(0.0255)	(0.0466)	(0.0174)	(0.0268)	(0.0489)
Temporary Job	0.0128	-0.0427	-0.0543	0.000961	-0.0662	-0.0205
	(0.0217)	(0.0341)	(0.0681)	(0.0228)	(0.0357)*	(0.0717)
_cons	2.156	2.158	2.161	2.074	2.075	2.079
	(0.0112)***	(0.0111)***	(0.0110)***	(0.0118)***	(0.0116)***	(0.0116)***
N (Industry)	5,614	2,082	665	5,614	2,082	665

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(also controlled for: Education, Occupation, Tenure Squared. Heckman Selection equation uses age, marital status, no. children, disability, current study)

Figure 6 – Estimated Sector Wage Differences for Male Workers

Female	Basic Hourly Pay			Adjusted Log Hourly Pay		
	(1) 85: Health & SW	(2) 85.3: Social Work	(3) 85.31: Soc. Work w. Accomm'n	(1) 85: Health & SW	(2) 85.3: Social Work	(3) 85.31: Soc. Work w. Accomm'n
Public Sector	0.122 (0.00581)***	0.196 (0.00908)***	0.228 (0.0144)***	0.120 (0.00616)***	0.190 (0.00962)***	0.226 (0.0153)***
Voluntary Sector	0.0920 (0.00826)***	0.153 (0.0103)***	0.137 (0.0201)***	0.0749 (0.00876)***	0.141 (0.0109)***	0.120 (0.0212)***
Years Experience	-0.00535 (0.000792)***	-0.00448 (0.00113)***	0.000156 (0.0000338)***	-0.00560 (0.000837)***	-0.00366 (0.00119)***	-0.00563 (0.00189)***
Experience Squared	0.000108 (0.0000158)***	0.000107 (0.0000223)***	-0.00690 (0.0504)	0.000111 (0.0000167)***	0.0000891 (0.0000235)***	0.000117 (0.0000357)***
No. Months Tenure	0.000197 (0.0000813)**	-0.000156 (0.000136)	5.42e-08 (0.000000733)	0.000215 (0.0000863)**	-0.000111 (0.000144)	-0.000198 (0.000233)
Part-time	0.0605 (0.00539)***	0.0110 (0.00792)	0.120 (0.0207)***	0.0494 (0.00572)***	0.00164 (0.00838)	0.0372 (0.0134)***
Org. Size: 1-10 emp.	0.0961 (0.00761)***	0.0463 (0.0108)***	0.0571 (0.0173)***	0.0879 (0.00805)***	0.0281 (0.0115)**	0.120 (0.0219)***
Org. Size: 11-24 emp.	0.0557 (0.00732)***	0.0274 (0.0106)**	0.0372 (0.0172)**	0.0685 (0.00777)***	0.0433 (0.0113)***	0.0687 (0.0184)***
Org. Size: 25-49 emp.	0.0367 (0.00760)***	0.0194 (0.0111)*	0.00345 (0.0350)	0.0537 (0.00807)***	0.0426 (0.0118)***	0.0566 (0.0183)***
Temporary Job	0.0408 (0.0118)***	0.0461 (0.0166)***	0.0243 (0.0171)	0.0317 (0.0124)**	0.0194 (0.0174)	-0.0821 (0.0363)**
_cons	1.920 (0.0131)***	1.914 (0.0124)***	1.913 (0.0122)***	1.853 (0.0139)***	1.849 (0.0132)***	1.848 (0.0129)***
N (Industry)	25,680	10,062	3,652	25,680	10,062	3,652

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(also controlled for: Education, Occupation, Tenure Squared. Heckman Selection equation uses age, marital status, no. children, disability, current study)

Figure 7 – Estimated Sector Wage Differences for Female Workers

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A comparison of the wage premiums from the Basic Wage and Adjusted Wage models for male workers is shown in Figure 8. The sector coefficients β_{VOLS} and β_{PUB} have been converted from log coefficients to percentages using the equation below as per Halvorsen & Palmqvist (1980).

$$\beta_{VOLS}^{percent} = e^{\beta_{VOLS}} - 1$$

The Unpaid Hours equations above found little evidence of additional unpaid hours of overtime for male workers in the voluntary sector, and so we would expect to find little difference between estimated in the Adjusted and Basic wage equations.

Industry	Sector	Basic Wage Premium	Adjusted Wage Premium	Difference
Health & S.W.	Public	8.06%	9.72%	1.66%
	Voluntary	3.22%	2.53%	-0.69%
Social Work Industry	Public	17.94%	19.48%	1.54%
	Voluntary	12.19%	11.07%	-1.12%
S.W. Accommodation	Public	21.90%	21.77%	-0.13%
	Voluntary	12.19%	9.41%	-2.78%

Figure 8 – Differences in Sector Premiums for Male Workers

The voluntary sector premium is still insignificant in the broad Health & Social Work industry, and has decreased by about 1% in the Social Work Activities industry. Surprisingly, in the narrowest Social Work Accommodation industry the premium has fallen by nearly 3%. However, this is a reduction in the premium of less than a quarter. This does not support a strong 'warm glow' effect from unpaid overtime for male workers, consistent with the finding of little or no additional unpaid overtime in the sector.

A comparison of the wage premiums from the Basic Wage and Adjusted Wage models for female workers is shown below in Figure 9.

Industry	Sector	Basic Wage Premium	Adjusted Wage Premium	Difference
Health & S.W.	Public	12.98%	12.75%	-0.23%
	Voluntary	9.64%	7.78%	-1.86%
Social Work Industry	Public	21.65%	20.92%	-0.73%
	Voluntary	16.53%	15.14%	-1.39%
S.W. Accommodation	Public	25.61%	25.36%	-0.25%
	Voluntary	14.68%	12.75%	-1.93%

Figure 9 – Differences in Sector Premiums for Female Workers

For female workers the voluntary sector premium has decreased slightly across all the industry classifications. The biggest change is in the Social Work Accommodation

industry where the premium has fallen by nearly 2%. This does not support a "warm glow" explanation for the additional unpaid hours, as the size of this effect is very small compared with the broader sector premium in these industries.

Overall, there is little evidence to support the hypothesis that the additional unpaid hours indicate a voluntary sector 'warm glow' effect.

Conclusion

This paper has examined overtime and wage data from the UK Labour Force Survey disaggregated by Industry to examine sector differentials within Health and Social Work services where the majority of voluntary sector workers are employed. The empirical analysis found strong evidence of higher levels of unpaid overtime amongst voluntary sector workers, particularly for females. The basic hours wage equations showed a premium at all three industry levels for both male and female workers. This is broadly in line with the findings of Leete (2001) using US data.

These findings are robust despite some sector differences in working hours, tested by estimating adjusted wage equations. Although additional unpaid overtime in the voluntary sector does partly reduce the sector effect for both male and female workers, a significant premium still remains.

Although there is evidence of greater unpaid overtime, the continued existence of wage premiums means that these additional hours are compensated for. Therefore these findings do not support the predictions of the warm-glow theories for voluntary sector wage-setting. Before discussing the implications, we consider two caveats for the results: sample selection and product markets.

This study is carried out in the cross-section, and so is not able to control for unobserved heterogeneity associated with sector selection. However, to support a warm-glow theory with these findings it would be necessary to suppose that voluntary sector workers were more productive due to unobserved characteristics by more than 8% to 15%.

It is also not possible to control for unobserved characteristics of job quality using employee data. If there are systematic differences by sector in the levels of effort required or the stress involved in doing the job, then these could account for the wage differential. This is plausible if there is significant "cream-skimming" behaviour by private firms in the product market. For example, a private firm running a care home looking to maximise profits may select to admit residents who will be easy and low-cost to care for. Motivated organisations in the voluntary sector, who gain warm glow from their work, may select more difficult or costly residents. This could result in a very different experience for workers on the "front-line". Again, given the size of the

wage premiums, this effect would need to be significant if a warm-glow effect on wages is again to be supported.

Is a finding of wage premiums incompatible with the warm-glow theory? Voluntary Sector organisations are bound by a non-distribution constraint that limits what can be done with profits. If a voluntary organisation makes a surplus on its operation it faces a choice:

- Increase quantity of output i.e. beyond Marginal Revenue = Marginal Cost

- Increase quality of output i.e. provide a "Rolls-Royce" service

- Decrease (subsidise) price of product for users

- Increase wages paid to workers (share rents with staff)

A motivated worker would gain a warm glow from the first three actions, although they may also suffer from intensified work. Motivated and unmotivated workers would receive utility from the last action. Without an understanding of the product market for the voluntary organisation it is difficult to distinguish between higher wages as a result of rent extraction, as opposed to higher wages stemming from more intensive work conditions to provide greater output or levels of quality.

The absence of a warm-glow effect in the industries where it could be expected to most important – the caring industries – provides a significant challenge to theories of warm-glow motivation in employment contracts. Although successful in explaining both charitable donations and volunteering behaviour, this paper argues primarily that a warm glow theory of wage-setting in the voluntary sector is insufficient to explain the labour market outcomes observed. While motivation may well play a part in organisations in this sector, the empirical evidence does not provide a clear picture, and there is a need to develop a better understanding of the factors driving the behaviour of voluntary organisations and their employees.

Appendix One – Variable Descriptions

This Appendix explains in more detail the definition and construction of the key variables from the UK Labour Force Survey (LFS) as used in this paper.

Identifying Organisations' Sector

Private Sector

The Private Sector includes Public limited companies (PLC), Limited companies (Ltd), and small businesses often owned by one or more individuals. It also includes self-employed individuals; sole traders, or owners of small shops or businesses.

Public Sector

The Public Sector includes any employer that is owned, funded or run by central or local government

Voluntary Sector

The Voluntary Sector includes charities, private trusts, housing associations, trade unions, private schools that are registered as charities and other voluntary organisations. In terms of the LFS, they are any employer coded with the LFS variable SECTRO03 coded "7"

Regression Equation Variables

These tables contain the LFS names for the variables used in the regressions, and details of the variables derived from LFS variables.

LFS Variable Name	Description
HIQUAL	Dummy variables for level of highest qualification held, split by National Vocational Qualification (NVQ) level
EMPMON	No. of months with current employer
SOCMAJM	Major Occupation Category
PTFT	Part-time / Fulltime
JOBTYP	Permanent / Temporary
DISCURR	Disability status
QULNOW	Respondee is currently studying for a qualification
INDSECT	SIC(92) Industry Classification
HOURPAY	Gross Hourly Wage
BUSHR	Basic Usual Weekly Hours
OTTHR	Overtime Usual Weekly Hours

Derived variables	Description and Source Variables
EXPER	AGE minus EDAGE (age at which completed fulltime education)
ORGSIZE	Recode of MPNOR
MARRIED	Recode of MARSTAT and MARSTATA (marital status)
NUMCHILD	Recode of FDPCH19 (number of dependent children in household)

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