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The Public-Private Sector Wage Differential for Full-Time Male Employees in Britain: A Preliminary Analysis

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The Public-Private Sector Wage Differential for Full-Time Male Employees in Britain: A Preliminary Analysis.

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ABSTRACT   JEL J3, J7

Relative employment conditions have changed across the public and private sectors in Britain over the last decade with the former becoming a more attractive earnings option. Using new linked employee-employer data for Britain in 2004, this paper shows that, on average, full-time male public sector employees earn 11.7 log wage points more than their private sector counterparts. Decomposition analysis reveals that the majority of this pay premium is associated with public sector employees having individual characteristics associated with higher pay and to their working in higher paid occupations. Whilst there is some evidence of workplace segregation in the private sector, there is little indication that rates of return vary across the earnings distribution for either public or private sector employees. It no longer appears to be the case that the public sector provides a refuge for the low skilled at the expense of the highly educated. Furthermore, working conditions appear more uniform in the public sector and, unlike the private sector, there is no significant penalty associated with ethnic background.

Key words: public sector earnings, male, earnings-gap, interquantile, segregation.

I. Introduction

> "The ASHE figures [showing that median earnings for full time workers in the public sector rose 4.1% to £475 a week in 2005 compared with 2.5% to £ 413 in the private sector] indicate that the Chancellor can now make a strong case for taking a tougher stance on public sector pay". (John Philpott, Chief Economist at the Chartered Institute of Personnel and Development, cited in *The Guardian*, November 11, 2005).

> "The Government says the public sector gets better pensions in compensation for lower pay. Today's evidence shows how they get better pensions and better pay", (David Willetts, Shadow Trade and Industry Secretary, cited in *The Guardian*, November 11, 2005).

> "I can assure you that through the vigilance of the Bank and our determination to ensure future public sector pay settlements are founded on our 2% inflation target, we will maintain our anti-inflation discipline," (Gordon Brown, Chancellor, cited in *The Guardian*, June 21, 2006).

The public sector wage bill is a matter of great concern to policy makers contributing as it does nearly 50% of government spending[1] and employing a third of the total U.K. workforce. A significant part of the Chancellor's Comprehensive Spending Review is focused on public sector pay and implications for the public sector workforce in the long run. Concerns have also been expressed about the recent increases in the public-private wage differential.

The public sector pay bill is far from stable over time. Trinder (1997) argues that there are large oscillations in the public sector pay bill and that the movements in private/public wage relativities are pro-cyclical (using data from the New Earnings Survey, NES). Disney and Gosling (1998, using data from the General Household Survey and the British Household Panel Survey) argue that despite these oscillations, the average public sector pay gap was approximately the same at the end of the 1990s (in 1994 male public sector hourly earnings were 14 per cent higher than their private sector counterparts) as it was at the end of the 1970s. During these two decades

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[1] There are six Pay Review Bodies for public sector employees, which have specific remit groups. In addition the Office of Manpower Economics (OME) services the Police Negotiating Board. They are all serviced independently by OME. The current aggregate pay bill of these covered groups is over £50 billion. Given GDP for 2002 is £ 1043 billion of which 56% is employee compensation (Annual Abstract 2004), the covered group payment represents 5% of GNP and 8.5% of all labour income.

changes in the occupational composition across sectors led to a decline in the public sector pay gap, especially so for men. Once they allow for changes in the age and qualifications of the workforces over time, Disney and Gosling (1998; page 354) report a public sector pay gap for men of only 1% in the 1990s (in contrast, to the 14% gap they report for women).

Bender and Elliot (1999) use the New Earnings Survey (NES) and the British Household Panel Survey (BHPS) to investigate pay convergence across the public and private sectors. Their main conclusion (using the usual decomposition analysis) is of divergence between returns to sector-specific occupational characteristics. Elliot et al. (1999) investigate public/private sector wages in the five largest EU states and Sweden. They also conclude that it is vital to allow fully for different returns to occupation, however, they note that a major difficulty is in identifying occupations where both private and public sector employees are present in large numbers. Studies which divide the sample (in some way) between high and low salaried employees could expect to find a positive pay premium for low earners in the public sector, especially so if males and females are considered together and if occupations are not fully allowed for.

Yu et al (2005) using data from the BHPS throughout the 1990s find the chances of earning a higher salary are greater for well paid employees in the private sector and vice versa for the lowly paid in the public sector. They only include years of schooling, work experience and an indicator variable for public sector employment as explanatory variables. Luciflora and Meurs (2006) compare the public sector pay gap across, Britain, France and Italy (for Britain they use data from the Labour Force Survey, LFS, in 1998). They also conclude that the pay gap is highest for low salary earners in the public sector and argue that differences in unobserved characteristics may be more important for these employees. It is clearly important to be able to control for potentially very diverse labour forces in the two sectors.

Another major difference between the public and private sectors in Britain is the nature of the wage setting process. For example, there are considerable disparities in the extent of trade union representation in wage negotiations, the presence of wage setting boards in the public sector, and the presence of incentive pay schemes across

the sectors. Makepeace and Marcenaro-Gutierrez (2006) also use data from the Labour Force Survey (LFS) to study public sector pay relativities, distinguishing between public servants covered by Pay Review Boards and those uncovered groups using SOC. They find that covered public sector workers do better than uncovered (and that the extent of this premium varies enormously by occupation). The authors have no other information on the nature of the covered and uncovered workplaces, however, and so can provide limited alternative possible explanations.

Burgess and Metcalfe (1999) use the 1990 Workplace Industrial Relations Survey (WIRS90) to explore incentive schemes across public and private sector workplaces. Controlling for occupational type they find that incentive schemes are much rarer in the public sector for higher skilled occupations. Burgess and Ratto (2003) survey international evidence to further explore the impact of explicit incentives (and especially Performance Review Pay, PRP) in the public sector. They conclude that these practices are typically under utilised in the public sector. A strength of these studies is the recognition that workplace characteristics are not uniform across the sectors. To be able to fully consider the association between payment schemes such as these and the resultant public sector pay gap for individual employees, however, it is necessary to use linked employee and workplace data.

More recent studies suggest a rise in public sector pay relative to private sector in the late 1990s and early 2000s. Makepeace and Marcenaro-Gutierrez (2006; page 6) argue that, with the exception of the armed forces, all the public sector occupations covered by pay review bodies saw a growth in their real earnings between 1999 and 2003. This is perhaps not surprising given the emphasis placed on public service performance by the Labour government after its success in the 2001 general election. "a [public sector] staff reinvigorated through more attractive and flexible pay and conditions. For the first time in nearly a decade, public sector pay is now rising faster than private sector pay" Tony Blair (Speech by the Prime Minister Tony Blair on Public Services reform[2], 25/1/2002). This suggests it also necessary to use recent data when exploring the public sector earnings gap.

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[2] As cited on http://www.pm.gov.uk/output/Page3008.asp, 26/3/2007.

The data used in this study are drawn from the British Workplace Employee Relations Survey 2004 (WERS04) which is a nationally representative survey of both workplaces and their employees. The linked nature (and extensive questionnaires) of WERS04 data allows us to control far more extensively for both individual employee characteristics and workplace characteristics than has been possible in previous earnings studies. A further attractive feature of the WERS04 data, of particular relevance to our study, is the extensive information it provides on both public and private sector workplaces (Kersley et al, 2006, page 5).

Most studies concentrating on the public-private wage differential issue rely on the human capital model as the theoretical basis for the study of earnings (Becker 1962 and 1964). This approach is also used as the starting point in this paper. At the employee level, it is assumed that wages increase with (marginal) productivity which in turn increases with measures of accumulated skills such as education, work experience, and training. The Human Capital approach is necessarily partial. Relying on age and education outcomes as measures of potential productivity have many well known limitations, particularly so for women (Becker, 1962 and 1964). Nickel and Quintini (2002), using evidence from age 10 and 11 test scores from the National Child Development Survey (NCDS) and the NES, argue that a decline in public sector relative to private sector pay adversely affects the quality of males in the public sector, but not females. Their paper emphasises the need to control fully for the individual characteristics of public sector employees, but also raises the question of why the different genders may respond differently to the characteristics of public sector workplaces.

Other factors also affect the marginal productivity of workers. Principally these other factors derive from the nature of the job that an individual does and from the workplace that they work in. The further contribution of our study over the existing literature is to also consider the potential impact of the workplace on the public sector pay gap.

2. Wage Determination in the Private and Public Sectors

The process of wage determination in any organisation is complex. There are many and sometimes conflicting effects to consider. The most general statement that economists can make is that in the private sector populated by profit maximising firms, there is a close relationship between the wage and the marginal product of labour. The exact nature of this relationship depends on market conditions. Under full blown labour market competition, the wage will equal the marginal product of labour as in the classical textbook account. In the public sector (and in the not-for-profit sector) there is no obvious reason why the link between marginal product and wage should be so strong. Nonetheless, so long as public sector organisations do have well defined objectives, then cost minimising considerations will also require them to take account of the productivity of workers in setting wage rates.

The factors which determine the marginal productivity function can be broadly divided into two types. First, there are those which are wrapped up in the individual worker: accumulated human capital, motivation, and so on. Secondly, there are those which are due to the workplace environment that the worker finds him/herself in: the level and quality of capital and other complementary inputs and the industrial relations environment for example. A favourable change in any of these will cause the marginal product function to be higher than it would have been without the favourable change.

The wage rate also depends on the labour market conditions facing the firm. Other things being equal, wages set under monopsony conditions will be lower (for the same MPL function) than under competition. From the point of view of a cross section econometric analysis, the comparative static proposition that can most usefully guide the estimation will be of the type: If worker B has a higher level of human capital than worker A, and if the supply conditions of type A workers and type B workers is the same and if both workers are in the same working environment (including the degree of market power enjoyed by their employers), then the wage of B should be higher than that of A.

Similarly, if the focus was on firm specific characteristics rather than worker characteristics, then the equivalent proposition would be: If worker B is employed in a firm with a higher level of capital than worker A's firm, but both firms enjoy equal market power, and if the supply conditions of type A workers and type B workers is the same and if both workers have the same level of human capital, then the wage of B should be higher than that of A.

The diagram below illustrates in the case of perfect competition.
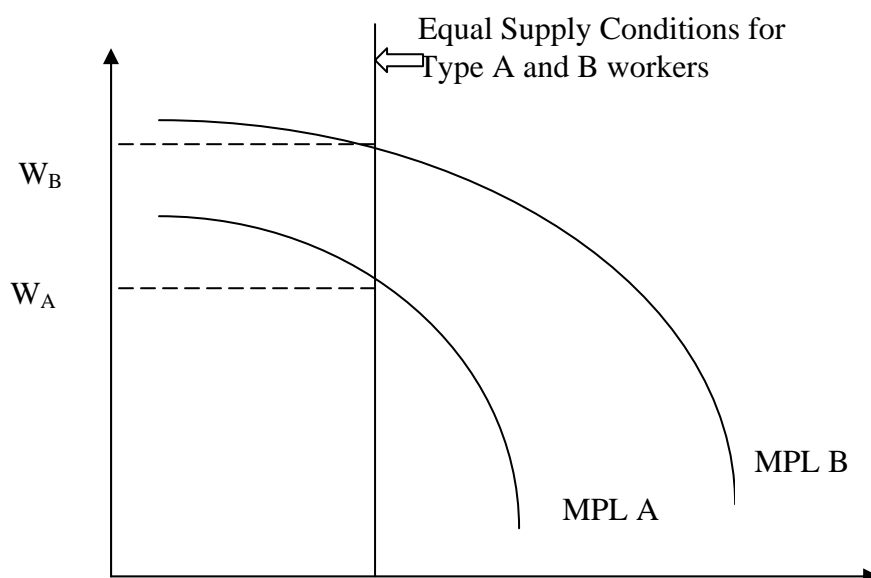
Figure1. Wage Determination under Perfect Competition

Under perfect competition and equal supply conditions, the only source of wage variation between A and B is to do with higher marginal product functions whether these are due to B's extra human capital or B's employers extra capital stock as illustrated above.

Typically, the econometric study of wage determination – the earnings function approach – has been based on data in which only workers have been sampled, e.g. the LFS. The typical variables thought to capture human capital and skill, i.e. education, experience, tenure, etc. have been used as explanatory variables in regressions in which the endogenous variable is a suitable measure of earnings.

Essentially, in terms of our diagram above, all variations in marginal product of labour functions are attributed to worker characteristics. Though these studies have provided valuable insights into the factors determining wages, they are necessarily limited because they are unable to take into account the potential sources of variation in MPL functions due to variations in the working environments of different workers. In other words, the role of workplace specific variables (which impinge on the MPL functions of all workers employed in the workplace) cannot be estimated, unlike in our analysis.

3. The Data

The data used in this study are drawn from the British Workplace Employee Relations Survey 2004 (WERS04)[3]. WERS04 is a nationally representative survey of workplaces with 5 or more employees[4]. (A workplace comprises the activities of a single employer at a single set of premises.) Face-to-face interviews for WERS2004 were conducted with a senior manager (with day-to-day responsibility for employee relations). At those workplaces responding to the manager survey, a questionnaire was presented to 25 randomly selected employees (in workplaces with more than 5 employees) or to all the employees (in workplaces with fewer than 26 employees). The entire surveying process resulted in 2,295 completed workplace surveys, with 22,451 completed employee questionnaires from 1,733 of these workplaces. Concentrating on male full-time employees leaves us data for 6,695 employees (1489 from the public sector and 5206 from the private).

A full list of the worker characteristic variables and the workplace specific variables, together with definitions is provided in the appendix (see Table A1). WERS04 is a stratified random sample, and larger workplaces and some industries are over-represented. Thus, all of the empirical results that follow use workplace and employee sampling weights where possible. Brief sample based summary statistics are presented in Table 1 for the public sector (columns one and two), and private sector employees (column three and four).

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[3]Department of Trade and Industry (2006). Workplace Employee Relations Survey: Cross-Section, 2004 (computer file). 5th ed. Colchester: The Data Archive (distributor). SN: 5294.

[4] The industries excluded from the survey were agriculture, hunting and forestry; fishing; mining and quarrying; private households with employed persons; and extra-territorial organisations and bodies.

The variable of major interest is the hourly wage variable W for employee i in workplace j. Hourly earnings are calculated for each employee by dividing their gross (before tax and other deductions) weekly wages by the hours they usually work each week (including any overtime and extra hours). The data do not give the actual value of gross weekly wages but rather the interval to which the wage belongs for each sampled worker, there are 14 bands. In our regression analysis, the mid-point of the interval is used as the measure of weekly wages.[5] Usual hours worked is a continuous measure. The subsequent hourly wage measure, W_{ij}, is the ratio of weekly wages to usual hours and is therefore continuous.

We find that public sector full-time males earn some 8.9% more than do their private sector employees (Table 1, row one) and that there is considerably more variance in public than in private sector pay. Comparing log wages, as is more common in the literature, public sector employees earn 11.7 log wage points (lwp or 11.7 log per cent) more than private sector employees. This is the raw earnings gap that will be explored further.

As discussed above, the majority of authors have adopted the human capital model as the theoretical basis for the earnings function (an extensive recent survey is provided in Chiswick, 2003). This approach is also used in this paper. At the employee level, it is assumed that wages increase with measures of accumulated skills such as education, work experience, and training. The public sector sample displays higher levels for all of these categories (35.5% have a degree or postgraduate qualification compared to 24.7% of the private sector employees; they have on average 2.3 more years of experience and 1.2 days more training in the previous year; they are also almost 9% more likely to have a vocational qualification). Public sector employees are much more likely to be in the professional, technical, clerical and

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[5]In unreported results, we address the possibility that this banding may affect our results. Using interval regression techniques, we find, however, no significant difference from the more general OLS regression results reported in the text.

personal services occupations whilst the private sector has more managers, craftsmen, salesmen, and operative-assembly workers.

Further categories of explanatory variables are also included. These are demographic variables (which may constrain an individual's choice of jobs such as the presence of dependent children, marital status, race and disability); job characteristics (being on a fixed term contract, current job tenure, and union membership); and workplace-specific characteristics (we allow the workplace to have a fixed-effect impact on the productivity of individual employees and thus on the earnings function).

Reading across the columns in Table 1, we can see that full-time male public servants are more likely to be married, have a dependent child, be disabled and not be from an ethnic minority. They are also more likely to be on a fixed term contract, have longer current job tenure, and be a union member. The differences in union membership rates are striking: 74% for the public sector and 23% for the private.

4. Econometric Methodology

We start by establishing a base line regression which uses individual worker characteristics only. For clarity we focus on earnings outcomes for full-time males, not least because the impact of gender may well be conflated with the issue of workplace-specific effects. Using semi-logarithmic wage equations, we estimate:

$$W_{ij} = \alpha + \beta_1 X(1)_{ij} + ... + \beta_k X(k)_{ij} + \varepsilon_{ij} \tag{1}$$

where W_{ii} is the natural log of the wage for individual i in workplace j; α is an intercept term; X_{ij} is a vector of k regressors capturing the individual characteristics expected to have an impact on wages; and ε_{ij} is a residual term. We call this our baseline model and estimate it using ordinary least squares (allowing for the sample survey weights) for both public sector and private sector full-time male employees.

Having established the baseline, we then allow for workplace specific fixed

effects in the simplest possible way by re-estimating (1) using a fixed effects model:

$$W_{ij} = \alpha + \partial_j + \beta_1 X(1)_{ij} + \ldots + \beta_k X(k)_{ij} + \varepsilon_{ij} \qquad (2)$$

where j again represents the workplace and δ_j the workplace specific effect[6]. Note the

considerable loss in degrees of freedom in moving from (1) to (2) due to the number

of workplace specific effects

5. Results.

Table 2 reports the baseline estimates of our earnings function in columns 2 and 3 and

the estimates including workplace specific fixed effects in columns 4 and 5. The test

of the explanatory power of the regressors is clearly significant for all the regressions.

Overall, the parameter estimates are generally well defined and have the expected

sign.

Beginning with the baseline regressions, the returns from experience and

higher qualifications are positive for all employees and they are higher in the private

sector than in the public sector. It should be remembered that these statements are

relative in nature. For example, the returns to education in each sector are measured

relative to the omitted education category; in this case, "education none or other"

(which we treat as our base). The average log hourly pay for this education level is

1.99 in the private sector and 2.08 in the public (they constitute 27.7 per cent of the

private sector workforce and 21.7 per cent of the public). As the comparison group is

lower paid in the private sector we might expect to see larger rates of return for higher

education levels in this sector. The returns from extra days of training and vocational

qualifications are also positive for all employees but are only significantly related to

wage increase in the private sector.

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[6] The workplace specific effect δ_j also captures unobservable individual effects common to all employees in a workplace. It is not possible to identify the remaining idiosyncratic effects and we relegate them to the residual. This will have no consequence for the estimate of δ_j if the remaining individual effects are uncorrelated with these included workplace specific effects.

The returns from being in the upper end occupations (managerial, professional and technical) rather than clerical are all higher in the public sector. The average log hourly pay for clerks is 2.17 in the public sector and 2.26 in the private and so we might expect to see higher returns for better paid occupations in the public sector. In the private sector there is a clear break in the return to occupation with craft, personal services, salesmen, operative and assembly workers and the unskilled earning less than clerks.

There is no significant difference in the returns to being married across the two sectors, with all full-time men enjoying higher wages if they are married. Public sector men earn significantly more if they have a child, however. There are also two more significant wages associations in the private sector that are not apparent in the public: members of ethnic minorities earn less and trade union members earn more.

Employees form ethnic minorities earn more than others in the public sector (although with low significance levels) and substantially less than others in the private sector. Being a trade union member is not associated with significantly higher earnings in the public service (despite the high membership rates recorded in this sector) but is associated with 5.5% higher earnings in the private sector.

The introduction of workplace specific fixed effects (columns 4 and 5 of Table 2) has little impact on the public sector results. There is some reduction in the returns from low levels of education but the return for higher qualifications (degree and postgraduate) show little change. The relationship with the demographic characteristics of the workers (having a child, being married, being disabled or a member of an ethic minority) and the wage also show no significant change. There is some slight decline in the wage returns for the highest occupations in the public sector but again not significantly so. These results suggest that there is very little workplace segregation amongst public servants or, alternatively, that the introduction of workplace specific characteristics does not have an impact on the relationship between the individual characteristics of the workers and their wages in the public sector in aggregate. There is one major exception; the wage premium enjoyed by those considering themselves to be ethnic is no longer significant, suggesting that these employees are concentrated in high paying workplaces.

In contrast, introducing workplace specific fixed effects into the private sector earnings function is associated with a removal of the positive relationship between training and wages; the positive returns from higher education levels are reduced; and the union wage gap becomes significantly negative. These results suggest that there is segregation of high paid workers into high paying workplaces and *vice versa* in the private sector. The union impact is particularly striking: the results suggest that individual union membership is actually associated with 4.7% less earnings once workplace effects have been fully allowed for. The returns to education, especially for postgraduates, are now lower in the private sector than the in public sector, as is the returns to a vocational qualification.

6. Decomposing the earnings gaps.

Following Oaxaca and Ransom (1994), in general, the decomposition of the mean earnings gap between groups of employees in the public sector (*pu*) and the private sector (*pr*) is calculated as:

$$\overline{W}_{pu} - \overline{W}_{pr} = (\overline{X}_{pu} - \overline{X}_{pr})\hat{\beta}_{pu} + \overline{X}_{pr}(\hat{\beta}_{pu} - \hat{\beta}_{pr}) + (\hat{\alpha}_{pu} - \hat{\alpha}_{pr}) \qquad (3)$$

In this calculation $(\overline{X}_{pu} - \overline{X}_{pr})\hat{\beta}_{pu}$ captures the impact of the difference in the value of the regressors weighted by the parameters from the model for the public sector *pu*, and $\overline{X}_{pr}(\hat{\beta}_{pu} - \hat{\beta}_{pr}) + (\hat{\alpha}_{pu} - \hat{\alpha}_{pr})$ is the remaining unexplained gap. We further decompose the regressors into two types: individual characteristics; and occupations. The decompositions are presented in Table 3.

As discussed above, the earnings gap between public and private sector employees is 11.7 per cent: Male full-time public sector employees earn 11.7 per cent more on average than do male full-time private sector employees. All figures are expressed in log-percentage points. This earnings gap can be decomposed into the component explained by differences in the mean values of their individual characteristics which make up 8.01 per cent; an occupational component of 2.42 per cent; and an unexplained component of 1.29 per cent. The three components summing to the earnings gap of 11.73 per cent.

It would seem that the higher hourly wages public sector males earn over private sector males primarily reflect the relatively more productive characteristics the former group possesses (or, at least, characteristics associated with higher hourly pay) and the higher paid occupations they are more likely to occur in. There is a relatively small unexplained component in their earnings gap.

When workplace specific fixed effects are included in the estimation, private sector employees can be seen to gain because they are more likely to be employed in a higher paying workplace (3.10 per cent). The decompositions otherwise show little change (panel 2 of Table 3): the component due to individual characteristics stays very similar at 8.59 per cent; the component associated with public sector employees being more concentrated in higher paying occupations increases to 4.46 per cent; and the unexplained component is 1.77 per cent.

7. Looking across the earnings distribution.

As discussed above, earnings in the public sector declined over 1980s and the 1990s relative to those in the private sector (Makepeace and Marcenaro-Gutierrez, 2006). This was especially true for those in the upper earning levels; typically the full-time, well educated men. The implied relative wage compression in the public sector has been found in several studies suggesting that standard OLS analysis, which is based on the conditional mean of the distribution, may not be the most suitable (Poterba and Rueben, 1994). A series of papers for the UK have used quantile regression estimation to explore the earnings gap across the earnings distribution (Disney and Gosling, 1998; Blackaby et al, 1999; Yu et al, 2005; Luicflora and Meurs, 2006). The results show (i) a fall in the premium associated with public sector employment at the lower income levels; and (ii) increasingly negative returns for the highest income earners throughout the 1990s (Yu et al, 2005; 371). Studies that included measures of education also found the returns to education for male graduates clearly declining at the higher income levels (Disney and Gosling, 1998; page 372).

Tables 4 and 5 present results from quantile regressions for WER2004. In the public sector (Table 4), the highest returns for education are generally found to occur in the middle regions of the earnings distribution (between the 40th and the 60th quantiles). This is true for both the high and low educated employees. In contrast,

private sector employees with post-graduate qualifications have declining rates of return at higher income levels (Table 5). These results are very different to those referred to above and may be due to recent relative wage gains in the public sector.

To compare the estimates for the individual quantiles directly, Table 6 reports differences in simultaneously estimated parameters (and associated confidence measures) between the 80th and 20th, and the 90th and 10th quantiles, respectively, in the two sectors. These results show very little difference in the parameters across these densities. In the private sector, the returns to training increases with higher earnings, whilst returns to the managerial, operative and unskilled occupations decline in the private sector with higher earnings. In the public sector the returns associated with having a dependent child and a vocational qualification increase with higher earnings, whilst those associated with longer tenure and being a craftsman decline. There is no evidence suggesting relatively higher or lower returns from being a trade union member across the earnings distribution.

There is limited evidence of ethnic minority employees being rewarded more at higher income levels in both sectors, although only at weak significance levels. In both sectors, there is, however, evidence that the unskilled earn less at higher income earnings and this penalty is surprisingly similar in the two sectors.

Conclusions.

Public sector employees enjoyed an 11.7 log wage point earnings premium over their private sector counterparts in Britain in 2004. Higher educated private sector employees receive a higher rate of return for education than do their public servants counterparts. However, the highest paid occupations in the public sector receive a higher return than those in the private sector, once education is allowed for. Ethnic minority employees are also found to earn considerably more in the public service and considerably less in the private sector.

Introducing workplace specific fixed effects has little impact on the parameters for the public sector suggesting that workplace characteristics are not strongly related to the individual characteristics that are associated with wages in this

sector. With the exception of ethnic employees indicating that ethnic public servants are concentrated in high paying workplaces.

In the private sector there is evidence of high wage workers being concentrated in high wage workplaces and *vice versa* and that this concentration is associated with earnings potential. For example, once the workplace specific effects are allowed for, being a union member is associated with a wage fall. Similarly, the fall in the parameters on training and higher education levels may indicate some segregation of high wage workers into high productivity workplaces.

Nevertheless, decomposition analysis shows that the majority of the public sector pay premium is associated with public servants being more likely to have individual characteristics associated with higher pay and to their working in higher paid occupations.

Comparative quantile analysis does not support earlier results suggesting lower returns for well educated public servants at higher income levels (or higher returns for the unskilled at low income levels). We find the returns to education in the public sector are generally highest in the middle of the earnings distribution. In contrast, the returns to the highest educated and to managers declines in the private sector with higher earnings. The penalty for being unskilled is higher in the private sector but increases across the earnings distribution by a similar amount in both sectors.

Our results from this preliminary analysis suggest that relative employment conditions have changed across the public and private sectors in Britain over the last decade with the former becoming a more attractive earnings option. It no longer appears to be the case that the public service provides a refuge for the low skilled at the expense of highly educated. Furthermore, working conditions are more uniform in the public sector and there is no penalty associated with belonging to an ethnic minority. In future work, we are developing these ideas and exploring more fully the relative employment conditions of the highest education and highest paid occupations across the two sectors. We are also addressing the gender pay gap across the sectors.

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Table 1. Descriptive statistics: public and private sector full-time males.

	public sector		private sector	
	mean	s.e.	mean	s.e.
hourly pay	10.970	0.22	10.073	0.15
ln(hourly pay)	2.315	0.02	2.198	0.02
potential experience (years)	26.223	0.41	23.907	0.27
training days (previous year)	3.564	0.16	2.334	0.07
education measures;				
none	0.144	0.01	0.219	0.01
other	0.062	0.01	0.071	0.00
cse25	0.088	0.01	0.119	0.01
cse1	0.215	0.01	0.219	0.01
gceae	0.046	0.01	0.042	0.00
gce2ae	0.079	0.01	0.069	0.00
degree	0.241	0.02	0.188	0.01
postgrad	0.114	0.01	0.059	0.01
vocational qualification	0.670	0.02	0.582	0.01
child	0.452	0.02	0.412	0.01
married	0.754	0.01	0.695	0.01
disabled	0.137	0.01	0.120	0.01
ethnic	0.043	0.01	0.058	0.01
fixed term	0.034	0.01	0.022	0.00
tenure	6.340	0.16	5.331	0.09
union	0.736	0.02	0.229	0.01
occupation categories;				
managerial	0.115	0.01	0.169	0.01
professional	0.161	0.02	0.105	0.01
technical	0.241	0.02	0.110	0.01
clerical	0.123	0.02	0.064	0.00
craft	0.095	0.02	0.174	0.01
personal	0.061	0.01	0.014	0.00
sales	0.006	0.00	0.044	0.01
operative	0.055	0.01	0.189	0.01
unskilled	0.143	0.02	0.132	0.01
observations	1489		5206	

Table 2. Baseline and FE regressions: public and private sector full-time males.

ln(hourly pay)	Baseline OLS				With workplace specific effects			
	public sector		private sector		public sector		private sector	
	coeff	t-value	coeff	t-value	coeff	t-value	coeff	t-value
potential experience (years)	0.018	5.14	0.027	12.03	0.013	3.78	0.022	10.29
potential exper sqd. (x10^3)	-0.217	-3.11	-0.419	-9.56	-0.167	-2.45	-0.341	-8.55
training (days previous year)	0.002	0.58	0.006	2.64	0.004	1.12	0.000	-0.08
educ none/other is omitted								
cse25	0.114	3.33	0.077	4.02	0.062	1.80	0.061	3.44
cse1	0.139	5.99	0.114	5.88	0.109	4.01	0.074	4.41
gceae	0.094	1.19	0.126	3.89	0.059	1.12	0.115	4.74
gce2ae	0.229	6.91	0.256	9.71	0.148	4.49	0.199	8.50
degree	0.288	9.61	0.376	14.75	0.233	8.03	0.243	11.76
postgrad	0.491	9.37	0.528	14.46	0.429	7.00	0.338	11.19
vocational qualification	0.031	1.57	0.030	2.19	0.048	2.54	0.034	3.17
child	0.053	2.63	0.026	1.99	0.058	2.60	0.015	1.51
married	0.061	2.80	0.077	5.28	0.058	2.54	0.069	5.56
disabled	-0.032	-1.56	-0.025	-1.48	-0.012	-0.54	-0.012	-0.83
ethnic	0.093	1.76	-0.075	-2.37	-0.010	-0.25	-0.059	-2.12
fixed term	0.058	1.29	-0.100	-1.60	0.024	0.57	-0.111	-1.99
tenure	0.014	4.71	0.012	5.69	0.014	4.45	0.011	6.73
union	-0.013	-0.58	0.055	2.86	0.008	0.32	-0.047	-2.87
clerical is omitted								
managerial	0.303	6.01	0.212	6.74	0.295	4.94	0.246	10.06
professional	0.227	3.58	0.189	5.58	0.202	2.20	0.128	5.12
technical	0.230	4.50	0.095	2.72	0.206	3.73	0.058	2.31
craft	0.083	1.71	-0.084	-2.68	0.076	1.30	-0.028	-1.17
personal	-0.083	-1.51	-0.277	-5.38	-0.006	-0.08	-0.145	-2.75
sales	0.041	0.49	-0.276	-6.27	-0.060	-0.68	-0.083	-2.47
operative	-0.090	-1.29	-0.223	-6.74	-0.209	-2.25	-0.157	-6.42
unskilled	-0.205	-4.23	-0.363	-9.59	-0.175	-2.27	-0.255	-8.73
constant	1.564	29.34	1.579	37.15	1.654	24.06	1.700	47.40
observations		1489		5206		1489		5206
R-squared		0.5147		0.5149		0.7427		0.7647

Table 3. Decomposing the earnings gap.

Earnings gap	-11.73%
(i) Baseline	
Differences in characteristics	-8.01%
Occupation	-2.42%
Unexplained	-1.29%
(ii) including workplace specific fixed effects	
Differences in characteristics	-8.59%
Occupation	-4.46%
Workplace	3.10%
Unexplained	-1.77%

Source: WERS 2004. In each case the contribution of each group of variables is evaluated using the parameters from the model for the public sector. All figures are expressed in log-percentage points.

Table 4. Interquantile differences for the public sector.

log hourly pay	q20		q40		q50		q60		q80	
	coeff	t-value	coeff	t-value	coeff	t-value	coeff	t-value	coeff	t-value
potential experience (years)	0.019	4.07	0.019	3.39	0.025	4.75	0.026	5.77	0.023	3.27
potential experience sqd. (x10^3)	-0.292	-3.49	-0.258	-2.47	-0.363	-3.61	-0.375	-4.37	-0.348	-2.49
training (days in previous year)	0.000	-0.02	0.003	1.15	0.003	1.01	0.001	0.54	-0.001	-0.24
education none/other is omitted										
cse25	0.037	1.14	0.061	1.60	0.039	1.16	0.052	1.21	0.032	0.72
cse1	0.074	2.24	0.126	5.32	0.119	4.57	0.122	3.97	0.119	3.15
ceae	0.088	1.39	0.189	4.84	0.149	3.15	0.169	2.57	0.113	2.99
ce2ae	0.184	4.91	0.222	4.79	0.232	4.95	0.205	5.06	0.197	4.99
degree	0.205	4.39	0.292	7.12	0.310	10.57	0.300	10.08	0.271	7.16
postgrad	0.391	9.71	0.412	7.93	0.403	10.61	0.413	10.37	0.340	9.27
vocational qualification	0.020	0.91	0.031	1.37	0.028	1.48	0.039	2.75	0.048	1.95
child 0-18	-0.005	-0.26	0.021	0.95	0.008	0.39	0.033	1.63	0.073	2.86
married	0.074	4.49	0.076	3.12	0.080	3.63	0.068	3.33	0.063	2.46
disabled	-0.035	-1.15	-0.004	-0.11	-0.019	-0.66	-0.036	-1.39	-0.031	-1.01
ethnic	0.027	0.46	0.078	1.16	0.102	2.00	0.099	2.80	0.113	2.31
fixed contract	0.050	0.94	0.050	1.03	0.090	1.72	0.073	1.39	0.078	1.10
tenure	0.016	5.36	0.013	3.25	0.012	3.31	0.009	2.69	0.009	3.08
union	-0.008	-0.42	0.012	0.44	0.021	0.89	0.021	0.93	0.013	0.30
clerical is omitted										
managerial	0.280	6.27	0.337	6.97	0.311	7.59	0.291	6.38	0.372	7.41
professional	0.332	8.00	0.302	5.97	0.276	6.02	0.264	5.45	0.305	5.89
technical	0.306	10.18	0.313	9.84	0.285	8.13	0.250	6.81	0.236	7.90
craft	0.090	3.20	0.068	2.25	0.059	1.43	0.021	0.47	0.004	0.09
personal	-0.143	-2.66	-0.107	-2.31	-0.076	-1.42	-0.121	-2.27	-0.083	-1.81
sales	0.005	0.02	0.096	0.49	0.047	0.32	0.014	0.09	-0.086	-0.32
operative	-0.031	-0.59	0.008	0.21	-0.020	-0.47	-0.072	-1.47	0.002	0.04
unskilled	-0.188	-7.13	-0.144	-4.26	-0.162	-4.24	-0.217	-5.79	-0.248	-5.66
constant	1.421	27.19	1.458	24.04	1.483	26.66	1.562	33.48	1.772	22.63
No. observations		1489		1489		1489		1489		1489
Pseudo R2		0.3174		0.3428		0.3473		0.3514		0.3373

Table 5. Interquantile differences for the private sector.

log hourly pay	q20		q40		q50		q60		q80	
	coeff	t-value	coeff	t-value	coeff	t-value	coeff	t-value	coeff	t-value
potential experience (years)	0.030	11.82	0.027	8.60	0.026	10.29	0.027	11.97	0.027	9.04
potential experience sqd. (x10^3)	-0.475	-10.64	-0.405	-6.62	-0.395	-7.31	-0.413	-9.05	-0.415	-6.82
training (days in previous year)	0.003	1.12	0.006	2.35	0.008	3.32	0.009	4.67	0.010	4.76
education none/other is omitted										
cse25	0.082	4.37	0.088	5.06	0.082	3.44	0.083	3.52	0.106	5.21
cse1	0.144	6.60	0.135	6.65	0.126	6.85	0.117	5.74	0.141	6.04
ceae	0.113	3.88	0.159	5.01	0.177	4.76	0.165	5.95	0.163	4.30
ce2ae	0.257	7.53	0.268	8.07	0.240	8.34	0.238	7.12	0.281	8.55
degree	0.376	21.64	0.426	27.85	0.400	19.22	0.394	16.93	0.402	15.71
postgrad	0.559	14.41	0.570	23.81	0.562	21.49	0.511	17.97	0.483	14.74
vocational qualification	0.031	3.17	0.034	3.06	0.035	3.39	0.023	2.46	0.019	1.60
child 0-18	0.022	1.60	0.011	0.87	0.018	1.26	0.024	1.91	0.035	2.96
married	0.100	6.97	0.092	8.10	0.091	6.07	0.085	5.16	0.079	3.62
disabled	-0.030	-1.42	-0.012	-0.62	-0.008	-0.45	-0.008	-0.60	0.010	0.47
ethnic	-0.091	-3.74	-0.074	-4.45	-0.080	-3.22	-0.068	-2.18	-0.043	-1.33
fixed contract	-0.157	-1.65	-0.111	-1.58	-0.098	-1.75	-0.092	-1.60	-0.073	-1.15
tenure	0.013	5.57	0.012	7.27	0.012	7.57	0.011	5.98	0.011	4.03
union	0.039	2.39	0.037	2.87	0.053	3.68	0.054	4.72	0.065	5.13
clerical is omitted										
managerial	0.235	7.69	0.316	8.65	0.287	7.11	0.292	10.66	0.233	7.60
professional	0.212	5.66	0.241	6.63	0.197	5.20	0.207	8.40	0.166	5.47
technical	0.067	2.10	0.129	4.29	0.082	2.21	0.082	3.01	0.097	2.56
craft	-0.026	-1.14	-0.003	-0.11	-0.054	-1.54	-0.072	-3.41	-0.118	-3.23
personal	-0.273	-8.98	-0.264	-5.16	-0.316	-5.50	-0.323	-5.50	-0.289	-2.83
sales	-0.236	-6.12	-0.224	-5.48	-0.244	-4.79	-0.242	-5.26	-0.280	-4.21
operative	-0.179	-8.36	-0.141	-4.43	-0.210	-5.71	-0.227	-8.91	-0.279	-7.36
unskilled	-0.289	-12.55	-0.253	-7.37	-0.303	-8.13	-0.323	-13.10	-0.369	-12.63
constant	1.262	33.31	1.419	24.39	1.560	30.46	1.653	40.24	1.862	33.74
No. observations		5206		5206		5206		5206		5206
Pseudo R2		0.2831		0.3201		0.3332		0.345		0.3415

Table 6. Interquantile differences.

log hourly pay	public sector				private sector			
	q80-q20		q90-q10		q80-q20		q90-q10	
	Δ coeff	t-value	Δ coeff	t-value	Δ coeff	t-value	Δ coeff	t-value
potential experience (years)	0.004	0.66	0.004	0.52	-0.003	-0.80	-0.004	-0.75
potential experience sqd. (x10^3)	-0.037	-0.29	-0.049	-0.32	-0.060	0.95	-0.122	1.05
training (days in previous year)	-0.001	-0.22	-0.006	-1.25	0.007	2.84	0.009	1.84
education none/other is omitted								
cse25	-0.005	-0.11	0.053	0.75	0.023	0.77	0.039	0.85
cse1	0.044	1.17	0.031	0.56	-0.004	-0.12	0.019	0.55
ceae	0.025	0.46	0.068	0.70	0.050	1.26	-0.056	-0.78
ce2ae	0.013	0.31	0.001	0.01	0.025	0.85	0.091	1.62
degree	0.066	1.06	0.036	0.54	0.026	0.79	0.055	1.13
postgrad	-0.051	-0.78	0.020	0.26	-0.075	-1.49	-0.064	-1.17
vocational qualification	0.028	1.00	0.079	2.23	-0.011	-0.73	-0.041	-1.36
child 0-18	0.078	2.09	0.064	1.64	0.013	0.58	-0.003	-0.10
married	-0.011	-0.44	0.006	0.15	-0.021	-1.17	-0.030	-1.06
disabled	0.005	0.17	-0.005	-0.11	0.040	1.59	-0.006	-0.20
ethnic	0.086	1.42	0.076	0.66	0.048	1.10	0.090	1.89
fixed contract	0.028	0.40	0.054	0.53	0.084	1.06	0.275	1.35
tenure	-0.007	-1.98	-0.012	-2.24	-0.002	-1.05	-0.001	-0.26
union	0.021	0.59	-0.025	-0.58	0.026	1.28	0.005	0.16
clerical is omitted	0.092	1.48	0.032	0.50	-0.001	-0.03	-0.006	-0.10
managerial	-0.028	-0.43	-0.035	-0.41	-0.046	-1.08	-0.124	-2.10
professional	-0.070	-1.28	-0.091	-1.80	0.030	0.58	0.010	0.17
technical								
craft	-0.086	-1.41	-0.203	-2.36	-0.092	-1.75	-0.107	-1.70
personal	0.060	0.88	0.069	0.81	-0.016	-0.22	-0.001	-0.01
sales	-0.091	-0.30	0.373	1.06	-0.044	-0.63	-0.040	-0.52
operative	0.033	0.30	0.115	1.06	-0.101	-2.57	-0.139	-1.92
unskilled	-0.060	-1.13	-0.133	-1.81	-0.081	-2.30	-0.112	-1.71
constant	0.351	3.79	0.660	5.55	0.600	8.86	0.913	11.93
No. observations		1489		1489		5206		5206
Pseudo R2	q80	0.337	q90	0.317	q80	0.342	q90	0.311
Pseudo R2	q20	0.317	q10	0.284	q20	0.283	q10	0.249

Appendix Table A1.   Variable definitions.

Variable name	Variable definition
hourly pay	Average hourly pay [midpoints of 14 bands, between 1 and 100]
potential experience (years)	Age minus (approximate years of schooling plus 5), measured in years.
training (days in previous year)	Days of training in the previous twelve months [midpoints of 6 bars, top coded at 10 days]
education measures;	
none	Has none of the academic qualifications listed
other	Has other academic qualifications than those listed
cse25	Highest level of education is GCSE grades D-G; CSE grades 2-5 SCE; O grades D-; SCE Standard grades 4-7.
cse1	Highest level of education is GCSE grades A-C; GCE O-level passes; CSE grade 1 SCE; O grades A-C; or SCE Standard 1-3
gceae	Highest level of education is GCE A-level grades A-E; 1-2 SCE; Higher grades A-C, As levels
gce2ae	Highest level of education is 2 or more GCE; A-levels grades A-E; 3 or more SCE; or Higher grades A-C
degree	Highest level of education is a first degree, eg BSc, BA, HND, HNC Ma at first degree level
postgrad	Highest level of education is a higher degree, eg MSc, MA, PGCE, PhD
child	Has a dependent child aged below 18
married	Married or living with a partner
disabled	Has a long term (>1 year) illness/disability
ethnic	Employee considers they are white and black Caribbean; white and black African; white and Asian; any other mixed background; Indian; Pakistani; Bangladeshi; any other Asian background; Caribbean; African; any other black background; Chinese; or any other ethnic group.
fixed contract	Employed on a fixed term contract
hours	Usual hours worked per week (includes over time)
standard hours	Usual hours worked per week minus over time
overtime hours	Usual Overtime Hours per Week
full time	Working full time, if standard working hours is greater than 36
tenure	Years at this workplace [midpoints of 5 bars, top coded at 10 years]
union	Employee is a union member

Variable name	Variable definition
occupation categories;	
managerial	Managerial
professional	Professional
technical	Technical
clerical	Clerical
craft	Craft service
personal	Personal service
sales	Sales and customer services
operative	Operative and assembly workers
unskilled	Unskilled
public sector	The formal status of this establishment (or the organisation) is described as: government-owned limited company / nationalised industry/T); public service agency; other non-trading public corporation; quasi autonomous national government organisation (QUANGO); local/central government (inc. NHS and Local Education Authorities).
private sector	The formal status of this establishment (or the organisation) is described as: public limited company (plc); private limited company; company limited by guarantee; partnership (inc. limited liability partnership/self-prop); trust / charity; body established by royal charter; co-operative / mutual / friendly society.