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Abstract: Earnings inequality in Great Britain has increased substantially over the last two decades at both the national and regional levels. This paper examines the changes that have taken place within both the national and regional distributions of earnings in Great Britain over the period 1976 to 1995. The estimation of national OLS and quantile regressions highlights those factors that have contributed to the rise in national earnings inequality, while the estimation of regional quantile earnings equations reveal the causes of increasing regional earnings inequality.

Keywords: Increasing national and regional earnings inequality; Quantile regressions.

JEL classification: J31; R23

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1. Introduction

The structure of earnings in the regions of Great Britain has changed in recent years. At the national level earnings inequality rose considerably during the 1980s and 1990s following a steady reduction in the 1970s (Bell, 1995). Over the same period patterns in regional earnings were characterised by greater regional inequality during the 1970s and 1980s, and convergence in regional average earnings during the 1990s.

The issue of increasing earnings inequality has attracted substantial attention in both the U.K. and the U.S. Various studies have highlighted the trends in wage inequality and attempted to explain the changes in the structure of earnings (Bell, Rimmer and Rimmer, 1994; Juhn, Murphy and Pierce, 1993; Schmitt, 1995). However, little emphasis has been placed on the issue of regional earnings inequality, and the question of what causes earnings inequality to rise within regions has been largely ignored. Furthermore, there have been no detailed empirical studies carried out to investigate the causes of earnings inequality at the regional level in Great Britain.

This paper examines the changes that have taken place within both the national and regional distributions of earnings in Great Britain over the period 1976 to 1995. The methodology consists of estimating OLS and quantile regressions in

order to investigate those factors that have contributed to the rise in both national and regional earnings inequality. In particular, this paper focuses on the causes of rising earnings inequality within the regions of Great Britain, and not inequality between the regions. The convergence in regional average earnings that occurred in the early 1990s is predominantly viewed as a direct result of the recession that took place in Great Britain over this period (Regional Economic Outlook, August 1993 and March 1994). This recession had a greater adverse effect on the southern regions of Great Britain and which resulted in the narrowing of the well-documented North-South divide. The increase in national earnings inequality that occurred during the 1990s is therefore predominantly a result of increasing earnings inequality within the regions of Great Britain, and not rising inequality between regions (Dickey, 2001). Consequently, this paper focuses on investigating the causes of rising inequality within the regional earnings distributions, and also identifying those factors that have contributed to increased earnings inequality at the national level.

The quantile regression technique is adopted because it allows us to gauge the extent to which individual and job characteristics affect the whole wage density. The standard OLS wage equation methodology is limited in the sense that it only considers the information provided by the conditional means, which implies that the level of earnings inequality is constant along the whole earnings distribution. The quantile regression approach addresses this issue by analysing differences

between quantiles of the wage densities. Quantile regressions therefore provide a parsimonious way of describing the whole distribution and should bring much value-added if the relationship between the regressors and the independent variable evolves across its conditional distribution.

The paper is organised as follows. Section 2 examines the changes in the national distribution of earnings between 1976 and 1995, and OLS and quantile regressions are estimated to highlight those factors that have contributed to increasing national earnings inequality. Section 3 considers the changes in regional earnings inequality over the same period, and quantile regressions are estimated for six broad regions of Great Britain. The results at different quantiles of the distribution are discussed, with particular emphasis on the impact of explanatory variables upon the dispersion of earnings. Lastly, section 4 concludes.

2. Changes in national earnings inequality

Changes in the national distributions of earnings for full-time employees (male and female separately) are examined using earnings data from the New Earnings Survey from 1976 and 1995. The NES provides the main source of information on the structure of earnings in Great Britain. It is a sample survey of the earnings of employees in employment, and contains information on weekly earnings,

hourly rates of pay and hours of work, as well as various employee characteristics such as age, occupation, industry, area and whether or not an individual is covered by a Wages Board or Council.

Earnings inequality as measured by the change in the 90-10 percentile difference increased by 25% between 1976 and 1995 (see last column of table 1). Table 1 also reveals that the rise in earnings inequality was much larger for men than it was for women. Earnings dispersion increased by 35.7% for men but by 20.7% for women. This greater increase in male earnings inequality is largely attributable to the substantial increase in earnings dispersion that took place in the lower half of the male earnings distribution. The 50-10 percentile difference increased by 48.3% for men between 1976 and 1995, whereas the 90-50 percentile difference rose by just 27.2%. The respective increases for women are 25% for the 50-10 percentile difference and 17.7% for the 90-50 percentile difference. Earnings dispersion therefore rose more for male employees than for female employees, and increased more among lower paid workers than among higher paid, and for both men and women separately.

One of the aims of this paper is to investigate some of the explanations for increased wage dispersion. In the research literature that has investigated the causes for the substantial rise in wage inequality in industrialised countries such as the U.K. and U.S. from the 1970s onwards, potential explanations have

included demand and supply shifts, institutional factors, and industrial restructuring (Bell, 1995; Freeman, 1991; Bluestone, 1990; Bishop et al, 1992). In particular, one explanation that has been recurrently advanced for the changes in the structure of wages is that there has been a shift in labour demand towards high skilled labour at the expense of low-skilled labour.

Explanations for this increasing demand for skilled labour have included technological change, the growth in international trade, and globalisation (Levy and Murnane, 1992; Gosling et al, 1994; Van Reenan, 1993). Less common explanations focus on market forces, for example the role of female participation and immigration.

One of the major hypotheses of rising wage inequality is the growth in skill-biased technological change that took place during the 1980s. Although the supply of skilled labour rose substantially over the same period, the demand for skilled workers was large enough to offset the supply shift. In particular, Krueger (1993) links the changes in the earnings distribution to the nature of the skill requirements in the 1980s and 1990s. He argues that there is a link between earnings and computer literacy, and that white-collar skills commanded a premium relative to the traditional skills of manual labour.

The globalisation argument for increasing wage dispersion is based on the idea that Great Britain is a small open economy whose markets are increasingly open to foreign competition. Globalisation means that low-wage developing countries with manufacturing bases effectively force down the wages of low-skilled workers relative to high-skilled workers in the richer industrialised countries. The globalisation argument has been favoured by many commentators in the U.S. to explain increasing inequality there (Leslie and Pu, 1996).

With respect to the role of female participation, an increase in female participation has been argued to increase the supply of relatively low skilled labour, thus driving down the wages of low skilled workers. In addition, if female workers are substitutes for low skilled workers, then a rise in the supply of female workers may lead to a fall in the demand for lower skilled male workers (Topel, 1997).

Aside from market forces, a number of institutional factors associated with labour market flexibility and deregulation have also been suggested as factors influencing the rise in earnings inequality in the U.K. These factors include changes in wage-setting institutions and industrial restructuring. Falling density weakens the power of trade unions relative to employers in the bargaining process, resulting in relatively lower settlements for workers and thereby directly affecting earnings dispersion. In addition, the changes in legislation to reduce the power of trade unions that have taken place over the past twenty years will also

have impacted adversely on earnings inequality. Industrial restructuring has contributed to lower earnings and higher inequality as the shift in employment from manufacturing to service industries displaced workers from a sector with higher mean earnings and a lower variance to a sector with lower mean earnings and a higher variance (Bluestone, 1990).

2.1. Specification of the quantile regressions

Most studies that investigate changes in the wage structure are restricted to mean type analysis. However, studies which investigate changes affecting the whole distribution should incorporate techniques which allow for the examination of changes at different points of the earnings distribution.

In order to further study the factors which influence national and regional earnings inequality over time and at different points of the wage distribution, this paper uses the technique of quantile regressions. The advantages of quantile regressions is obvious when the issue of interest is examining the influence of individual and job characteristics on earnings inequality, and changes in the returns to these characteristics over time. It may be that the returns to a particular characteristic have not changed as measured by the mean, while in reality they may have changed at various quantiles. Such effects will be ignored by the standard OLS methodology, but will be captured by quantile regressions.

The quantile regression model assumes that conditional on a vector of characteristics (x), the θ^{th} quantile of log y is linear (see Buchinsky, 1994):

$$Quant_{\theta}(\ln y_i \mid x_i) = \beta_{\theta}' x_i$$

giving rise to the linear quantile regression model:

$$\ln y_i = \beta_{\theta}' x_i + u_{\theta i}$$

where x_i is the vector of explanatory variables, β_{θ} are the vector of parameters, $Quant_{\theta}(ln\ y_i|x)$ denotes the conditional quantile of $ln\ y$ given x, and where $Quant_{\theta}(u_{\theta}|x) = 0$. The θ^{th} regression quantile, $0<\theta<1$, is defined as the solution to the problem:

$$\min\left\{ \sum_{i:y_{i\geq X_I\beta}} \theta \mid \ln y_i - x_i\beta_{\theta} \mid + \sum_{I:y_I<x_i\beta_{\theta}} (1-\theta) \mid \ln y_i - x_i\beta_{\theta} \mid \right\}$$

This is normally written as:

$$\min \sum_{\beta \in R^K} \rho_{\theta}(\ln y_i - x_i\beta_{\theta})$$

where $\rho_\theta(\varepsilon)$ is the check function defined as $\rho_\theta(\varepsilon) = \theta\varepsilon$ if $\varepsilon \geq 0$ or $\rho_\theta(\varepsilon) = (\theta - 1)\varepsilon$ if $\varepsilon < 0$. This problem can be solved by linear programming methods and standard errors are obtainable by bootstrap methods.

In this linear quantile regression the interpretation of the coefficients is straightforward. The coefficient for a particular explanatory variable measures the impact of that variable on the θ^{th} conditional quantile of the distribution of log earnings.

Using NES data cross-section OLS and quantile regressions are estimated for Great Britain for four years; 1976, 1980, 1991 and 1995. The sample consists of full-time male and female employees aged between 16 and 65 years[1]. The earnings variable used is the logarithm of hourly earnings adjusted for overtime. In line with the explanations provided in the literature investigating changes in wage dispersion, the regressors included in the specification of the equations are; union density; percentage of total workforce in manufacturing; workforce composition which reflects technical change; and female participation.

The explanatory variable 'Union density' is defined as the percentage of a region's total non-agricultural workforce who is covered by a collective

agreement. Similarly, the explanatory variable 'Percentage in Manufacturing' is defined as the percentage of a region's non-agricultural workforce employed in manufacturing. 'Workforce composition' is defined as a region's ratio of non-manual to manual labour. Lastly, 'Female participation' is calculated as the ratio of females to total regional employment (Taylor, 2000).

2.2. National OLS and quantile regression results

The results for the national OLS and quantile regressions are shown in Table 2. Although the primary concern of the paper is not the estimated effects of the various regressors at the mean, it is useful to discuss the results as they provide a benchmark against which the quantile regression estimates may be compared.

Workforce composition has had the largest influence on hourly earnings, while female participation appears to have the least impact on the level of national earnings. As expected both the explanatory variables Percentage in manufacturing and Union density have positive effects on the level of national earnings. For the variable Percentage in manufacturing, this is consistent with wage levels being typically higher in manufacturing than in service industries. An increase in the proportion of manufacturing workers relative to the total workforce would be expected to exert a positive impact on the level of national earnings.

[1] Part-time workers are omitted due to the sampling frame of the NES, which makes the earnings information on part-time workers less than fully representative.

Similarly, as unions allow workers to raise their wages above competitive levels, an increase in union density should also increase the level of national earnings.

The effects of the four explanatory variables have a positive effect on the level of earnings. However, their influence appears to have diminished over the period. By 1995 only Workforce composition and union density have a statistically significant impact on hourly earnings in Great Britain.

Similar to the OLS results the quantile regression results suggest that the independent variables have greater explanatory power at the beginning of the period than at the end.

Consistent with the OLS results the variable Percentage in manufacturing has a positive effect on the level of national earnings. However, the quantile regressions further reveal that this variable exhibits an equalising impact on the distribution of national earnings (i.e. an increase in the proportion of the workforce employed in manufacturing raises the earnings of workers at the bottom of the earnings distribution more than it raises the earnings of those workers at the top end, thereby contributing to lowering earnings inequality).

While Percentage in manufacturing has a positive and significant impact at the lower and middle quantiles, the variable is insignificant at the 90^{th} quantile in all

years. Taking into account that the most skilled/educated workers are usually at the upper end of the conditional wage distribution, these results support the theory that the decline in manufacturing employment during the 1980s and 1990s has contributed to the observed rise in earnings inequality by eroding the equalising impact that wage-setting in the manufacturing sector has on the wage distribution (by raising the wages of lower skilled, manual workers relative to higher skilled workers).

Union density also yields an equalising effect on the distribution of national earnings, with low paid workers benefiting more from being in a union than high paid workers. This is consistent with the empirical evidence in both the U.S. and U.K., which finds that unions are associated with reduced earnings dispersion. Traditionally unions have organised low-paid workers with the result of compressing the distribution of earnings across firms, occupations and industries. Consequently, unions have been argued to act as a redistributive force, reducing the level of wage dispersion (Card, 1992; Freeman, 1991; Gosling and Machin, 1995; and Bell, 1995).

Workforce composition has a highly significant effect on national earnings for workers across the earnings distribution. However, similar to the OLS results, the impact of workforce composition on national earnings was greater at the beginning of the period than at the end. Similar to the findings in this paper,

Leslie and Pu (1996) also find little evidence that the influx of low-skilled female labour has served to depress earnings at the lower end of the skill distribution. Further, Schmitt (1995) finds no evidence that the increase of women into the labour market has lowered average skill levels.

3. Changes in regional earnings inequality

There is very little empirical evidence on regional earnings inequality in Great Britain, and whether or not earnings inequality has increased uniformly or differently within the individual regions. The changes that have taken place in the regional earnings distributions for full-time male and female employees between 1976 and 1995 are shown in Table 1. As before, the earnings variable used is the logarithm of hourly earnings adjusted for overtime.

In 1976 earnings dispersion is greatest in Greater London and lowest in Wales. Earnings dispersion among men is also greatest in Greater London and lowest in Wales. For female employees, however, inequality is greatest in the Rest of the South and the Midlands and lowest in Scotland.

Earnings inequality in all six regions is greater in the top half of the earnings distributions. For each of the regions the 90-50 percentile difference is larger than the 50-10 percentile difference. This is also true for males and females separately.

By 1995 earnings dispersion is still greatest in Greater London for all employees and for men separately. For females earnings inequality is now greatest in Wales. The Midlands has the lowest level of earnings dispersion overall and for men, but dispersion is lowest for women in Greater London[2]. Similar to 1976 earnings inequality is greater in the top half of each of the regional earnings distributions for all employees and for men and women separately.

At the regional level the largest increase in earnings dispersion occurred in Wales where inequality rose by 35.5%. For men and women separately the largest increase in inequality occurred in Wales (46.9%) and in Scotland (41.7%) respectively. The region that experienced the smallest rise in earnings dispersion, overall and for both men and women, is the Rest of the South.

Although earnings inequality rose substantially more in the bottom half of the earnings distribution than in the top at the national level, this is not the case at the regional level. In the northern part of the country (the Midlands, the North, Wales and Scotland) earnings inequality rose more in the top half of the earnings distribution than in the bottom. For the southern part of the U.K. (Greater London and the Rest of the South) the opposite is true. Thus, the larger increase in the

[2] This result for women in Greater London may be surprising, but it may be explained by the restriction of the sample to full-time workers. As the large proportion of low-paid part-time female workers who are employed in service industries in Greater London are not included, this may result in lower earnings dispersion being reported among female workers in this region.

bottom half of the national earnings distribution is driven by the substantial increases in inequality in the lower halves of the earnings distributions of the southern regions.

3.1. Specification of regional quantile regressions

Examining the changes in the regional earnings distributions reveal that earnings inequality has not only increased at different rates within the different regions, but has also increased differently across the earnings distributions in each of the regions. This raises the question of whether or not the effects of the determinants of regional earnings are the same across the whole of the regional earnings distributions. For example, do certain factors have a greater effect on lower paid workers at the bottom of the earnings distributions than on higher paid workers at the top, or vice versa? As the standard OLS returns may disregard an enormous amount of variety in the returns across the distributions, the estimation of quantile regressions allow for a better understanding of how the returns differ along the regional earnings distributions.

Cross-section quantile regressions are estimated for six broad regions of Great Britain; Greater London, the Rest of the South, the Midlands, the North, Wales and Scotland. As before, data from 1976, 1980, 1991 and 1995 are used.

The advantage of estimating separate earnings equations for each region is that it allows for differences in both the intercepts and the slope coefficients, thereby allowing the effects of the determinants of earnings to vary across regions. Consequently, the relationship between earnings and its determinants at the regional level can be more fully explored.

The six regional earnings distributions are significantly different from one another (using the Kruskal Wallis H test of independent samples), and therefore should be investigated separately. This is in line with Monastiriotis (2000) who finds that regional wage inequalities in the UK are determined by regional-specific factors, and therefore the UK regions should be viewed as mini-economies with a common trend but rather distinct steady-states.

The specification of the regional earnings equations includes a vector of explanatory variables consisting of occupation, industry, sector, age, gender, union coverage, and a regional migration dummy variable. The regressions are estimated at five quantiles of the log earnings distribution; the 0.10, 0.25, 0.50, 0.75 and 0.90 quantiles.

Direct modelling of human capital is precluded as a result of the NES not including observations on education and experience. In the absence of such variables previous research using the NES has used occupation and age variables

as proxies for human capital (Groshen, 1991; Bell, Rimmer and Rimmer, 1994; Andrews, Bell and Upward, 1998).

3.2. Regional quantile regression results

Cross-section quantile results for the six regions for 1976 and 1995 are set out in Tables 3 to 8. The quantile estimates for the occupation variables highlight the earnings gap between high-skilled and low-skilled workers. Skilled workers in the top few occupational groups earn a premium relative to those employed in the lower skilled occupations. The coefficients for the higher skilled occupations have also increased between 1976 and 1995, while the coefficients for the lower skilled occupations have declined. This may indicate changing relative wages among all occupations independent of other influences. It is also consistent with improved returns for highly skilled labour overtime relative to other (Bell, Rimmer and Rimmer, 1994).

In addition, the earnings gap between lower-skilled and higher-skilled workers is not uniform across the earnings distributions. The regional coefficients display an upward trend as the quantile level increases. For example, in Greater London in 1976, the returns to a manager at the 90^{th} percentile are 162% higher than the returns to a manager at the 10^{th} percentile (table 3). Similarly, the returns to an individual employed in associate professional and technical occupations in the

North in 1976 are 179% higher relative to an individual in the same occupation at the 10^{th} percentile (table 6).

Using occupation as a proxy for human capital these results are consistent with the findings of Pereira and Martin (2000), who find that in the U.K. the upper quantiles are associated with higher returns to education, and thus earnings dispersion increased with the level of education. Buchinsky (2004) finds a similar result for the U.S. Using CPS data for the period 1964 to 1988 he finds that in general the returns to education are higher at the higher quantiles.

Relative to workers in Other manufacturing, individuals employed in agriculture, forestry and fishing are disadvantaged over the period, with individuals in Greater London being particularly disadvantaged. In contrast, there is an earnings premium for workers in energy, mining and banking. The earnings premium for employees in banking, finance and insurance is greatest in Greater London, the region in which service industries tend to be more concentrated. For all regions the premium associated with employment in this industry is greater at the upper quantiles relative to the lower quantiles in 1976, and in 1995 for all regions except Greater London where this disequalising impact appears to have been reversed.

Employment in the public sector has a largely positive influence on the level of hourly earnings. This is particularly true for local government. For all regions

there is an earnings premium for those employed in local government relative to those individuals employed in the private sector. However, employment in local government has a largely disequalising influence on regional earnings dispersion. In 1976 it had a disequalising effect in the Rest of the South, the Midlands, the North and Wales. In Greater London and Scotland the returns to local government employment are higher at the two ends of the earnings distribution and lower at the middle quantiles. By 1995 employment in local government had an equalising impact on earnings dispersion in all regions.

At the beginning of the period public corporations had an equalising impact on the earnings distributions in Greater London and the rest of the South, but a disequalising effect in the Midlands and Wales. By 1995 the earnings premium associated with employment in public corporations had disappeared in all regions. Being employed in central government has a generally positive influence on earnings for workers at the lower quantiles, but is insignificant for workers at the upper end of the regional earnings distributions.

Age in addition to occupation may embody some elements of human capital, namely work experience and on the job training. Age has clearly contributed to increased earnings dispersion over the twenty-year period in all six regions. There is an earnings premium for individuals aged between 36 and 50 years. Individuals aged between 16 and 20 years earn lower wages relative to all other

age groups, with this earnings gap increasing over the period across the whole of the regional earnings distributions.

For younger workers aged between 21 and 30 years the earnings gap relative to prime age workers is greater at higher quantiles than at the lower quantiles. Earnings inequality between young workers and prime age workers is therefore greater among high paid workers than among low paid workers.

Evidence from both the U.S. and the U.K. indicate that unions have an important equalising effect on earnings. The quantile estimates confirm that the premium for union coverage generally decreases as the quantile level increases. In 1976, 1980 and 1991 coverage by a major collective agreement had a positive effect on individual earnings at the lower end of the regional earnings distributions, but a negative impact on earnings for those individuals at higher quantiles. This is in line with the findings of Flaherty and Caniglia (1992) who show that union density in the U.S. has an equalising impact on statewide earnings distributions in 1979. Gosling and Machin (1995) also investigate the relationship between unions and earnings dispersion for the U.K. Their results highlight that the distribution of earnings is more compressed in plants with recognised trade unions, and that pay dispersion for semi-skilled workers rose much more in the non-union sectors relative to the union sectors. They suggest that the decline in unionisation accounts for approximately 18% of the increase in the across-

establishment dispersion of semi-skilled earnings between 1980 and 1990. By 1995 unionism seems to have less explanatory power at higher quantiles than in the previous years.

At the lower quantiles the union premium is greatest in Wales in 1976 and 1991, in Scotland in 1980, and in Greater London in 1995. At the upper quantiles the union premium is greatest in Greater London in 1976, and in Scotland in both 1980 and 1991. By 1995 the effect of unionism is only statistically significant in the Rest of the South.

Being female is generally associated with a lower wage level. In all regions and in all years' men earn higher wages relative to women. The gender earnings gap also increases as the quantile level rises, so that the gender difference is greatest among high paid workers than among low paid workers. For example, the premium for male workers in Greater London in 1995 is 0.077 at the 10^{th} percentile, rising to 0.201 at the 90^{th} percentile (table 3).

The gender gap is smallest in Greater London. For higher paid workers at the upper quantiles, the gender gap is greatest in Scotland, while for the low paid workers it is generally greatest in the Midlands.

A decline in the gender coefficients between 1976 and 1995 indicate a rise in women's earnings relative to men's. The quantile regressions further reveal that the narrowing of the gender gap occurred across the whole earnings distributions. Thus, the rise in women's earnings relative to men's across the period helped to decrease earnings dispersion, and this occurred for both low and high paid workers in all regions.

The regional migration variable enables us to examine whether the effect on individuals earnings of moving from one region to another differs across regions and also within each of the regional earnings distributions.

In each year those individuals who moved into any region except Greater London were better off in terms of earnings, in contrast to those individuals who moved into Greater London who were relatively worse off. This may imply that for an individual to relocate to the Rest of the South, the Midlands, the North, Wales or Scotland they require the incentive of an increase in earnings, whereas those who relocate to Greater London are prepared to suffer a drop in earnings in order to work in that region.

In general, for all regions except Greater London, this positive effect of regional migration on earnings tends to increase as the quantile level increases. Higher paid workers therefore benefit even more from regional migration than low paid

workers. This is particularly true for individuals in Wales in 1976 and 1980, and in the North in 1991 (tables 6 and 7).

4. Conclusions

Earnings inequality has risen in Great Britain in both the national and regional distributions of earnings over the period 1976 to 1995. Further, inequality has increased differently within each of the regional earnings distributions. Most recent research on changes in the U.K. wage structure has concentrated on changes in the level of national inequality, and the issue of regional earnings inequality has received less attention. In particular, the causes of rising within-region inequality have been largely ignored. This is important because increasing regional earnings inequality is explained by the rising inequality in earnings among individuals' within each of the regions, and as the regional earnings distributions have widened, the distribution of earnings at the national level has become more unequal.

This paper has investigated the changes that have taken place within both the national and regional earnings distributions. In contrast to most studies that investigate issues of wage dispersion using mean type analysis, this paper estimates both national and regional quantile regressions in order to examine those factors that have contributed to increasing national and regional earnings dispersion. The quantile regression methodology is particularly useful when

investigating issues of earnings dispersion as it highlights changes at various points of the conditional wage distribution.

At the national level the quantile regressions indicate that demand side factors such as workforce composition, which reflects technical change, have had an important impact on both the level of national earnings and the distribution of national earnings, whereas supply side influences such as female participation have only had a small impact on national earnings. Factors other than market forces have also had a significant effect on earnings dispersion. Both institutional change and industrial restructuring have a positive effect on the level of national earnings and exert an equalising impact on the distribution of earnings at the beginning of the period, but do not seem to be as important at the end of the period. The decline in unionisation and the shift in employment away from manufacturing towards service industries that occurred over the period have therefore contributed to the rise in national earnings inequality over the last 25 years by increasing the earnings gap between low paid and high paid workers.

At the regional level the quantile regression results indicate that standard OLS estimates may disregard a considerable amount of variety in the returns to the various regressors, as the changes in the returns to the regressors were not uniform across all quantiles of the regional earnings distributions.

Human capital is relatively more valued for highly paid jobs. The quantile regressions reveal that the returns to both occupation and age are lower at the lower end of the regional earnings distributions than at the top of the distributions. The increase in skilled labour since the 1980s has therefore had a disequalising impact on the wage distribution and has contributed to increased earnings inequality at the national level, but also within the individual regions.

At the regional level, trade unionism appears to have an equalising effect on earnings. The premium for union coverage is highly dependent on the quantile level, and generally decreases as the quantile level increases. Gender has also contributed to decreasing earnings dispersion over the period, with the narrowing of the gender earnings gap occurring for both low and high paid workers.

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Table 1. Changes in Regional Earnings Inequality, 1976 - 1995

	Greater London	Rest of the South	The Midlands	The North	Wales	Scotland	Great Britain
A: Total							
90 – 10	0.236	0.212	0.303	0.247	0.355	0.263	0.249
90 – 50	0.152	0.139	0.364	0.257	0.392	0.282	0.207
50 – 10	0.363	0.322	0.229	0.234	0.311	0.238	0.305
75 – 25	0.305	0.371	0.358	0.361	0.454	0.378	0.391
75 – 50	0.228	0.340	0.419	0.416	0.450	0.379	0.386
50 – 25	0.409	0.410	0.288	0.298	0.459	0.376	0.398
B: Males							
90 – 10	0.346	0.326	0.444	0.353	0.469	0.399	0.357
90 – 50	0.209	0.193	0.463	0.287	0.363	0.332	0.272
50 – 10	0.211	0.534	0.421	0.443	0.506	0.477	0.483
75 – 25	0.215	0.490	0.492	0.471	0.487	0.436	0.494
75 – 50	0.252	0.390	0.493	0.418	0.379	0.247	0.440
50 – 25	0.628	0.620	0.492	0.533	0.617	0.478	0.560
C: Females							
90 – 10	0.192	0.120	0.168	0.232	0.325	0.417	0.207
90 – 50	0.103	0.082	0.173	0.223	0.464	0.499	0.177
50 – 10	0.304	0.175	0.160	0.245	0.163	0.317	0.250
75 – 25	0.211	0.319	0.454	0.445	0.442	0.533	0.428
75 – 50	0.188	0.459	0.672	0.547	0.754	0.728	0.524
50 – 25	0.255	0.176	0.233	0.332	0.169	0.332	0.321

Table 2. National OLS and quantile regression results

	Percentage in manufacturing	Union density	Female participation	Workforce composition	Constant
OLS:					
1976	0.011*	0.013*	0.014*	0.588*	-1.798*
1980	0.007*	0.013*	0.007*	0.415*	-0.673*
1991	0.006*	0.004*	0.003	0.260*	-0.963*
1996	0.001	0.002*	-0.002	0.183*	1.661*
Quantile:					
1975:					
0.10	0.014*	0.015*	0.014*	0.637*	-2.515*
0.25	0.013*	0.016*	0.016*	0.616*	-2.355*
0.50	0.014*	0.015*	0.018*	0.627*	-2.093*
0.75	0.010*	0.011*	0.015*	0.568*	-1.471*
0.90	0.003	0.001	0.003	0.421*	0.204
1980:					
0.10	0.007*	0.011*	0.004*	0.385*	-0.955*
0.25	0.008*	0.014*	0.006*	0.438*	-1.113*
0.50	0.009*	0.017*	0.010*	0.475*	-1.201*
0.75	0.007*	0.013*	0.010*	0.441*	-0.620*
0.90	0.002	0.005*	0.008*	0.339*	0.459
1991:					
0.10	0.009*	0.010*	-0.007	0.324*	0.322
0.25	0.008*	0.012*	-0.013*	0.347*	0.658*
0.50	0.006*	0.006*	-0.005	0.285*	1.058*
0.75	-0.001	-0.004*	0.012	0.123*	1.734*
0.90	0.003	-0.007*	0.035*	0.148*	1.197*
1995:					
0.10	0.003	0.004*	-0.005	0.189*	1.064*
0.25	0.003	0.005*	-0.007	0.209*	1.334*
0.50	-0.01	0.002*	-0.007	0.176*	1.887*
0.75	-0.003	-0.001	-0.002	0.141*	2.254*
0.90	0.001	0.001	0.006	0.191*	1.998*

Note: * indicates 5% significant level.

Table 3. Quantile Results: Greater London 1976 and 1995

	1976					1995				
	0.10	0.25	0.50	0.75	0.90	0.10	0.25	0.50	0.75	0.90
Occupation										
Managers & administrators	0.151*	0.212*	0.309*	0.379*	0.395*	0.346*	0.398*	0.488*	0.609*	0.715*
Professional occupations	0.242*	0.304*	0.395*	0.434*	0.427*	0.466*	0.517*	0.578*	0.585*	0.598*
Associate professional & technical	0.168*	0.267*	0.377*	0.427*	0.407*	0.335	0.338*	0.414*	0.485*	0.567*
Clerical & secretarial	0.062*	0.059*	0.054*	0.015	-0.006	0.039	0.034*	0.062*	0.047*	0.013
Personal & protective services	-0.101*	-0.104*	-0.061	-0.085*	0.033	-0.253*	-0.171*	0.006	0.125*	0.079*
Sales occupations	0.028	0.062*	0.133*	0.161*	0.154*	0.008	0.029	0.112*	0.131*	0.281*
Plant & machinery operatives	-0.045*	-0.037*	-0.028*	-0.054*	-0.061*	-0.193*	-0.190*	-0.162*	-0.167*	-0.141*
Other occupations	-0.134*	-0.125*	-0.115*	-0.114*	-0.148*	-0.240*	-0.247*	-0.245*	-0.253*	-0.270*
Industry										
Agriculture, forestry & fishing	-0.086	-0.146	-0.308	-0.458	0.210	-0.571	-0.301	-0.429*	-0.467*	-0.530*
Energy & water supply	0.064	0.089*	0.057	0.127*	0.098*	0.309*	0.220*	0.152*	0.091*	0.050
Other mineral & ore extraction	0.036	0.113*	0.057*	0.045	-0.034	0.072	-0.008	-0.09	-0.060	-0.069
Metal, vehicles & engineering	0.085*	0.080*	0.026	-0.024	-0.106*	0.001	-0.062*	-0.102*	-0.141*	-0.134*
Construction	0.002	0.029	-0.008	-0.046*	-0.100*	-0.040	-0.138*	-0.171*	-0.265*	-0.274*
Distribution, catering & repairs	-0.072*	-0.063*	-0.054	0.012	-9.1e-5	-0.156*	-0.230*	-0.229*	-0.253*	-0.275*
Transport & communication	0.031	0.062*	0.019	0.035	-0.039	0.098*	0.008	-0.056*	-0.121*	-0.152*
Banking, finance & insurance	0.131*	0.193*	0.194*	0.207*	0.173*	0.188*	0.159*	0.160*	0.124*	0.159*
Other services	0.056*	0.114*	0.158*	0.150*	0.095*	0.023	-0.020	-0.045	-0.117*	-0.132*

Sector										
Public corporations	0.210*	0.170*	0.163*	0.090*	0.067*	0.001	0.001	0.012	0.047	0.073
Central government	0.167*	0.138*	0.070*	0.076*	0.118*	0.013	-0.059*	-0.128*	-0.143*	-0.120*
Local government	0.186*	0.150*	0.140*	0.164*	0.170*	0.70*	0.032	-0.002	0.019	0.010
Age group										
16 – 20	-0.433*	-0.422*	-0.435*	-0.426*	-0.464*	-0.502*	-0.512*	-0.504*	-0.508*	-0.436*
21 – 25	-0.098*	-0.137*	-0.176*	-0.228*	-0.282*	-0.197*	-0.212*	0.250*	-0.258*	-0.271*
26 – 30	0.002	-0.008	-0.057*	-0.090*	-0.147*	-0.077	-0.075	-0.101	-0.113	-0.127*
31 – 35	-0.015	8.16e-11	-0.022	-0.033	-0.061*	-0.006	-0.005	-0.033*	-0.046*	-0.041*
41 – 45	-0.010	-0.016	-0.016	-0.015	0.004	-0.025	0.006	0.007	0.018	0.051
46 – 50	-0.023	-0.036*	-0.021*	-0.005	0.014	-0.023	0.011	0.016	0.021	0.035
51 – 55	-0.030*	-0.043*	-0.045*	-0.028	0.010	-0.095*	-0.050*	-0.045*	-0.014	0.019
56 – 60	-0.064*	-0.078*	-0.099*	-0.087*	-0.047	-0.119*	-0.105*	-0.071*	-0.059*	-0.008
61 – 65	-0.128*	-0.150*	-0.169*	-0.194*	-0.186*	-0.213*	-0.132*	-0.152*	-0.065	-0.053
Collective agreement	0.020	-0.020*	-0.035*	-0.054*	-0.102*	0.142*	0.096*	0.081*	0.040	-0.010
Gender	0.169*	0.185*	0.205*	0.214*	0.237*	0.077*	0.092*	0.121*	0.165*	0.201*
Move	-0.057*	-0.051*	-0.028	-0.036	-0.039*	-0.002	-0.022*	-0.021	-0.067*	-0.087*
Constant	-0.094*	0.050*	0.237*	0.469*	0.737*	1.634*	1.861*	2.050*	2.283*	2.470*
N	11092					11513				
Kolmogorov-Smirnov test	0.000					0.000				
Jarque-Bera normality test	995.9					914.5				

Table 4. Quantile Results: The Rest of the South 1976 and 1995

	1976					1995				
	0.10	0.25	0.50	0.75	0.90	0.10	0.25	0.50	0.75	0.90
Occupation										
Managers & administrators	0.102*	0.145*	0.239*	0.325*	0.398*	0.362*	0.430*	0.506*	0.609*	0.713*
Professional occupations	0.210*	0.293*	0.401*	0.451*	0.467*	0.507*	0.545*	0.569*	0.593*	0.614*
Associate professional & technical	0.201*	0.265*	0.333*	0.416*	0.455*	0.265*	0.296*	0.323*	0.371*	0.372*
Clerical & secretarial	0.032*	0.033*	0.026*	0.031*	0.041*	0.049*	0.038*	0.027*	0.017	0.010
Personal & protective services	-0.079*	-0.076*	-0.031	-0.035*	0.137*	-0.151*	-0.101*	-0.019	0.065*	0.097*
Sales occupations	-0.060*	-0.046*	-0.003	0.069*	0.118*	0.020	0.030*	0.107*	0.166*	0.248*
Plant & machinery operatives	-0.034*	-0.040*	-0.031*	-0.036*	-0.017	-0.118*	-0.144*	-0.136*	-0.123*	-0.138*
Other occupations	-0.092*	-0.101*	-0.097*	-0.084*	-0.072*	-0.172	-0.192*	-0.231*	-0.260*	-0.282*
Industry										
Agriculture, forestry & fishing	-0.026	-0.108*	-0.183*	-0.76*	-0.330*	-0.143*	-0.164*	-0.177*	-0.216*	-0.218*
Energy & water supply	0.108*	0.110*	0.159*	0.117*	0.116*	0.315*	0.248*	0.187*	0.153*	0.095*
Other mineral & ore extraction	0.090*	0.088*	0.075*	0.068*	0.052	0.060*	0.086*	0.101*	0.096*	0.060*
Metal, vehicles & engineering	0.105*	0.097*	0.080*	0.048*	0.026*	0.067*	0.045*	0.021	-0.015	-0.067*
Construction	-0.006	-0.022*	-0.064*	-0.113*	-0.134*	-0.096*	-0.130*	-0.150*	-0.148*	-0.170*
Distribution, catering & repairs	-0.096*	-0.103*	-0.103*	-0.132*	-0.119*	-0.182*	-0.180*	-0.202*	-0.198*	-0.217*
Transport & communication	0.005	0.012	0.049*	0.039*	0.017	0.043*	0.034*	0.002	-0.019	-0.062*
Banking, finance & insurance	0.030*	0.076*	0.104*	0.118*	0.115*	0.049*	0.072*	0.093*	0.097*	0.070*
Other services	0.010	0.054*	0.101*	0.151*	0.144*	-0.100*	-0.103*	-0.100*	-0.099*	-0.080*

Sector										
Public corporations	0.117*	0.099*	0.061*	0.062*	0.057*	-0.079*	-0.087*	-0.089*	-0.088*	-0.002
Central government	0.075*	0.062*	0.035*	-0.015	0.003	0.090*	0.046*	0.028	-0.007	-0.081*
Local government	0.116*	0.098*	0.156*	0.199*	0.257*	0.133*	0.104*	0.118*	0.099*	0.019*
Age group										
16 – 20	-0.449*	-0.392*	-0.374*	-0.674*	-0.397*	-0.474*	-0.436*	-0.471*	-0.444*	-0.459*
21 – 25	-0.118*	-0.118*	-0.141*	-0.188*	-0.223*	-0.191*	-0.227*	-0.241*	-0.264*	-0.264*
26 – 30	0.006	0.001	-0.031*	-0.073*	-0.095*	-0.072*	-0.096*	-0.101*	-0.112*	-0.115*
31 – 35	-0.016	0.012	0.012	-0.021	-0.035	-0.010	-0.027*	-0.027*	-0.034*	-0.047*
41 – 45	-0.018	-0.007	-0.003	-0.006	0.019	-0.029	-0.015	-0.007	-0.011	-0.002
46 – 50	-0.037*	-0.021	-0.005	-2.35e-10	0.012	-0.034*	-0.022*	-0.013	-0.04	0.008
51 – 55	-0.053*	-0.045*	-0.048*	-0.049*	-0.022	-0.066*	-0.054*	-0.047*	-0.048*	-0.026
56 – 60	-0.085*	-0.092*	-0.082*	-0.078*	-0.062*	-0.115*	-0.111*	-0.094*	-0.095*	-0.097*
61 – 65	-0.105*	-0.131*	-0.131*	-0.138*	-0.152*	-0.171*	-0.182*	-0.189*	-0.216*	-0.206*
Collective agreement	0.066*	0.036*	0.005	-0.017*	-0.062*	0.107*	0.100*	0.056*	0.048*	0.026*
Gender	0.203*	0.232*	0.242*	0.261*	0.281*	0.124*	0.149*	0.168*	0.183*	0.208*
Move	0.056*	0.075*	0.110*	0.098*	0.079*	0.075*	0.077*	0.115*	0.104*	0.124*
Constant	-0.200*	-0.086*	0.067*	0.254*	0.430*	1.467*	1.642*	1.827*	2.022*	2.228*
N	17437					22667				
Kolmogorov-Smirnov test	0.000					0.000				
Jarque-Bera normality test	1740.0					511.3				

Table 5. Quantile Results: The Midlands 1976 and 1995

	1976					1995				
	0.10	0.25	0.50	0.75	0.90	0.10	0.25	0.50	0.75	0.90
Occupation										
Managers & administrators	0.099*	0.105*	0.189*	0.276*	0.414*	0.326*	0.406*	0.477*	0.590*	0.760*
Professional occupations	0.191*	0.253*	0.328*	0.379*	0.400*	0.530*	0.581*	0.605*	0.621*	0.672*
Associate professional & technical	0.137*	0.176*	0.242*	0.334*	0.351*	0.226*	0.267*	0.303*	0.331*	0.366*
Clerical & secretarial	0.015	0.007	0.003	-0.002	0.022	0.024	0.014	0.001	0.003	0.015
Personal & protective services	-0.097*	-0.107*	-0.093*	-0.055*	0.142*	-0.173*	-0.131*	-0.030	0.067*	0.167*
Sales occupations	-0.047*	-0.039	0.029*	0.074*	0.146*	0.038	0.063*	0.101*	0.187*	0.242*
Plant & machinery operatives	-0.031*	-0.045*	-0.041*	-0.049*	-0.036*	-0.099*	-0.096*	-0.093*	-0.071*	-0.047*
Other occupations	-0.102*	-0.107*	-0.098*	-0.082*	-0.046*	-0.204*	-0.211*	-0.203*	-0.219*	-0.222*
Industry										
Agriculture, forestry & fishing	-0.029	-0.068*	-0.183*	-0.286*	-0.278*	-0.068	-0.042	-0.134*	-0.236*	-0.171*
Energy & water supply	0.166*	0.150*	0.127*	0.083*	-0.022	0.327*	0.295*	0.232*	0.172*	0.175*
Other mineral & ore extraction	0.092*	0.088*	0.066*	0.042*	-0.023	0.065*	0.079*	0.047*	0.050*	0.057*
Metal, vehicles & engineering	0.112*	0.116*	0.090*	0.049*	-0.004	0.127*	0.101*	0.067*	0.034*	-0.004
Construction	-0.011	-0.029*	-0.064*	-0.102*	-0.079*	0.016	-0.015	-0.075*	-0.071*	-0.074*
Distribution, catering & repairs	-0.103*	-0.113	-0.164*	-0.193*	-0.219*	-0.098*	-0.103*	-0.119*	-0.116*	-0.086*
Transport & communication	0.038*	0.029*	-0.007	-0.035	-0.109*	0.104*	0.057*	0.009	-0.042*	-0.059*
Banking, finance & insurance	0.005	0.075*	0.085*	0.107*	0.109*	0.084*	0.119*	0.118*	0.122*	0.148*
Other services	0.007	0.050*	0.130*	0.193*	0.136*	0.036	0.024	0.002	-0.021	-0.047

Sector										
Public corporations	0.082*	0.102*	0.099*	0.108*	0.128*	-0.057	-0.058*	-0.024	-0.028	0.022
Central government	0.100*	0.093*	0.014	-0.055	-0.029	0.077*	0.086*	0.066*	0.064*	0.057
Local government	0.147*	0.154*	0.156*	0.188*	0.267*	0.110*	0.113*	0.109*	0.099*	0.090*
Age group										
16 – 20	-0.428*	-0.389*	-0.402*	-0.395*	-0.341*	-0.490*	-0.451*	-0.458*	-0.489*	-0.476*
21 – 25	-0.086	-0.104*	-0.118*	-0.153*	-0.148*	-0.174*	-0.203*	-0.219*	-0.239*	-0.220*
26 – 30	0.012	-0.003	-0.032*	-0.062*	-0.060*	-0.060*	-0.084*	-0.094*	-0.104*	-0.082*
31 – 35	0.008	0.018	0.002	-0.015	0.023	-0.007	-0.015	-0.031*	-0.035*	-0.017
41 – 45	0.007	-0.004	-0.022	-0.018	0.009	-0.009	-0.001	0.016	0.018	0.045*
46 – 50	-0.032	-0.036*	-0.044*	-0.046*	-0.001	-0.003	-0.004	-0.001	0.003	0.045
51 – 55	-0.031	-0.038*	-0.063*	-0.069*	-0.027	-0.065*	-0.049*	-0.051*	-0.022	0.010
56 – 60	-0.053*	-0.070*	-0.083*	-0.078*	-0.029	-0.090*	-0.082*	-0.073*	-0.045*	0.011
61 – 65	-0.132*	-0.132*	-0.150*	-0.154*	-0.092*	-0.181*	-0.207*	-0.196*	-0.128*	-0.055
Collective agreement	0.080*	0.041*	0.019*	0.002	-0.007	0.128*	0.108*	0.075*	0.054*	0.029
Gender	0.229*	0.240*	0.257*	0.267*	0.279*	0.147*	0.171*	0.184*	0.206*	0.213*
Move	-0.036	-0.029	-0.029	0.041	0.110*	0.037	0.036	0.057*	0.069*	0.109*
Constant	-0.247*	-0.106*	0.069*	0.258*	0.391*	1.323*	1.480*	1.684*	1.869*	2.009*
N	10795					12943				
Kolmogorov-Smirnov test	0.000					0.000				
Jarque-Bera normality test	1446.0					568.2				

Table 6. Quantile Results: The North 1976 and 1995

	1976					1995				
	0.10	0.25	0.50	0.75	0.90	0.10	0.25	0.50	0.75	0.90
Occupation										
Managers & administrators	0.102*	0.135*	0.207*	0.281*	0.355*	0.358*	0.400*	0.453*	0.546*	0.648*
Professional occupations	0.168*	0.234*	0.344*	0.406*	0.389*	0.543*	0.567*	0.618*	0.630*	0.646*
Associate professional & technical	0.138*	0.190*	0.271*	0.338*	0.386*	0.227*	0.263*	0.299*	0.337*	0.343*
Clerical & secretarial	0.019	0.005	0.003	-0.001	0.012	0.031*	0.001	-0.010	-0.016	-0.036*
Personal & protective services	-0.079*	-0.108*	-0.092*	0.065*	0.103*	-0.190*	-0.161*	-0.024	0.093*	0.118*
Sales occupations	-0.050*	-0.031	0.007	0.062*	0.095*	0.029	0.024	0.070*	0.135*	0.171*
Plant & machinery operatives	-0.042*	-0.045*	-0.043*	-0.035*	-0.038*	-0.102*	-0.131*	-0.109*	-0.084*	-0.075*
Other occupations	-0.104*	-0.110*	-0.104*	-0.082*	-0.070*	-0.185*	-0.194*	-0.208*	-0.235*	-0.282*
Industry										
Agriculture, forestry & fishing	-0.007	-0.065*	-0.151*	-0.242*	-0.213*	-0.025	-0.052*	-0.109*	-0.215*	-0.276*
Energy & water supply	0.192*	0.177*	0.191*	0.175*	0.130*	0.369*	0.313*	0.264*	0.240*	0.219*
Other mineral & ore extraction	0.174*	0.180*	0.173*	0.154*	0.151*	0.180*	0.176*	0.178*	0.142*	0.097*
Metal, vehicles & engineering	0.135*	0.132*	0.109*	0.088*	0.043*	0.102*	0.078*	0.054*	0.013	-0.020
Construction	0.033*	0.021	0.013	0.006	0.013	-0.030	-0.065*	-0.067*	-0.087*	-0.024
Distribution, catering & repairs	-0.139*	-0.134	-0.126*	-0.133*	-0.107*	-0.161*	-0.182*	-0.197*	-0.175*	-0.156*
Transport & communication	0.077*	0.046*	0.021	0.023	0.014	0.051*	0.053*	0.017	-0.028*	-0.036
Banking, finance & insurance	0.065*	0.083*	0.125*	0.143*	0.162*	0.030*	0.052*	0.081*	0129*	0.132*
Other services	0.031	-0.071*	0.167*	0.233*	0.247*	-0.053*	-0.041*	-0.016	-0.008	0.008

Sector										
Public corporations	0.066*	0.077*	0.091*	0.084*	0.064*	-0.021	-0.068*	-0.099*	-0.093*	-0.081*
Central government	0.095*	0.081*	0.032	-0.022	-0.060*	0.146*	0.099*	0.029	-0.008	-0.059
Local government	0.123*	0.113*	0.134*	0.148*	0.185*	0.172*	0.135*	0.098*	0.089*	0.041
Age group										
16 – 20	-0.445*	-0.419*	-0.413*	-0.394*	-0.400*	-0.530*	-0.455*	-0.435*	-0.450*	-0.439*
21 – 25	-0.100*	-0.109*	-0.134*	-0.169*	-0.202*	-0.197*	-0.203*	-0.211*	-0.234*	-0.252*
26 – 30	-0.023*	-0.029*	-0.047*	-0.074*	-0.096*	-0.098*	-0.078*	-0.090*	-0.099*	-0.113*
31 – 35	-0.023	-0.014	-0.019	-0.023	-0.051*	-0.036*	-0.035*	-0.014	-0.016	-0.035*
41 – 45	-0.033*	-0.034*	0.027*	-0.018	-0.008	-0.010	0.007	0.002	0.019	0.019
46 – 50	-0.051*	-0.051*	-0.043*	-0.026*	-0.015	-0.022	-0.003	0.021*	0.022	0.014
51 – 55	-0.072*	-0.082*	-0.079*	-0.067*	-0.059*	-0.063*	-0.043*	-0.020	0.012	0.038
56 – 60	-0.093*	-0.104*	-0.112*	-0.091*	-0.087*	-0.100*	-0.076*	-0.048*	-0.047*	-0.029
61 – 65	-0.146*	-0.171*	-0.173*	-0.171*	-0.186*	-0.174*	-0.165*	-0.151*	-0.135*	-0.142*
Collective agreement	0.058*	-0.036*	0.012*	-0.009	-0.040*	0.098*	0.082*	0.055*	0.036*	-0.003
Gender	0.218*	0.243*	0.269*	0.286*	0.305*	0.129*	0.145*	0.156*	0.194*	0.204*
Move	0.046*	0.018	0.015	0.092*	0.079*	0.052*	0.086*	0.099*	0.065*	0.111*
Constant	-0.212*	-0.084*	0.060*	0.218*	0.401*	1.386*	1.559*	1.741*	1.916*	2.123*
N	18747					19292				
Kolmogorov-Smirnov test	0.000					0.000				
Jarque-Bera normality test	2393.0					294.4				

Table 7. Quantile Results: Wales 1976 and 1995

	1976					1995				
	0.10	0.25	0.50	0.75	0.90	0.10	0.25	0.50	0.75	0.90
Occupation										
Managers & administrators	0.095*	0.099*	0.185*	0.256*	0.401*	0.404*	0.395*	0.444*	0.548*	0.662*
Professional occupations	0.131*	0.170*	0.280*	0.401*	0.534*	0.524*	0.583*	0.635*	0.645*	0.748*
Associate professional & technical	0.106*	0.202*	0.288*	0.425*	0.480*	0.262*	0.292*	0.328*	0.367*	0.430*
Clerical & secretarial	0.020	0.014	0.004	0.030	0.056	0.060	0.026	0.017	0.006	0.025
Personal & protective services	-0.114*	-0.077	0.044	0.071	0.243*	-0.109	-0.087	-0.026	0.078	0.147*
Sales occupations	-0.031	-0.031	-0.043*	0.070	0.183*	0.099*	-0.010	0.055	0.084	0.176*
Plant & machinery operatives	-0.053*	-0.053*	-0.029*	-0.018	-0.007	-0.082*	-0.069*	-0.057	-0.037	-0.027
Other occupations	-0.121*	-0.117*	-0.112*	-0.081*	-0.063*	-0.196*	-0.211*	-0.214*	-0.209*	-0.162*
Industry										
Agriculture, forestry & fishing	0.002	-0.044	-0.190*	-0.148	-0.028	-0.077	-0.061	-0.153*	-0.290*	-0.416*
Energy & water supply	0.204*	0.115*	0.121*	0.131*	0.053	0.282*	0.345*	0.299*	0.370*	0.386*
Other mineral & ore extraction	0.234*	0.184*	0.166*	0.165*	0.115*	0.144*	0.245*	0.286*	0.241*	0.135*
Metal, vehicles & engineering	0.173*	0.131*	0.094*	0.086*	0.063	0.112*	0.126*	0.106*	0.064	0.025
Construction	-0.018	-0.039	-0.057	-0.009	-0.065	-0.084*	-0.071*	-0.097*	-0.138*	-0.212*
Distribution, catering & repairs	-0.110*	-0.140*	-0.198*	-0.147*	-0.163*	-0.266*	-0.198*	-0.239*	-0.228*	-0.251*
Transport & communication	0.033	7.7e-5	-0.067*	-0.071*	-0.082	-0.066	0.089	0.055	0.003	-0.016
Banking, finance & insurance	0.002	0.011	0.024	0.038	0.086	0.014	0.070	0.093*	0.139*	0.128*
Other services	0.031	0.058	0.084*	0.171*	0.162*	-0.145*	-0.033	-0.012	-0.018	-0.012

Sector										
Public corporations	0.110*	0.140*	0.154*	0.141*	0.151*	-0.076	-0.226*	-0.122*	-0.106	-0.058
Central government	0.098*	0.086*	0.081*	-0.002	0.020	0.205*	0.106*	0.062	0.029	0.004
Local government	0.114*	0.083*	0.111*	0.119*	0.159*	0.197*	0.130*	0.103*	0.126*	0.072*
Age group										
16 – 20	-0.462*	-0.382*	-0.365*	-0.362*	-0.369*	-0.596*	-0.448*	-0.398*	-0.473*	-0.365*
21 – 25	-0.093*	-0.117*	-0.119*	-0.167*	-0.182*	-0.194*	-0.214*	-0.231*	-0.252*	-0.234*
26 – 30	-0.030	-0.040	-0.042*	-0.081*	-0.083*	-0.051	-0.076*	-0.087*	-0.087*	-0.068
31 – 35	-0.014	0.005	0.009	-0.022	-0.033	-0.023	-0.007	0.002	-4.45e-10	-0.042
41 – 45	-0.040	-0.039	-0.025	-0.022	-0.022	0.025	0.018	0.026	-0.006	0.001
46 – 50	-0.068*	-0.046	-0.043	-0.031	0.034	-0.037	-0.008	0.009	-0.004	0.004
51 – 55	-0.022	-0.050	-0.024	-0.026	-0.031	-0.034	-0.024	-0.025	-0.120	0.024
56 – 60	-0.108*	-0.097*	-0.067*	-0.079*	-0.065	-0.057	-0.078	-0.048	-0.003	0.007
61 – 65	-0.107*	-0.132*	-0.151*	-0.173*	-0.111	-0.099	-0.051	-0.049	-0.130*	-0.058
Collective agreement	0.113*	0.069*	0.004	-0.001	-0.024	0.138*	0.118*	0.093*	0.056*	-0.005
Gender	0.214*	0.231*	0.258*	0.263*	0.315*	0.114*	0.134*	0.167*	0.221*	0.301*
Move	0.085*	0.048	0.051	0.128	0.123*	0.026	0.017*	0.029	0.020	0.123
Constant	-0.273*	-0.109*	0.049	0.188*	0.303*	1.360*	1.488*	1.655*	1.833*	1.956*
N	3192					3354				
Kolmogorov-Smirnov test	0.000					0.000				
Jarque-Bera normality test	611.3					53.9				

Table 8. Quantile Results: Scotland 1976 and 1995

	1976					1995				
	0.10	0.25	0.50	0.75	0.90	0.10	0.25	0.50	0.75	0.90
Occupation										
Managers & administrators	0.079*	0.122*	0.244*	0.344*	0.468*	0.391*	0.425*	0.494*	0.579*	0.650*
Professional occupations	0.194*	0.217*	0.298*	0.678*	0.450*	0.567*	0.636*	0.696*	0.697*	0.683*
Associate professional & technical	0.115*	0.175*	0.330*	0.406*	0.496*	0.260*	0.329*	0.372*	0.426*	0.399*
Clerical & secretarial	0.021	0.010	0.034*	0.033*	0.045	0.052*	0.024*	0.041*	0.027	0.024
Personal & protective services	-0.118*	-0.110*	-0.059*	-0.050*	0.034	-0.163*	-0.096*	0.022	0.128*	0.111*
Sales occupations	-0.108*	-0.124*	-0.057*	0.004	0.094*	0.016	0.013	0.041	0.091*	0.156*
Plant & machinery operatives	-0.048*	-0.059*	-0.051*	-0.055*	-0.024	-0.109*	-0.126*	-0.089*	-0.088*	-0.090*
Other occupations	-0.110*	-0.094*	-0.085*	-0.098*	-0.095*	-0.205*	-0.210*	-0.232*	-0.267*	-0.274*
Industry										
Agriculture, forestry & fishing	-0.025	-0.085*	-0.126*	-0.193*	-0.206*	-0.051	-0.113*	-0.134*	-0.230*	-0.298*
Energy & water supply	0.146*	0.158*	0.201*	0.185*	0.054	0.331*	0.271*	0.233*	0.217*	0.164*
Other mineral & ore extraction	0.118*	0.145*	0.135*	0.127*	0.041	0.097*	0.086*	0.109*	0.111*	0.059
Metal, vehicles & engineering	0.174*	0.158*	0.139*	0.120*	0.057*	0.124*	0.085*	0.036*	0.025	-0.023
Construction	-0.014	-0.005	0.011	0.046	0.041	0.017	-0.029	-0.080*	-0.138*	-0.085*
Distribution, catering & repairs	-0.109*	-0.116*	-0.135*	-0.129*	-0.143*	-0.175*	-0.226*	-0.268*	-0.276*	-0.255*
Transport & communication	0.035	0.018	0.005	0.001	-0.123*	0.064*	0.009	-0.017	-0.028	-0.028
Banking, finance & insurance	0.011	0.046*	0.090*	0.118*	0.102*	0.021	0.020	0.028	0.021	0.041
Other services	0.007	0.044	0.101*	0.157*	0.136*	0.003	-0.041	-0.061	-0.073*	-0.061

Sector										
Public corporations	0.116*	0.093*	0.085*	0.089*	0.158*	-0.028	-0.051	-0.081*	-0.035	0.022
Central government	0.091*	0.093*	0.038	0.008	0.005	0.020	0.032	-0.005	0.011	0.008
Local government	0.168*	0.122*	0.118*	0.127*	0.163*	0.101*	0.111*	0.072*	0.087*	0.089*
Age group										
16 – 20	-0.456*	-0.391*	-0.395*	-0.388*	-0.375*	-0.535*	-0.497*	-0.453*	-0.465*	-0.435*
21 – 25	-0.063*	-0.087*	-0.133*	-0.150*	-0.166*	-0.148*	-0.160*	-0.189*	-0.236*	-0.252*
26 – 30	0.007	-0.007	-0.029	-0.053*	-0.085*	-0.038	-0.074*	-0.084*	-0.104*	-0.122*
31 – 35	0.020	7.21e-6	-0.001	0.5005	-0.038	0.012	-0.010	-0.005	-0.027	-0.033
41 – 45	-0.025	-0.039	-0.022	-0.009	-0.012	0.009	-0.009	-0.022	1.59e-9	0.002
46 – 50	-0.020	-0.042	-0.069*	-0.037	-0.031	-0.005	0.004	0.021	0.026	0.032
51 – 55	-0.031	-0.060*	-0.061*	-0.032	-0.066*	-0.003	-0.019	0.003	0.008	0.019
56 – 60	-0.069*	-0.081*	-0.124*	-0.086*	-0.087*	-0.071*	-0.068*	-0.069*	-0.043	-0.031
61 – 65	-0.091*	-0.130*	-0.148*	-0.152*	-0.166*	-0.108*	-0.166*	-0.104*	-0.075*	-0.096
Collective agreement	0.061*	0.038*	-0.021*	-0.008	-0.045*	0.097*	0.068*	0.050*	0.003	-0.031
Gender	0.221*	0.235*	0.275*	0.298*	0.354*	0.142*	0.134*	0.182*	0.204*	0.225*
Move	0.032	0.047	0.100	0.093	0.260*	0.085	0.230*	0.192*	0.117*	0.155*
Constant	-0.234*	-0.077*	0.047*	0.203*	0.379*	0.365*	1.579*	1.745*	1.949*	2.126*
N	7795					7687				
Kolmogorov-Smirnov test	0.000					0.000				
Jarque-Bera normality test	925.7					151.9				

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