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On the Up: Voluntary Sector Wages in the UK 1998 - 2007

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On the Up: Voluntary Sector Wages in the UK 1998 - 2007[1]

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Since 1997 the UK Government has sought to expand the provision of public services by the independent nonprofit sector. With policies to build the capacity of the sector, public spending on voluntary organisations has grown from £2 billion in 1996/97 to £6.88 billion in 2005/06. Theory suggests that the comparative advantage of nonprofits lies in the mission-motivation of those who work in them, and predicts that motivated workers will accept lower wages. We examine sector wage differentials in time-series to show that growth in voluntary sector wages has outpaced the private and public sectors. This state intervention in the market has had big consequences for the make-up of the voluntary sector workforce.

JEL Codes: J21; J31; H44

Keywords: Compensating Wage; Warm Glow; Voluntary Sector; Nonprofit

"*A bigger role for the voluntary sector, in framing and delivering local services, is central to our vision.*"

The Rt. Hon Tony Blair MP (2002)

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"*Politicians once thought the man in Whitehall knew best. Now we understand that the... mother from the playgroup... might know better.*"

The Rt. Hon Gordon Brown MP (2001)

Introduction

Government intervention in a market can often have unforeseen consequences. Studying the effects of a major policy change on a market can help us to understand how markets work, and evaluate the consequences of intervention.

Since coming to power in 1997 the Labour government in the UK has promoted the involvement of the independent non-profit sector in the provision of public services. As a result, the so-called voluntary sector has grown dramatically as the increasing use of commissioning and competitive tendering has exerted many market forces on the sector from which it had previously enjoyed some shelter.

This growth has been fuelled by the rise in the number of public services contracted-out to the sector. The value of government contracts with the voluntary sector increased from around £2 billion in 1996/97 to £6.88 billion in 2005/06 (Public Administration Select Committee, 2008). This has increased the importance of the sector, both as a significant employer in the UK and as a key part of public service provision. In 2003 earned income from contracts and trading overtook donated income as the most significant source of funds for UK charities (National Council of Voluntary Organisations, 2008).

Much has been made of the distinctive advantages of the voluntary sector, rooted in the profit-distribution constraint and the "warm glow" of motivated workers. We ask, what effect has the exogenous shock of the government-supported expansion of the sector had on the make-up of the voluntary sector workforce?

This paper focuses on the paid workforce in the voluntary sector to examine the effect of the sector's growth on pay levels and the wage differentials between sectors. We show that the theory of compensating differentials predicts that the warm-glow wage discount will fall as the sector expands. Using data from the UK Labour Force Survey (LFS), we find that while there is evidence of lower voluntary sector wages in 1998, this gap has been closing over the

past ten years as the sector has experienced faster wage growth than either the private or public sectors. The convergence of voluntary sector wage levels on the public sector wages has significant implications for the cost-saving potential of policies of the contracting-out of public services.

The analysis of sector differences suffers from a potential bias from sample selection, as workers are not allocated to a sector randomly. We tackle this in two ways. Firstly, we argue that government policy to expand the sector is an exogenous shock increasing the size of the sector beyond the warm-glow equilibrium and bringing many new workers into the sector. Secondly, we use the limited panel structure of the LFS with workers switching their sector of employment, to estimate a fixed effects model.

A significant challenge in voluntary sector research is the availability of data in what is still a relatively small sector. In this paper, LFS data collected over the past decade has been pooled to permit detailed analysis of the trends in sector wage differences in the last ten years.

A Growing Third Sector

The starting point for the increasing interest of government in the voluntary sector can be traced back to the Deakin Commission on the Future of the Voluntary Sector (Commission on the Future of the Voluntary Sector, 1996). This led to the establishment of the Compact (Home Office, 1998), a statement of understanding between government and the voluntary sector over the provision of public services.

> *"This Compact between Government and the voluntary and community sector provides a framework which will help guide our relationship at every level. It recognises that Government and the sector fulfil complementary roles in the development and delivery of public policy and services, and that the Government has a role in promoting voluntary and community activity in all areas of our national life.*
>
> *The work of voluntary and community organisations is central to the Government's mission to make this the Giving Age."*
>
> The Rt. Hon Tony Blair MP (Home Office, 1998)

The rationale for the contracting-out of public services was increased value for money, incorporating reduced costs, increased quality and greater variety. For many public services, the voluntary sector was seen as having a comparative advantage in the provision of quality;

particularly where there were significant information asymmetries between recipient and provider.

From 2002 a number of initiatives were introduced to increase the capacity of the voluntary sector to provide public services (National Audit Office, 2005), including a target to increase total spending on voluntary organisations. In the 2004 spending review the explicit target was dropped, in favour of a commitment to increase both capacity and overall contribution of the sector, measured by an indicator of the size of the sector's paid and unpaid workforce.

Between 1996 and 2005 the voluntary sector workforce grew by 26%, a much higher rate of increase than the private sector (11%) and the public sector (14%) over the same period (National Council of Voluntary Organisations, 2007). This represents a significant number of new recruits to the sector. If the comparative advantage of the sector flows from the efforts of "mission-motivated" workers, what can economic theory tell us about motivation in a growing sector?

Theories of Voluntary Sector Wage-Setting

The economic rationale for the existence of independent nonprofit organisations, or the voluntary sector, is based on the combination of the profit non-distribution constraint and the existence of intrinsic motivation in those running the organisation (see Rose-Ackerman (1986) and Rutherford (2010) for a review). These two elements allow voluntary organisations to more credibly provide services with significant information asymmetries, where quality is difficult to observe or contract over, than the private sector. The removal of the profit motive reduces the incentive to cheat on the provision of unobservable quality, and gives voluntary organisations an advantage in these industries. This explains the concentration of voluntary organisations in the health, social work and education industries.

What can theory tell us about wage-setting in the voluntary sector, and how might it be different? There are a number of explanations that come under the banner of "warm glow" theories, suggesting that voluntary sector workers gain utility from their work which compensates them for lower wages.

Compensating Wage Differentials

Compensating Wage Differentials is the concept that characteristics of the work that affect worker utility are reflected in the wage paid for the job. Classically, this has been shown in the form of "danger money", where workers in dangerous or risky jobs are paid a wage premium to compensate for the greater risk of accident that they face in the course of their work. This concept can be generalised to allow for lower wages in the presence of positive aspects of the job. For the voluntary sector, this approach can be applied to the higher utility that workers receive from a nonprofit employer.

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. More recently Besley and Ghatak (2005) outline a model of 'motivated agents' that gain utility from producing goods or services that are in line with their 'mission', essentially a 'warm glow' arises from working in the voluntary sector. This warm glow forms part of the compensation received by workers for their efforts, and so predicts that motivated workers will accept employment in the mission-oriented sector at lower wages than non-motivated agents.

In this paper we use a simple model of equalising differences to model the effect of warm glow on the labour market outcomes. Warm glow utility can be thought of as providing a positive benefit of work in the sector much as unpleasant working conditions might provide a negative cost to working in job that is dirty or unsafe. This model also allows us to consider the effects of an increase in the size of the voluntary sector.

Rosen (1986) outlines the classic model of compensating differentials. He provides a framework for a theory of labour supply to jobs with different (un)desirable attributes. These attributes are non-pecuniary by-products of undertaking the job. Examples provided by Rosen include:

Onerous working conditions

Regional differences

Work schedules / unemployment risk

Composition of pay packages

Rosen's model is outlined for an undesirable job attribute, without loss of generality. I will now outline Rosen's model with a desirable, 'warm glow' attribute in place of the undesirable attribute. Following Besley and Ghatak, I abstract from issues of public or

private ownership of organisations, and instead discuss a profit-oriented sector and a mission-oriented sector. The mission-oriented sector is distinguished by allowing jobs within this sector to carry a non-pecuniary benefit of contributing to the mission – the so-called warm glow.

The Sectors

The labour market is made up of two sectors, denoted by D = (0, 1). Sector D=0 is the profit-oriented sector, and sector D=1 is the mission-oriented sector, where workers receive a warm glow utility. The two sectors pay wages w_0 and w_1 respectively.

Workers

Workers utility is dependent on their consumption of market goods, C, and their work sector (D).

$$U = u(C, D) \qquad (1)$$

If C_0 is the level of market goods consumed by workers in the profit-oriented sector, then C* is the consumption level required by workers in the mission-oriented sector to be indifferent between the sectors.

$$u(C_0, 0) = u(C^*, 1) \qquad \rightarrow C^* \leq C_0 \qquad (2)$$

We can then define the compensating variation, Z, as:

$$Z = C^* - C_0 \qquad (3)$$

Define the sector wage difference as:

$$\Delta W = w_0 - w_1 \qquad (4)$$

Workers will be indifferent between taking a job in either of the two sectors if:

$$\Delta W = -Z \qquad (5)$$

Z is a personal taste variable that varies from worker to worker. In the traditional model, Z would represent the distaste for an unpleasant characteristic of the job. In this context mission-motivated workers have a low Z, as they get warm-glow utility from engaging in activities that are in accordance with their mission-motivation. Z can be thought of as the degree of mission motivation amongst the workforce. These theories then predict lower

wages in the mission-oriented sector, and ΔW can be thought of as the market price for accepting a job in the mission-oriented sector.

Heterogeneous Labour Supply

The probability density function of tastes in the population is represented by g(Z), and G(Z) is the cumulative density function. Workers for whom $\Delta W < Z_i$ will choose to work in the mission-oriented sector (where the loss of wages is not as big as the indifferent level of consumption). This is illustrated in Figure 1. The shaded area shows the proportion of the workforce in the mission-oriented sector, where for an individual worker i: $Z_i < Z^*$.

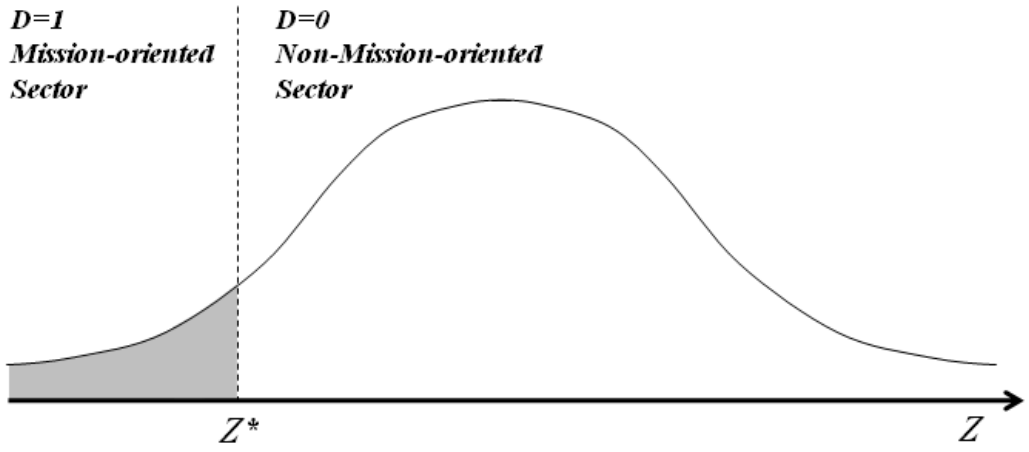


Figure 1: Probability Density Function over Z

The proportion of workers choosing to work in the mission-oriented sector will then be:

$$N_1 = \int_{-\infty}^{\Delta W} g(Z)dZ = G(\Delta W) \qquad (6)$$

And the proportion of workers in the profit-oriented sector will be:

$$N_0 = \int_{\Delta W}^{\infty} g(Z)dZ = 1 - G(\Delta W) \qquad (7)$$

This model implies that lower wages will be paid in the mission-oriented sector than in the profit-oriented sector, but workers will sort into their sector choice depending on their valuation of the warm-glow utility.

Heterogeneous Labour Demand

Rosen outlines the demand-side of the labour market similarly, with firms facing variable costs to "clean-up" the undesirable job attribute. This is not so easily applicable to the mission-oriented sector. The nonprofit status of an organisation is a legal institutional constraint, and is not easy to change. Glaeser (2001) outlines a theory of not-for-profit entrepreneurs, who forgo the profits of a private firm in order to harness the voluntary contributions that a non-profit organisation can elicit. Entrepreneurs make an optimal choice of organisation type, choosing to form a nonprofit organisation when the benefits of harnessing contributions to the organisation through the credibility of nonprofit status outweigh the potential profits of forming a for-profit organisation.

Voluntary organisations have a clear incentive to recruit mission-motivated workers. The provision of warm-glow utility as part compensation reduces the costs in the sector, and increases the level of output that can be produced in line with the organisation's aims.

Product Market Equilibrium

The growth in the voluntary sector over the past ten years has been driven by an increase in the contracting out of public service provision (Kendall, Matosevic, Forder et al., 2003). In recent years the amount of earned income received by voluntary organisations (through trading, contracting-out and commissioning) has been growing faster than the total voluntary income received through donations (National Council of Voluntary Organisations, 2008). In 2003, the total earned income for the voluntary sector exceeded the total voluntary income for the first time, and the increase has continued.

With this in mind, we model the product market of the mission-oriented sector simply as supplying services to a public sector buyer. These services are typically located in the Health and Social Work or Education industries. The public sector has a fixed budget *M* to spend on purchasing services, shown by the budget constraint in equation (*8*), and so is represented by a downward sloping demand curve.

$$M = p_P q_P + p_V q_V + P \qquad (8)$$

Where p_P, p_V are the prices and q_P, q_V are the quantities of services provided by the profit-oriented and mission-oriented sectors respectively, and P is spending on other public goods.

Both the profit-oriented and mission-oriented sectors use the same production technology. Increasing the quantity supplied requires an increase in employment, and so organisations face an upwards-sloping supply curve.

$$q = f(L) \qquad (9)$$

The profit-oriented sector maximises profits:

$$\underset{q_P}{Max}\pi = p_P.q_P - C(q_P, w_P) \qquad (10)$$

The mission-oriented sector maximises its output given a zero profit condition (due to the non-distribution of profits constraint).

$$0 = p_V.q_V - C(q_V, w_V) \qquad (11)$$

The increasing demand for mission-oriented sector services is represented in this simple model as an exogenous shift in the public sector demand curve. This is driven by policy changes at a national level to contract out the provision of public services.

The purchaser of services has a demand for services D. These services can be supplied by either the Profit-oriented or Mission-oriented sectors. The existence of warm-glow wage discounts gives the mission-oriented sector a cost advantage in service provision, and so it is able to provide the same level of service at a lower price. The quantity of service demanded determines the mission-oriented sector's demand for labour, and so the equilibrium level of Z^* and w_V.

Increasing the Voluntary Sector Workforce

As the mission-oriented sector grows, its demand for labour increases. In equilibrium the marginal worker has a taste for warm glow $Z_i = Z^*$. In order to attract workers for whom the utility of working in the profit-oriented sector is higher than that of the mission-oriented sector, w_V must increase.

The sector equilibrium wages, w_P and w_V, result in a split of the labour market at Z^*. Workers with $Z_i < Z^*$ will have $U(C^*, g) > U(C_0,0)$ and so will choose to work in the mission-oriented sector. Workers with $Z_i > Z^*$ will have $U(C^*, g) < U(C_0,0)$ and so will choose to work in the profit-oriented sector. This proportion is given by N_1 in Equation 6. As the marginal worker at Z^* is indifferent between working in the two sectors, the size of the mission-

oriented sector workforce can only be increased by increasing the w_V. The additional workers will have $Z_i > Z^*$, and so the average level of warm glow utility will reduce in the mission-oriented sector. This increased wage will reduce the size of the warm-glow wage differential, and bring wages in the two sectors closer together.

Figure 2 shows the effect of an expansion in demand for mission-oriented sector production. If the purchaser decides to increase the proportion of services sourced from the mission-oriented sector then this will shift the demand curve D_X rightwards to D_X'. The new equilibrium in the labour market will be a higher wage w_V'. The additional workers in the mission-oriented sector are provided by the shift in Z^* to $Z^{*\prime}$. The additional workers recruited all have a preference for warm glow Z_i that is lower than the existing mission-oriented sector workforce. This in turn reduces the cost advantage of the mission-oriented sector. Over time this would reduce the sector wage-gap as the sector grows.

These theories can be tested empirically, by estimating sector wage differentials after controlling for observable differences in individuals, jobs and organisations. The theory makes two predictions: firstly, if the mission-oriented sector workforce is made up of individuals with a high taste for warm glow, then we would expect to find a wage discount in the sector. Secondly, as the sector grows, fuelled by an increase in contracting-out, the wage gap should narrow.

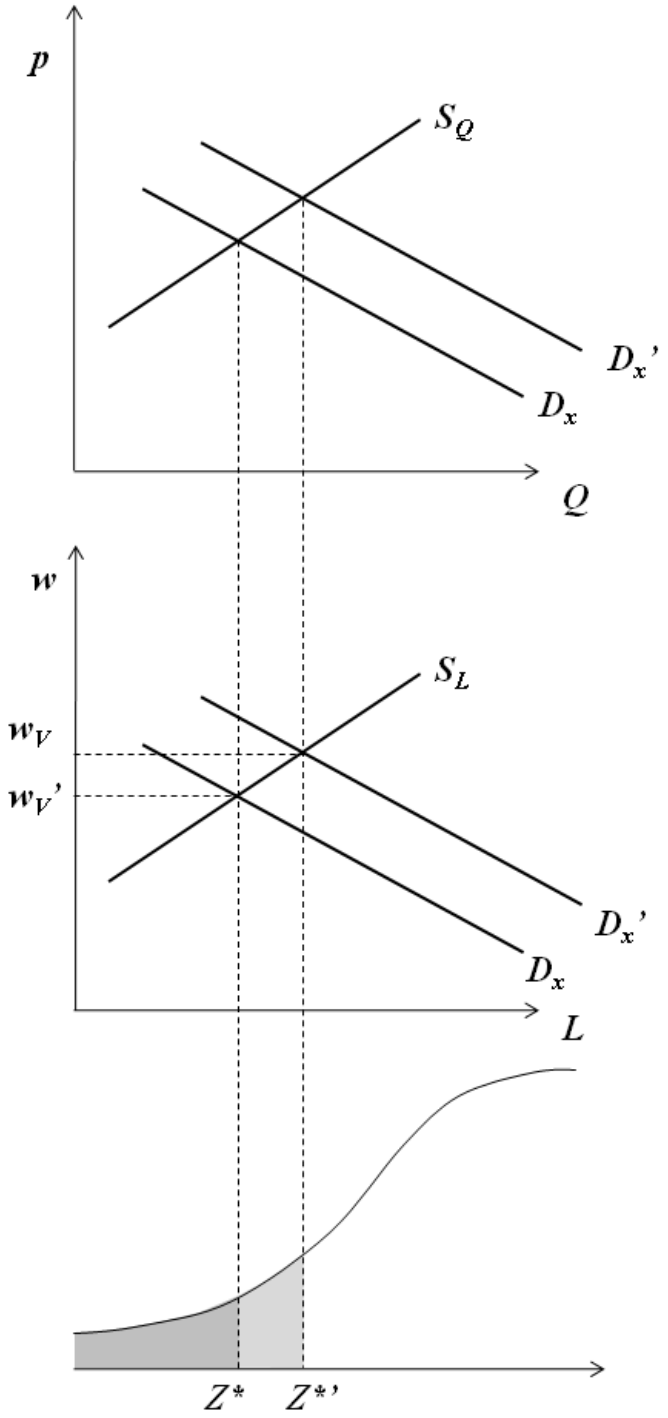


Figure 2: Expansion of the Mission-oriented Sector

Empirical Research on Sectoral Wage Differentials

There is an extensive literature on the apparent public sector wage premium found by examining the mean wages of workers in the two sectors. This premium is often found even after adjusting measures for the different workers characteristics in the two sectors. Disney and 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. The early literature, primarily using US data, focussed on specific industries or professions.[3] 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.

More recent work has analysed nonprofit wage differential across the whole workforce. 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. Ruhm and Borkoski (2003) undertook both a cross-sectional and longitudinal analysis of nonprofit compensation using the 1994-98 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. Although their dataset has a longitudinal component, this is used only to examine workers switching between sectors, and not to analyse changes in wage

[3] See also Mocan and Tekin (2003)

differentials across time. Our contribution to this literature is to examine the evolution of the sector wage differentials over time as the sector grows, while also controlling for sample selection bias through a fixed effects model.

The questions that we seek to address in this study are as follows. Firstly, are there significant sector wage differences found in the UK data, and do these support a warm-glow theory of wage setting? Secondly, how have these wage differences evolved in the past ten years of government-driven growth in the sector?

Exploring the Data

This analysis uses the UK Labour Force Survey (LFS). The LFS is a rotating panel, collected quarterly, following individuals for one year. The sample used here is for the 10 years from 1998 Q1 to 2007 Q2. This nationally collected dataset provides a large representative sample of the UK population, across all sectors and industries. Additionally, the pooled cross-sections permit analysis of changing wage differentials following government intervention in the market that was not analysed in the previous literature.

Table 1 below shows the breakdown of the sample by sector and gender. This shows that there are around 6,500 workers sampled in the voluntary sector over the 10 year period. This means that voluntary sector workers make up only about 2.5% of the sample. However, the proportion of voluntary sector workers in the LFS sample has been growing over the period, from about 2.2% in 1998 to 2.7% in 2007.

Sector	*sex* male	female	Total
Private Sector	95,892	73,458	169,350
	(56.62%)	(43.38%)	
Public Secto	26,343	49,728	76,071
	(34.63%)	(65.37%)	
Voluntary Sector	1,850	4,588	6,438
	(28.74%)	(71.26%)	
Total	**124,085**	**127,774**	**251,859**
	(49.27%)	(50.73%)	

Table 1: Number and proportions of workers by Sex and Sector
Source: UK Labour Force Survey (1998-2007)

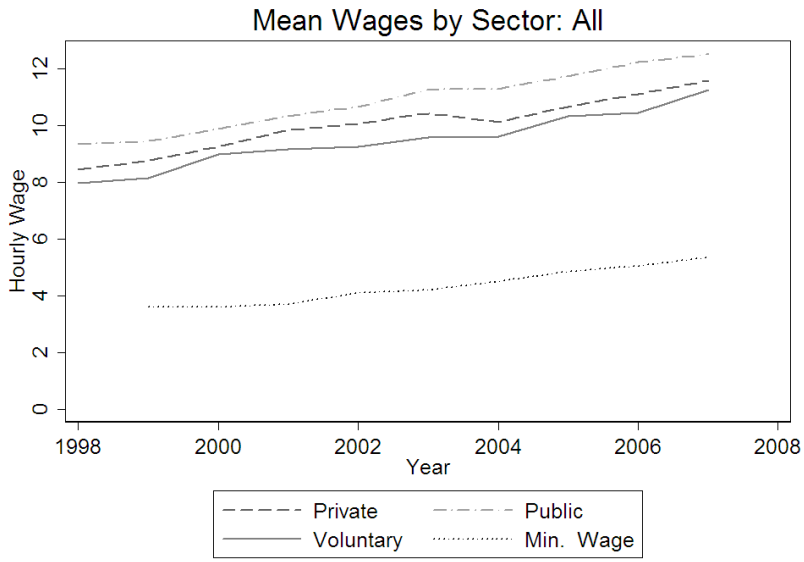
The table also shows that the voluntary sector workforce is predominantly female, at over 71%, and this is higher even than the proportion of women in the public sector.

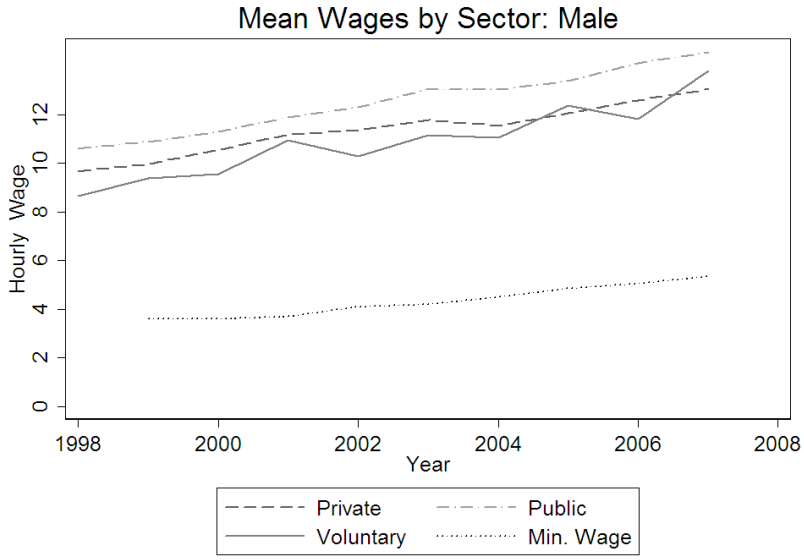
In this paper we look at how voluntary sector wages have changed in the past ten years. Figure 3 below shows the mean wages by sector and gender over the ten years of the sample period. In the first figure, the sample mean wages are plotted, showing that public sector wages are consistently highest, with private sector wages second and the lowest wages in the voluntary sector.

The second and third panels split the sample into male and female workers, and a quite different picture emerges. Voluntary sector male wages are still lower than the private and public sectors, although in 2005 and 2007 they edge above the private sector. Voluntary sector female wages are consistently at a premium to the private sector, but below the public sector throughout the ten years.

However, these differences in the mean wages between sectors could be explained by the differences in characteristics between workers in the sectors. For example, systematic differences between the sectors in the age, experience or education of workers could explain the observed difference in mean wages. In this paper we estimate wage equations that allow us to control for observable differences in the characteristics of workers between sectors, in order to estimate the unexplained sector wage differential. It is this wage differential that would allow us to test the theory of warm-glow wage setting.

Figure 4 below shows the distribution of years of experience by sector. Workers in the private sector have the fewest years of experience, with the distribution peaking early at around 15 years. Both the public and voluntary sectors have higher proportions of more experienced workers, peaking at around 20 to 25 years.





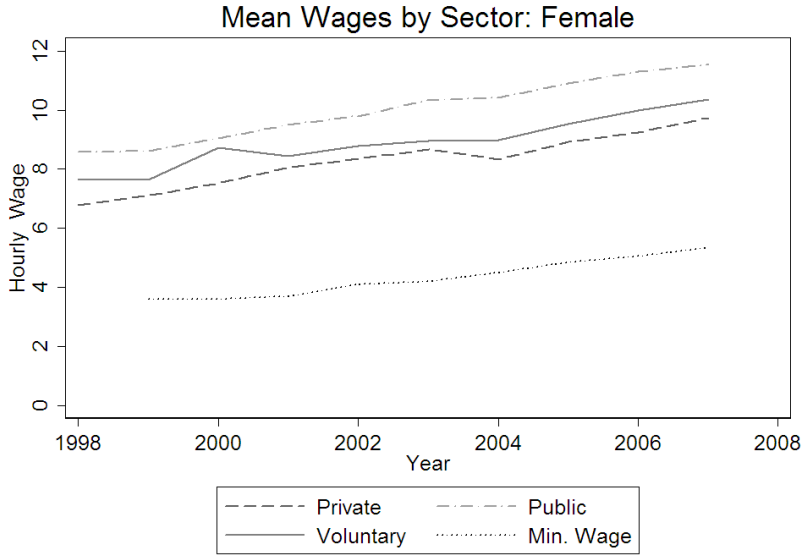


Figure 3: Mean Wages 1998 to 2007 by sector
Source: UK Labour Force Survey (1998-2007)

Tenure by Sector

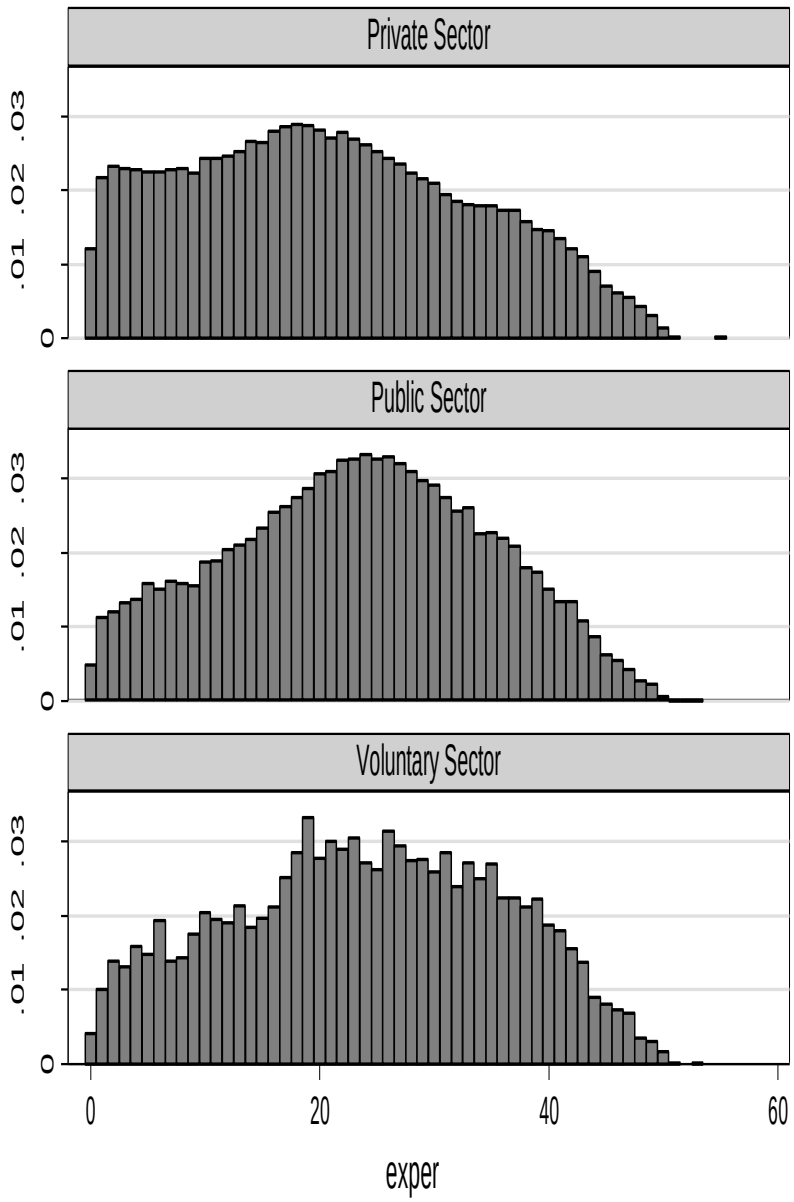


Figure 4: Histogram of Years Experience by Sector
Source: UK Labour Force Survey (1998-2007)

Methodology

In this paper we estimate three models. The first specification is a Mincer wage equation estimated on pooled cross-sectional data. The second specification interacts the sector and year variables to explore how the sector wage differentials have evolved over the past ten years. The third specification uses a smaller panel dataset to estimate a fixed effects model using workers switching between sectors.

MODEL ONE: Pooled Cross-Section

In keeping with the existing literature, wage equations are estimated using a Mincer Equation (see (Heckman, Lochner, & Todd, 2006) for a review). This models wages with the equation:

$$\ln(w_i) = \beta_0 + \beta_{EDUC} EDUC_i + \beta_{EXP} EXP_i + \beta_{EXP2} EXP_i^2 + \varepsilon_i \qquad (12)$$

This framework allows other controls to be added in order to test various hypotheses. Controls are included for age, experience, tenure, education, part-time working, organisation size, temporary work, occupation, industry, region and time.

$$\ln(w_i) = \beta_0 + \beta_{PUB} PUB_i + \beta_{VOL} VOL_i + \beta_{EDUC} EDUC_i + \beta_{EXP} EXP_i + \beta_{EXP2} EXP_i^2 + \boldsymbol{\beta_X}.\boldsymbol{X_i} + \varepsilon_i \qquad (13)$$

Where PUB and VOL are sector dummy variables, and $\boldsymbol{X}$ is a collection of relevant control variables. The equations are estimated separately for male and female workers. 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.

The summarised estimation results are shown in Table 2 columns (1) and (2) below. This table shows the results for male and female workers across the whole ten-year sample, with the estimated coefficients for public sector, voluntary sector, age, experience and tenure reported. Additional explanatory variables included in the model estimation but not reported include age, education, organisation size, occupation, industry, region, and time dummies for year and quarter.

Male workers in voluntary sector receive 12.2% lower wages than the private sector. Those in the public sector receive 2.6% less than the private sector.[4] Wages for female workers in the voluntary sector are higher than the private sector by 1.5%, while those in the public sector earn 3.4% more than their colleagues in the private sector.

MODEL TWO: Wage Differentials over time

This model allows us to explore the evolution of the sector wage differences over time. In the past ten years the voluntary sector has experienced significant growth, and has also seen a significant shift in its main source of funding from donated income to revenue from services. How has this affected wages in the voluntary sector?

The LFS data has been used to estimate wage differentials over time using the pooled-cross-section model, with the sector dummies interacted with the year dummies.

$$\ln[w(EDUC, EXP)] = CONS + \beta_{PRIV} PRIVATE + \beta_{PRIVYR} PRIVXYEAR + \beta_{PUB} PUBLIC + \beta_{PUBYR} PUBXYEAR + \beta_{EDUC} EDUC + \beta_{EXP} EXP + \beta_{EXP2} EXP^2 + \boldsymbol{\beta}_{\mathbf{X}} \mathbf{X} + \varepsilon \qquad (14)$$

Table 2 below shows the estimates of this model, in columns (3) and (4). Also reported are the year and sector interactions for 2004 to 2007. The coefficient on the sector dummies now represents the estimated wage differential in 1998, the base year. The sector year interactions show how this wage differential has evolved over time. Male workers begin with wage premiums in the private and public sectors of 21.5% and 20.9% respectively. This premium reduces over the ten years, dropping to 3.7% in the private sector and 0.9% in the public sector by 2007. Female workers in 1999 earned 6.4% more in the public sector than the voluntary sector, but with no significant difference from the private sector. The private sector year interactions are not statistically significant, however the public sector premium falls across the ten years to only 1.3% in 2007.

[4] The sector coefficients β_{VOLS} and β_{PUB} have been converted from log coefficients to percentages as per Halvorsen & Palmqvist (1980)

MODELS (1) AND (2): POOLED CROSS-SECTION WAGE EQUATIONS

	MODEL ONE		MODEL TWO	
	(1)	(2)	(3)	(4)
	Basic: Male	Basic: Female	Interact: Male	Interact: Female
Public Sector	-0.0262	0.0490	-0.00469	0.0652
	(0.00446)***	(0.00322)***	(0.00938)	(0.00744)***
Voluntary Sector	-0.130	0.0148	-0.199	0.00266
	(0.00939)***	(0.00566)***	(0.0311)***	(0.0186)
Experience	0.0102	0.00265	0.0102	0.00267
	(0.000915)***	(0.000875)***	(0.000915)***	(0.000875)***
Exper2 /100	-4.957	-4.275	-4.960	-4.276
	(0.170)***	(0.175)***	(0.170)***	(0.175)***
Tenure	0.0129	0.0145	0.0129	0.0145
	(0.000368)***	(0.000378)***	(0.000369)***	(0.000379)***
Tenure2 /100	-0.0202	-0.0200	-0.0201	-0.0199
	(0.00111)***	(0.00133)***	(0.00111)***	(0.00133)***
Part-Time	-0.0652	-0.0363	-0.0653	-0.0363
	(0.00506)***	(0.00217)***	(0.00506)***	(0.00217)***
Temporary Job	-0.0411	-0.0360	-0.0410	-0.0359
	(0.00552)***	(0.00431)***	(0.00552)***	(0.00431)***
PublicX2004			-0.0252	-0.00696
			(0.0116)**	(0.00905)
PublicX2005			-0.0235	-0.0128
			(0.0118)**	(0.00921)
PublicX2006			-0.0142	-0.0144
			(0.0118)	(0.00910)
PublicX2007			-0.0239	-0.0275
			(0.0141)*	(0.0107)**
VoluntaryX2004			0.0552	0.00552
			(0.0400)	(0.0239)
VoluntaryX2005			0.154	0.0308
			(0.0413)***	(0.0243)
VoluntaryX2006			0.106	0.0323
			(0.0409)***	(0.0234)
VoluntaryX2007			0.150	0.0218
			(0.0483)***	(0.0277)
_cons	1.188	1.524	0.876	1.181
	(0.0253)***	(0.0246)***	(0.0252)***	(0.0246)***
N	120169	124297	120169	124297
R^2	0.548	0.561	0.549	0.561
AIC	102076.1	83749.9	102052.7	83756.2

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(Models (1a) and (1b): $\ln(w) = CONS + \beta_{PRIV} PRIV + \beta_{PUB} PUB + \boldsymbol{\beta}_{\mathbf{X}} \mathbf{X} + \varepsilon$ Models (2a) and (2b): $\ln(w) = CONS + \beta_{PRIV} PRIV + \beta_{PRIVYR} PRIVXYR + \beta_{PUB} PUB + \beta_{PUBYR} PUBXYR + \boldsymbol{\beta}_{\mathbf{X}} \mathbf{X} + \varepsilon$ The experience and tenure variables are measured in years. The Sector/Year interactions for

1999-2003 have been omitted from the table to save space. Additional explanatory variables included in the model estimation but not reported above include Age, Education, Organisation Size, Occupation, Industry, Region, Year and Quarter.)

Table 2: Pooled Cross Section Estimation Results
Source: UK Labour Force Survey (1998-2007)

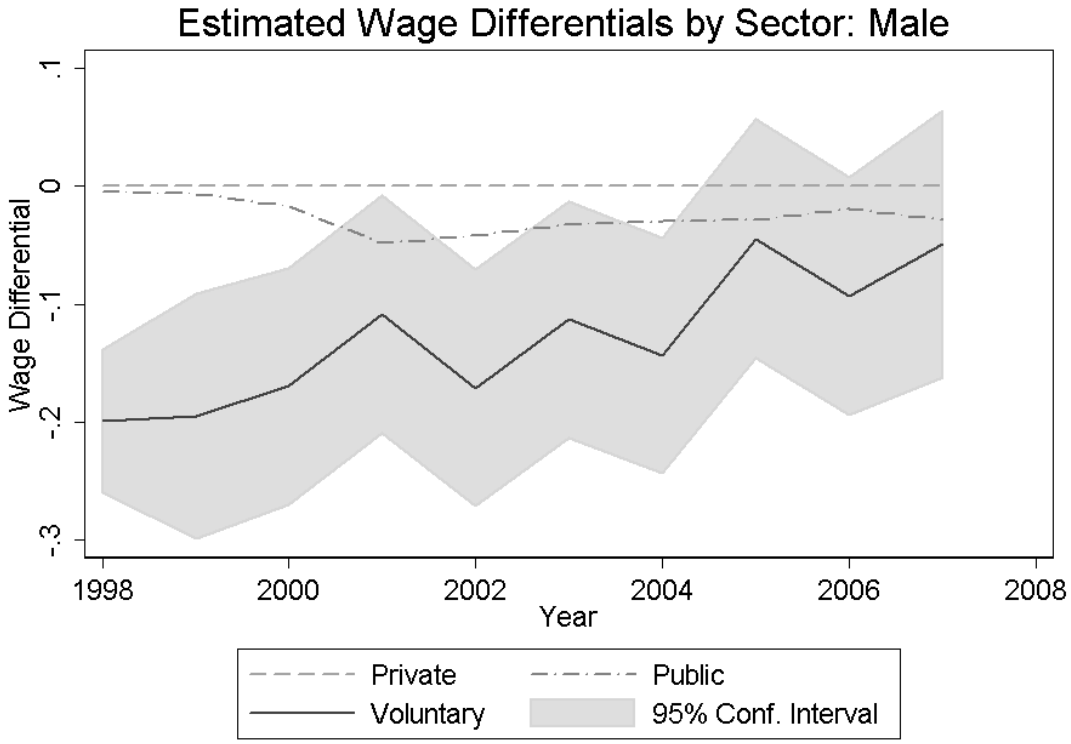
Figure 5 below graphs these year specific dummies combined with the estimated individual sector and year effects, relative to private sector wages in 1998. These plots are produced by adding the year, sector, and interaction effects for each sector, and taking the Private sector wage level in each year as the base.

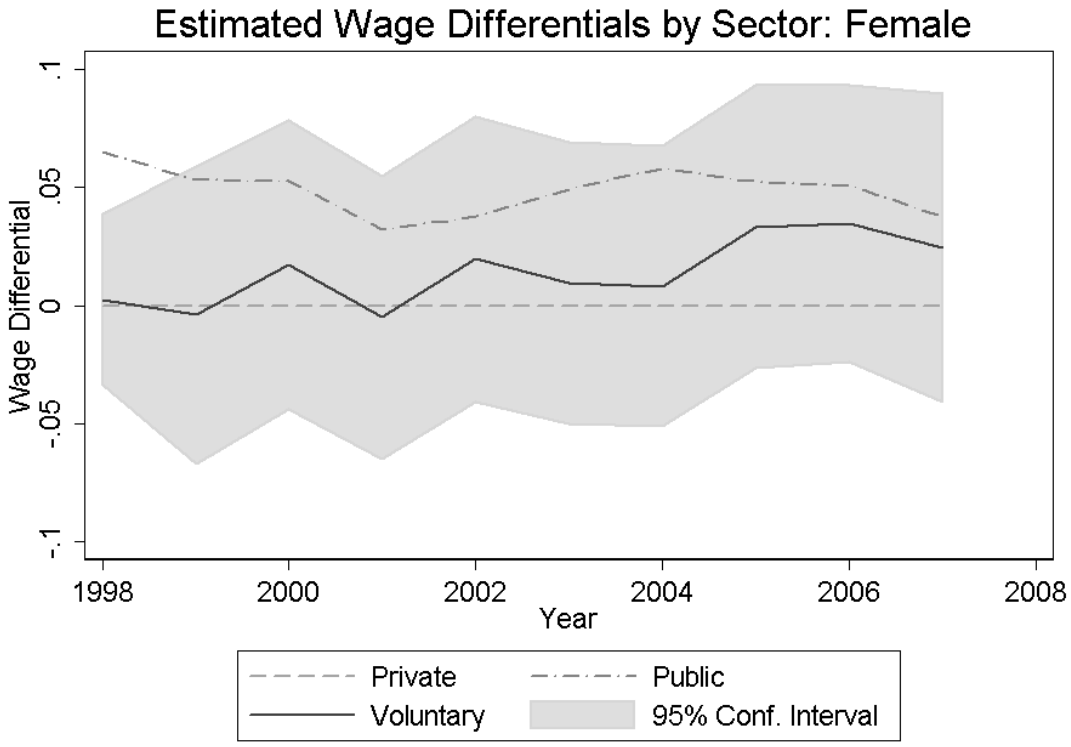
We can see that for male workers the voluntary sector wage discount was greatest in 1998, and the gap has been closing steadily over the ten-year period. For female workers, voluntary sector wages began on a par with the private sector, but with a significant discount from the public sector. Until 2004, voluntary sector wages seem to track the private sector wage growth, however in the last three years of this period they increase at a faster rate, approaching the public sector premium.

Model Three: Fixed Effects

The third model makes use of the limited panel structure of the UK Labour Force Survey. The dataset is a rotating panel, with workers surveyed quarterly and exiting after a year. This model uses the first and fifth waves of the panel, one year apart, as these are the two waves where participants are asked about the wage in their primary employment.

Estimating a panel model allows us to control for individual fixed effects by observing the same individuals in two sectors. Although this tackles some of the criticisms of cross-sectional analysis of wage differences, we must also address a number of issues. Firstly, sector effects are now identified by those individuals who are observed in both sectors. This requires that there are sufficient observations to fully identify the effects. The relatively small size of the voluntary sector makes this more difficult, but by combining several years of the LFS we have assembled sufficient observations.





Notes: The wage differentials are calculated summing the sector, year and interaction effects for each sector. The 95% confidence interval shown is for the voluntary sector estimates. The 95% confidence interval shows the interval around the voluntary sector wage level compared to the private sector base.

Figure 5: Estimated Wage Differentials 1998 – 2007
Source: UK Labour Force Survey (1998-2007)

Secondly, there is still a potential issue of sector selection as the decision to move job is not strictly exogenous. The ideal case would be a organisation switching sector as an exogenous shock. However organisations very rarely move into and out of the voluntary sector, and we would require observations on many employees of the firm to identify organisational effects. The detailed worker data, collected so close to the sector switch, is likely to be the closest we will come to a random panel dataset of sector moves. Thirdly, estimating a fixed effects model increases the potential bias due to measurement error. For this reason we use only the data collected contemporaneously by personal or telephone interview, and do not extend the dataset to analyse data recalled from the twelve months prior to selection into the LFS.

Describing the sector switchers

Table 3 shows the panel sample by sector, gender and wave. Workers in the voluntary sector make up about 1.5% of the male workforce and about 3.5% of the female workforce.

		Male				Female
Sector	Wave 1	Wave 5	Total	Wave 1	Wave 5	Total
Private Sector	36,768	36,440	73,208	25,709	25,083	50,792
Public Sector	11,309	10,896	22,205	19,969	19,454	39,423
Voluntary Sector	744	758	1,502	1,653	1,739	3,392
Total	48,821	48,094	96,915	47,331	46,276	93,607

Table 3: Panel Sample by Wave and Gender
Source: UK Labour Force Survey (1997-2002)

Table 4 shows a breakdown of the sector switchers between waves 1 and 5 of the LFS. Unsurprisingly the majority of workers in each sector do not switch over the year of observation.

		Wave 1 Private		Public		Voluntary	
Wave 5		Freq.	Percent	Freq.	Percent	Freq.	Percent
Private	Male	36,062	73.87	594	1.22	136	0.28
	Female	24,340	51.43	815	1.72	329	0.7
Public	Male	634	1.3	10,647	21.81	61	0.12
	Female	1,167	2.47	19,003	40.15	131	0.28
Voluntary	Male	72	0.15	68	0.14	547	1.12
	Female	202	0.43	151	0.32	1,193	2.52

Table 4: Panel Sample by Wave and Gender
Source: UK Labour Force Survey (1997-2002)

For males, 337 workers (0.7%) and for females, 813 workers (1.7%) switch into or out of the voluntary sector. Although these sector switchers form a small proportion of the whole sample, they represent a significant proportion of voluntary sector workers. This is indicative of the fact that voluntary sector workers make up about 4% of the UK workforce. By way of comparison, in 2004/05 the university sector employed an estimated total of 284,000 workers, or just over 1% of the workforce (HEFCE, 2006).

Figure 6 below shows the distribution of log hourly wage by sector and sector move. This shows that there is a greater spread in the distribution of private sector wages compared to the voluntary sector.

The graph in Figure 7 below shows employees' tenure with their employer at their first observation in the LFS, that is before they switch sector. Workers in the public sector have the flattest tenure distribution, while workers in the voluntary sector have the steepest. Overall workers who switch during the time they are observed have much steeper tenure distributions, suggesting that those moving jobs are likely to move again. Workers moving between the private and voluntary sectors have the shortest tenures, while those moving into and out of the public sector tend to have longer tenures.

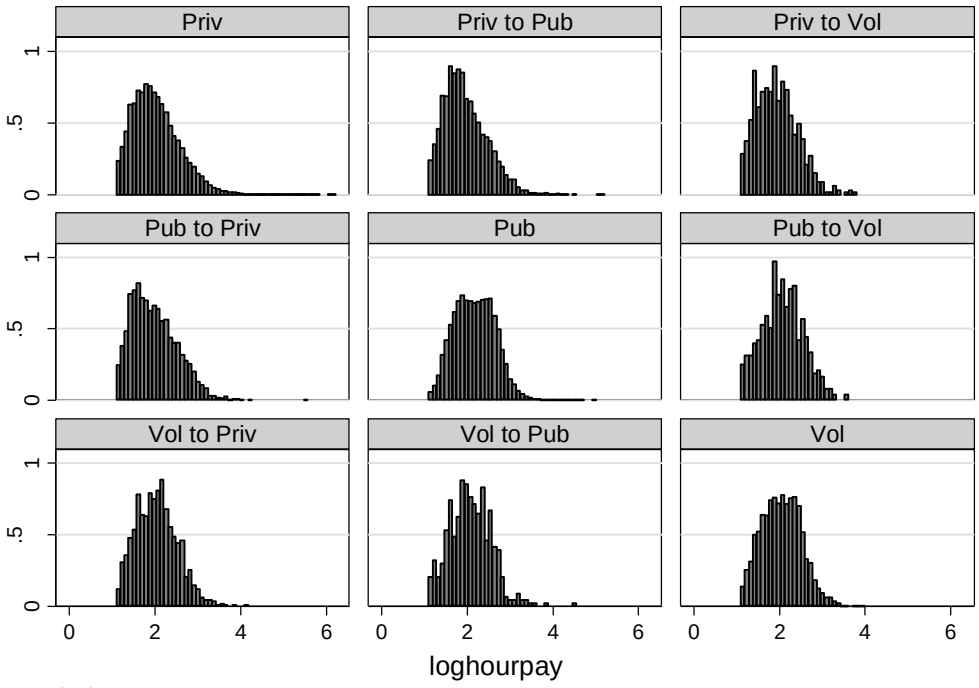


Figure 6: Histogram of log hourly pay by sector move
Source: UK Labour Force Survey

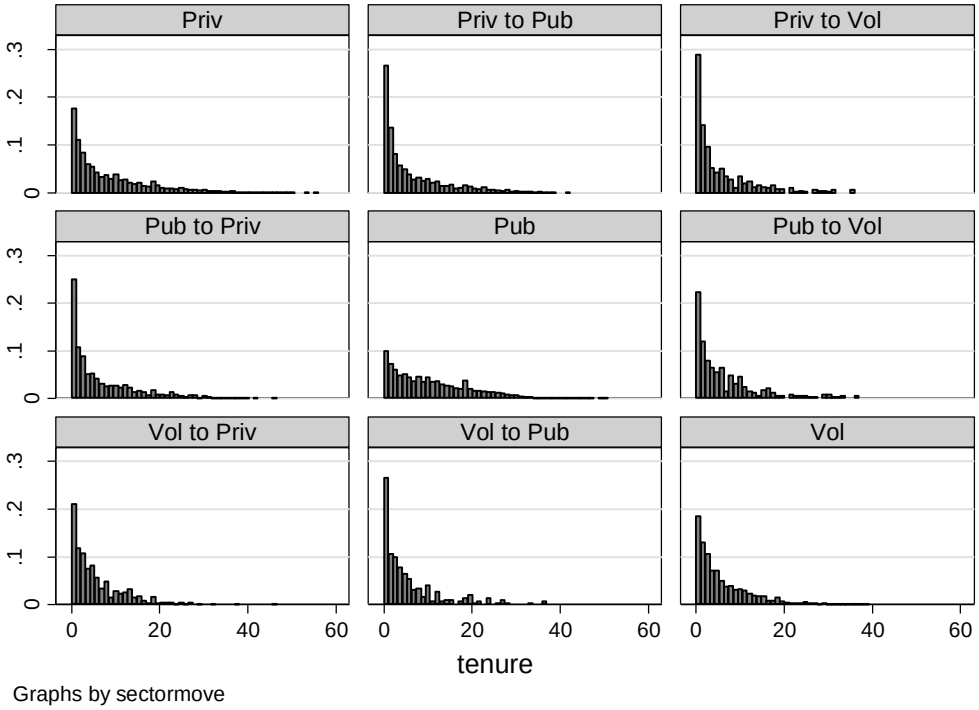


Figure 7: Histogram of employee tenure by sector move
Source: UK Labour Force Survey

Estimating the model

The model estimated is a fixed effects estimator with two time periods, regressing log hourly wages on a set of explanatory variables with sector dummy variables. Separate models are estimated for male and female workers.

$$\ln[w_{it}] = \beta_0 + \beta_{PUB} PUB_{it} + \beta_{PUBYR} PUBXYEAR_{it} + \beta_{VOL} VOL_{it} + \beta_{VOLYR} VOLXYEAR_{it} + \beta_{EDUC} EDUC_{it} + \beta_{EXP2} EXP_{it}^2 + \boldsymbol{\beta}_{\mathbf{X}} \mathbf{X}_{it} + \alpha_i + \varepsilon_{it} \quad (15)$$

Results

The Fixed effects estimation results can be seen in Table 5 below. The time dummies and sector/year interactions for the Public Sector have been omitted from the table to save space. Additional explanatory variables included in the model estimation but not reported above include education, organisation size, industry, and region.

They show a public sector wage premium in 1997 of ~3.5% and a voluntary sector wage discount of ~12.5% for male workers. For female workers there is a public sector premium of ~5.7% and no significant voluntary sector wage difference.

The change in sector wage differentials by year can be seen in Figure 8 below. For both male and female workers wages in the voluntary sector grow faster than the private and public sectors. Male workers begin with a significant voluntary sector wage discount, which disappears across the time period. Female workers begin and end with no statistically significant wage difference, although the estimated premium grows over the period. For male workers the public sector premium is steady over the time period, while it rises slightly for female workers.

MODEL 3: FIXED EFFECTS WAGE EQUATIONS

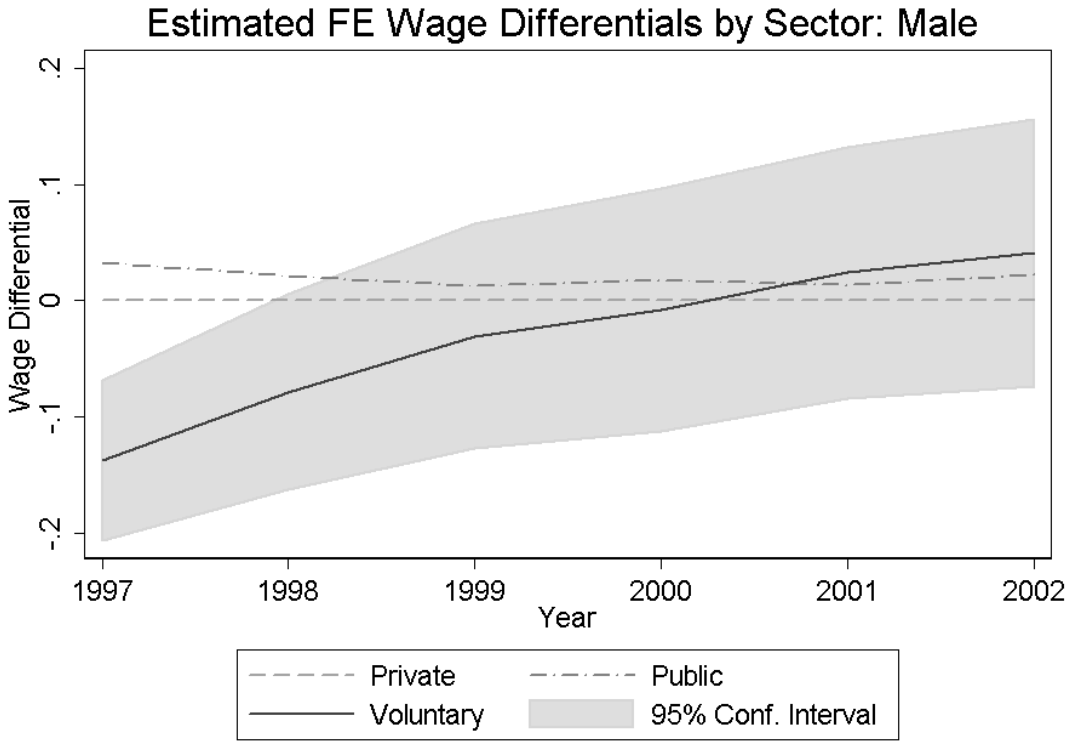
	(3a) FE: Male	(3b) FE: Female
Public Sector	0.0322	0.0585
	(0.0137)**	(0.0115)***
Voluntary Sector	-0.137	0.0108
	(0.0354)***	(0.0258)
VoluntaryX1998	0.0583	0.0180
	(0.0240)**	(0.0183)
VoluntaryX1999	0.106	0.0280
	(0.0346)***	(0.0252)
VoluntaryX2000	0.129	0.0160
	(0.0396)***	(0.0280)
VoluntaryX2001	0.160	0.0260
	(0.0423)***	(0.0296)
VoluntaryX2002	0.176	0.0519
	(0.0467)***	(0.0323)
Age^2 /100	-0.0747	-0.0691
	(0.00680)***	(0.00732)***
Tenure	0.00366	0.00216
	(0.00107)***	(0.00122)*
$Tenure^2$ /100	0.00388	0.00618
	(0.00385)	(0.00545)
Part Time	0.0226	0.0378
	(0.0106)**	(0.00534)***
Temporary Job	-0.0256	-0.0126
	(0.00788)***	(0.00659)*
_cons	3.119	2.586
	(0.112)***	(0.116)***
N	96915	93607
R^2	0.064	0.060
AIC	-140914.7	-130812.3

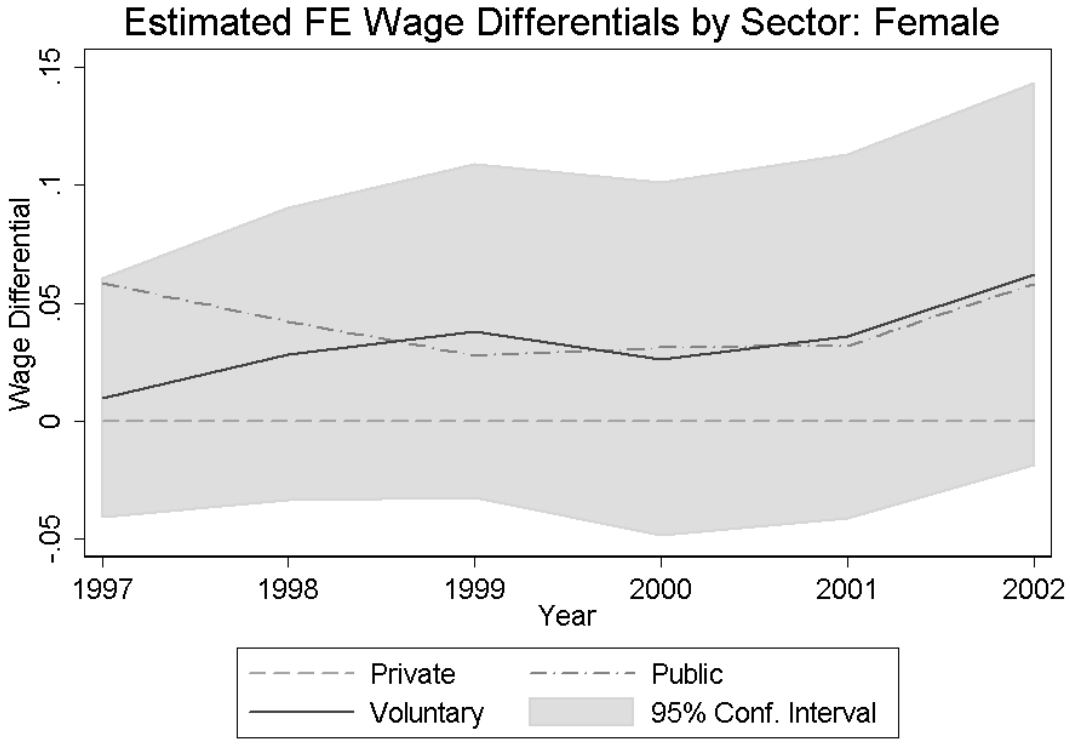
Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(Model (3a) and (3b): $\ln[w_{it}] = CONS + \beta_{PRIV} PRIVATE_{it} + \beta_{PRIVYR} PRIVXYEAR_{it} + \beta_{PUB} PUBLIC_{it} + \beta_{PUBYR} PUBXYEAR_{it} + \beta_{EDUC} EDUC_{it} + \beta_{EXP2} EXP_{it}^2 + \boldsymbol{\beta}_{\mathbf{X}} \mathbf{X}_{it} + \alpha_i + \varepsilon_{it}$
The age and tenure variables are measured in years. The Sector/Year interactions for the Public Sector have been omitted from the table to save space. Additional explanatory variables included in the model estimation but not reported above include Education, Organisation Size, Industry, Region, and Year dummies. Age is omitted due to collinearity, as all worker observations are one year apart.)

Table 5: Fixed Effects Panel Estimation Results
Source: UK Labour Force Survey (1997-2002)





Notes: The wage differentials are calculated summing the sector, year and interaction effects for each sector. The differentials for the public and voluntary sectors are shown relative to the private sector as a base in each year. The 95% confidence interval shows the interval around the voluntary sector wage level compared to the private sector base.

Figure 8: Estimated Wage Differentials 1997 – 2002

Source: UK Labour Force Survey (1997-2002)

These findings were supported even after controlling for worker fixed effects using the limited panel structure of the Labour Force Survey. This suggests that the findings are not simply explained by sector selections effects due to unobserved worker heterogeneity.

This decade has seen a significant expansion of the voluntary sector workforce. The theory of compensating wage differentials that forms the basis for warm-glow theories of wage-setting clearly predicts that as the voluntary sector expands the warm-glow wage gap should narrow.

We must also rule-out alternative explanations for the sector wage growth over this period. Firstly we consider gender differences. If the additional voluntary sector workers have been disproportionately male, then this could explain the greater erosion of the male wage differential. Figure 9 shows the proportion of male workers by sector over the sample period. This suggests that the proportion of male workers has actually fallen slightly, from 29% in 1998 to 26% in 2007.

Alternatively, it is feasible that as public services have been contracted out to the voluntary sector the unions have followed the workforce. If there has been an increase in unionisation in the voluntary sector in response to the growth of the workforce, then this could explain in part the faster wage growth.

Figure 9 also shows the proportion of workers who are union members, and the proportion of workers who report that a union is present at their place of work, by sector. This shows clearly that the proportion of workers in the voluntary sector who are union members has fallen since 1998 from 29% to 18% in 2006. This suggests that the move of workers from the public to the voluntary sectors has not been driven by an increase in unionisation. In fact, the reverse is true: wage growth has been higher in the voluntary sector despite a decline in unionisation within the sector.

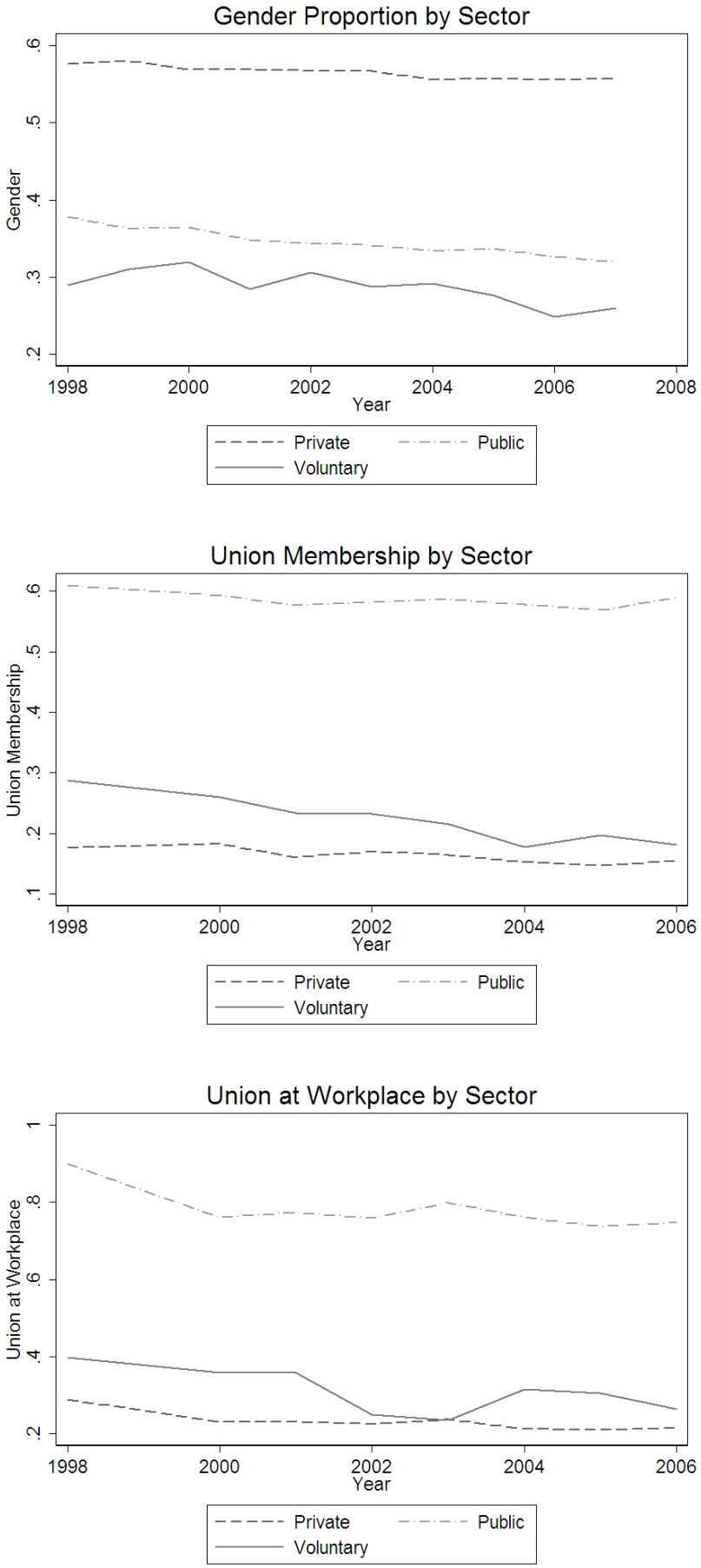


Figure 9: Gender Balance, Union Membership and Presence by Sector
Source: UK Labour Force Survey (1998-2006)

This analysis also suggests that as the voluntary sector expands the average level of warm-glow motivation reduces. What else could cause this effect? The conclusions drawn depend on a stable distribution of Z in the population: if workers become more altruistic then the distribution of Z will shift, and we could expect an increase in the size of the sector without warm glow reducing.

	National Survey of Volunteering				***Citizenship Survey***	
	1981	**1991**	**1997**	**2001**	**2003**	**2005**
Formal Volunteering in Past 12 months	44%	51%	48%	39%	42%	44%
Regular Formal Volunteering in past 12 months	27%	31%	29%	27%	28%	29%

Table 6: Percentage of Formal Volunteers over time[5]
Source:(Low, Butt, Ellis Paine, & Davis Smith, 2007)

We argue that despite the increasing size of the voluntary sector the distribution of Z has remained constant. We consider levels of formal volunteering, undertaken without pay, as a proxy for the levels of mission-motivation in the population. Table 6 shows the percentage of the population who reported having undertaken formal volunteering work in the previous 12 months. Figures are shown for both once-off and regular volunteering. They show that levels of volunteering have not significantly increased since 1997: in fact they seem to have experienced a dip compared to volunteering levels in the early 1990's. If the sector was growing due to an increase in altruism in the population (and so a shifting Z distribution) we would reasonably expect that levels of unpaid volunteering would also show a similar change. This supports our assertion that the growth of the voluntary sector workforce has been fuelled by a movement of Z*, rather than by an increase in the number of altruistic workers in the population.

If the distribution of Z has remained fairly constant, and so the average level of mission-motivation in the voluntary sector has fallen, what are the consequences? Firstly, the scale of the problem depends on the shape of the distribution of Z, the taste for warm glow. If it is relatively uniform, then there will be little difference between existing and new voluntary sector workers. If however it is peaked, then the introduction of new workers could have significant impacts on the make-up of the voluntary sector workforce. Two potential impacts of this are identified.

[5] Figures from the Helping Out survey in 2006 showing higher volunteering proportions. However the report notes that methodological differences mean that the figures for 2006 are not comparable with previous surveys.

Firstly, if the mission of an organisation in determined by negotiation between the employees then the introduction of employees with weaker mission-oriented motivation could have implications for the strength and type of mission. The theoretical rationale for voluntary sector provision of public services is that the combination of the profit non-distribution constraint and the intrinsic motivation of workers allows the credible provision of quality where there are significant information asymmetries between provider and purchasers or recipients. If the mission, or level of intrinsic motivation is diluted, then this could have implications for the comparative advantage of voluntary organisations in the provision of these types of services.

Besley and Ghatak extend their Principal-Agent model to allow a spectrum of missions that the Principal and Agent bargain over. They show how compromising on mission can be used as an alternative to incentive pay. The converse of this is that as incentive pay increases in the voluntary sector, and wages converge, there is less of a role for mission-matching between principals and agents.

Akerlof (1986) discussed reciprocal gift exchange in the workplace, where workplace norms provide the framework for a system of reciprocal effort. The introduction of new workers who do not share these norms could cause this reciprocal equilibrium within the organisation to collapse, and reduce effort even amongst the most mission-motivated workers.

Secondly, a further rationale for contracting-out public services is to reap efficiency and cost-saving benefits from the competitive tendering of services. At least some of these benefits arise from the lower wage levels attributed to warm glow. However the findings in this paper suggest that the effect over the past ten years of this policy has been strong growth in voluntary sector pay for both male and female workers, as pay in the sector has converged on pay levels in the public sector. This will have significantly eroded the cost benefits of the policy.

There are a number of caveats that should be highlighted in interpreting these results. The LFS has been chosen for this analysis due to the richness and high quality of the worker data that it includes. But, given the nature of the voluntary sector, it is not without fault. Sector data is recorded only for respondents' main jobs, and not for secondary or further jobs. Since many jobs in the voluntary sector are part-time and/or temporary, it is conceivable that they make up a greater proportion of these omitted jobs. This suggests that the

estimate of sector size provided by the UK LFS is certainly a lower bound. Given the types of jobs involved, this effect is likely to be minor in the estimation, but is an ongoing issue for voluntary sector researchers and is worthy of note.

Conclusion

As with the findings in the US literature, the evidence for warm-glow wages is not clear cut. Although male workers are paid less in the voluntary sector, this wage-gap has been narrowing in the UK in recent years, and now appears to be non-existent. For female workers (who make up more than two thirds of the voluntary sector workforce), the analysis suggests a small voluntary sector premium above the private sector. While female workers still earn less than their colleagues in the public sector, the gap between the voluntary and public sectors has been narrowing.

We have tackled the issue of sector selection bias by both examining the labour market in the voluntary sector in the face of an exogenous shock, and through the analysis of a fixed effects model to control for unobserved worker heterogeneity. This has shown that the results are robust even after controlling for a potential sample selection bias.

Over the past ten years the voluntary sector has moved closer to the market, engaging in competitive tendering and commissioning processes for service provision. The government has specifically targeted increasing the capacity of sector to provide public services. This paper has shown that during this period the sector has seen significant growth, both as a proportion of the UK workforce and in the workers' pay.

We have explored the consequences of a government initiative to expand a specific sector through contracting-out public services. The motive for this policy was based on increasing value for money, in terms of cost, quality and variety. Through our analysis of voluntary sector workforce data, we argue that this policy has in fact had the opposite effect, by increasing wages to public sector levels and diluting the mission-motivation of workers in the sector.

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