THE GOOD WORK COMMISSION

Provocation Paper 8

Pay: Who were the winners and losers of the New Labour era?

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Contents

List of Figures and Tables

1. **Real earnings increased steadily between 1997 and 2009 across all levels and major industries.**
   - Adjusting for inflation, median earnings increased at a rate of 1.4 per cent a year between 1997 and 2009, 18 per cent over the period. The exception was between 2006 and 2008 when inflation was higher; real wage growth returned in 2009 due to negative inflation.
   - Women's pay has grown faster than men's (nominal, ie unadjusted for inflation, earnings grew by 52 per cent, against 45 per cent for men between 1997 and 2009).
   - The UK is relatively well placed among European nations regarding perceptions of effort-reward imbalances, with 53.6 per cent of workers agreeing with the statement 'I am well paid for the work I do' (the EU average is 43.2 per cent).
   - Employees in financial services, management positions, professionals, health, education and public administration (led by large rises for teachers, nurses and doctors) and, more surprisingly, the mining and quarrying sector, were among the main winners in terms of pay.

2. **Inequality has risen – although at a slower rate than in the 1980s and 1990s….and so too has 'polarisation' into 'good' and 'bad' work, driven by changes in both technology and social attitudes.**
   - Inequality continued to rise during the 2000s, but at a notably slower rate. Furthermore, lower earners (at the bottom decile of the earnings distribution) made gains relative to others.
   - During the 2000s, jobs in the middle of the earnings distribution became fewer, while those at the top and bottom became more numerous.
   - Jobs are increasingly dividing into high skill, high pay jobs, typically in management and the professions, and low-skill, low-pay jobs in services. Meanwhile, skilled, 'middling' sorts of jobs are eroding (the 'disappearing middle' or 'hourglass labour market').
   - Technology is an important explanation for work polarisation: it replaces skilled, but relatively routine work (bank tellers, booking agents, machine operatives), but increases demand for non-routine cognitive skills (analysts, programmers) and for non-routine manual or 'personality-based' skills (hairdressers, drivers, waiters, carers).

   but…
   - *'Technological determinism' alone is an inadequate explanation. Changes in social attitudes have had the effect of normalising inequality: faith in incentives as motivators, the idea that individuals are responsible for their own achievements and thus deserving of their rewards, belief in charismatic leaders and 'superstars', financial permissiveness.*
   - *Critics argue such attitudes are now being re-appraised in the wake of the financial crisis, recession and sovereign debt crisis.*

3. **The national minimum wage has been a critical intervention in two ways: it has improved the position of the low paid *and* restrained inequality in the bottom half of the income scale.**
    - In the 1980s and 1990s, lower paid workers (at the bottom decile of earnings) lost out relative to others, in part due to the decline of trade unions and the abolition of the Wages Councils in 1993.
    - Since 1998 this position has been reversed: the lowest paid have received higher increases in hourly pay than other groups of workers.
    - On its introduction in April 1999, it affected between 1.2 and 1.3 million workers, improving their pay by an average of 15 per cent, but after 2001 the NMW was raised at a faster rate than average earnings. By October 2009, the NMW had increased by over 61 per cent (4.9 per cent year-on-year) since its implementation, far higher than either average earnings or prices.

4. **The gap between the pay of women and men has been closing steadily over time, but remains substantial – women's mean hourly pay was 16.4 per cent among full-timers (13.2 per cent part-timers, 20.2 per cent all employees) compared with 37 per cent when the Equal Pay Act was introduced in 1970.**
    - The largest pay gaps are in the 40-49 age group, in the private sector (20.8 per cent among full-timers) and in skilled trades occupations (they are narrowest among the highest qualified professionals). Between ages 22-29, the pay gap is just 1 per cent – indicating the impact of families and caring disproportionately affects women.
    - Life-cycle patterns, interruptions to careers and occupational segregation explain most of the pay gap.
    - However, statistics do not indicate how much of it is accounted for by discrimination and how much by personal choice (ie women choosing lower paid work and/or better work-life balance).
    - The complaint that discrimination in subtle and not-so-subtle ways remains a feature of the labour market is widespread – often among women in senior management.
    - However, perceptions of gender discrimination in the UK are relatively low within the European Union (it is perceived to be higher in Sweden, France, Italy, Spain, Portugal, Cyprus, Malta and the Czech Republic).

    but…

    - *Women pay a heavy price on part-time work: 43 per cent of women work part-time and there is a large income penalty on hourly earnings of up to 40 per cent.*

- *Part-timers possess lower skills, have limited opportunities for skill development and poorer career prospects. This may be a strategic choice among employers: some studies suggest UK employers more likely than European counterparts to use part-timers to meet short-term fluctuations in workload – ie as a form of disposable labour – rather than develop their skills.*
- *The quality of work among part-timers appears to be closely linked to regulation – their position improved following introduction of the national minimum wage in 1999 and Part-Time Work Directive of 2000.*
- *Rising skills among part-timers have not been reflected in their pay position. Only part-timers in the highest occupational positions – mainly managers – have seen rises in skills and pay.*

5. **It generally pays to be a graduate – but the experiences of graduates and the pay they receive from their qualification are becoming very diverse.**
   - The difference a degree makes to earning power is substantial: overall, graduates earn 47 per cent more in terms of gross hourly earnings than those with 'A' levels.
   - But studies have questioned the worth of some degrees, especially from 'new' universities. On some calculations, up to a third of graduates are in jobs that do not demand a degree five years after graduation. They experience no or low returns from their qualification.
   - Elsewhere, although the relationship between skills and income is generally robust, there is a complex link between some qualifications attained as an adult and pay. Level 1 and 2 NVQs are not associated with higher returns; OND/ONC, City and Guilds, and higher level NVQ qualifications have a positive relationship.

6. **The dominant method of pay setting is management decision (70 per cent of workplaces)… and there have been strong moves towards incentive pay (55 per cent of workplaces use it) and away from collective bargaining.**
   - Proponents claim incentive pay is more flexible at: eliciting effort, enhancing commitment, retaining staff, promoting fairness (so that effort is rewarded) and monitoring performance.
   - But many studies doubt it motivates. One major analysis of 51 separate studies found it 'dis-incentivised' additional effort due to doubts concerning fairness; another argued it creates conflict.
   - There is a clear trend towards flatter, broader pay bands (promoted on the grounds that it 'values people' rather than 'values jobs'), often accompanied by incentive pay.

- Team-based incentive pay is increasingly popular (25 per cent of workplaces), especially in the private sector. However, individual incentive pay is relatively less important than in the 1980s (a fifth of workplaces today). Critics claim individual systems hinder collaboration.

but…

- *There are increasingly 'two cultures' regarding pay setting in public and private sectors. Some 79 per cent of public sector workers have their pay set through collective bargaining, compared with 11 per cent in the private sector (22 per cent of workers overall[1]).*

[1] Using 2004 Workplace Employment Relations Survey data

Most of us would like to be paid more. But the place of reward in good work debates relates to how it fits in to perceptions of fairness. There is perhaps no neat, universally convincing answer to what constitutes pay that is 'fair'. However, one answer that is as robust as others is that pay is fair when it is concerned with a balance between the effort put in and the pay received. What is more, where an imbalance is perceived by individuals to be acute, research suggests that it can be detrimental to an employee's health.[2]

So what do people feel about the balance between the effort they put in and the rewards they receive? According to the European Working Conditions Survey, the UK is relatively well placed among European nations regarding perceptions of effort-reward imbalances, with 53.6 per cent of workers agreeing with the statement 'I am well paid for the work I do' (the EU average is 43.2 per cent) (See Figure 1 on the next page).

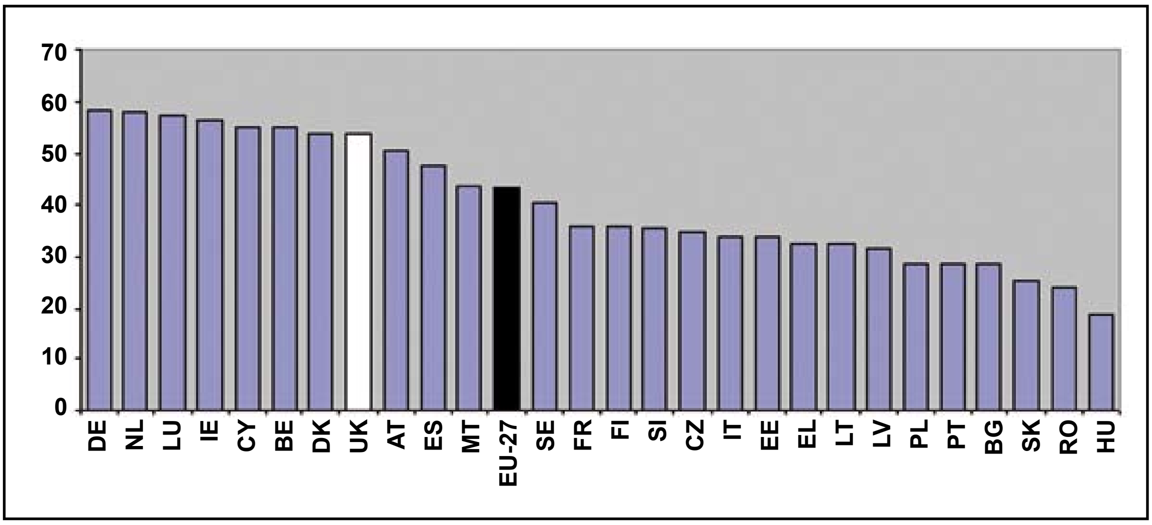
Outside the workplace, pay relates to a host of other issues. It forms a starting point from which other inequalities spring forth. Not only is the capability of individuals to consume affected by pay, but also their capability to develop as they see fit. Inequalities affect the ability of individuals to live in the catchment areas of the best schools, or to help young people onto the housing ladder. They are also linked to stark differences in life expectancy after the age of 50 and significantly curtail the opportunities open to subsequent generations.[3] There is a substantial body of evidence that suggests more equal societies are more cohesive societies.[4]

This report examines what has happened to pay in recent years. The first section examines overall trends in wages and wage inequality and the second section examines trends in gender and ethnicity.

The third section examines pay by qualifications and skills, with a focus on government policy in those areas. The final section considers trends in pay systems and pay structures, examining *how* employees are paid and the mechanisms that determine levels of pay.

[2] Constable et al, 2009
[3] Hills, 2010
[4] Wilkinson and Picket, 2010

Figure 1: Percentage of workers who agree they are well paid for the work they do

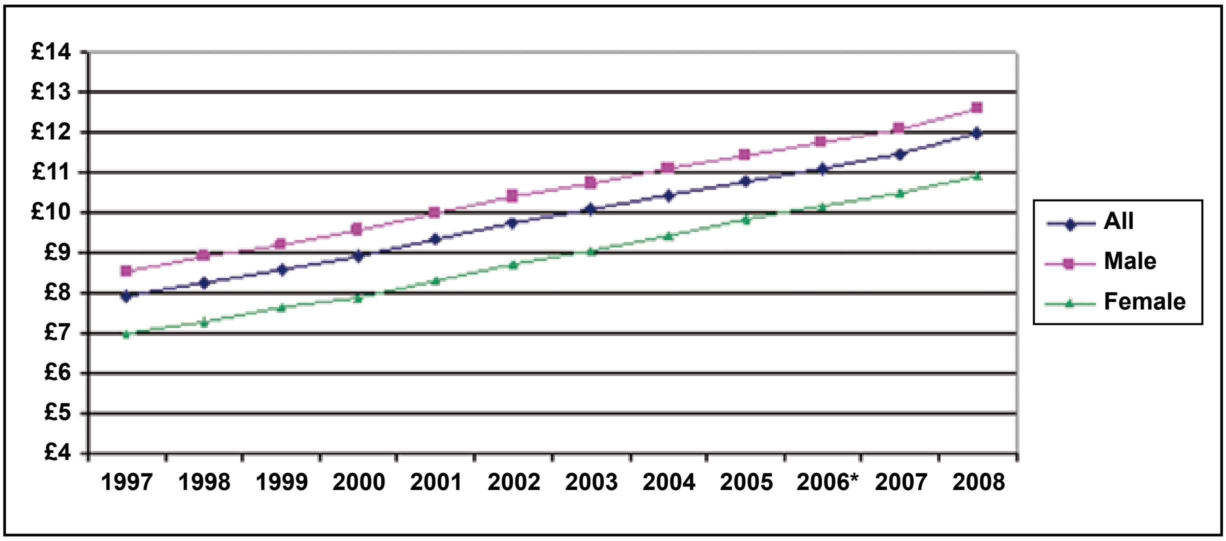


Source: European Working Conditions Survey 2005

1.1 Gross changes in wage levels since 1997

Did things get better? If part of better is that most people made gains in their income then the answer is a straightforward yes. Gross average wages have increased in recent years. Median full-time earnings by hour increased by 47 per cent in nominal terms between 1997 and 2008 at a fairly even rate, equivalent to 3.6 per cent year-on-year. Both men and women workers have enjoyed this steady increase, with women's hourly earnings increasing slightly more than men's – at 52 per cent compared to 45 per cent (Figure 2).

Figure 2: Median gross hourly earnings – full-time workers 1997-2008



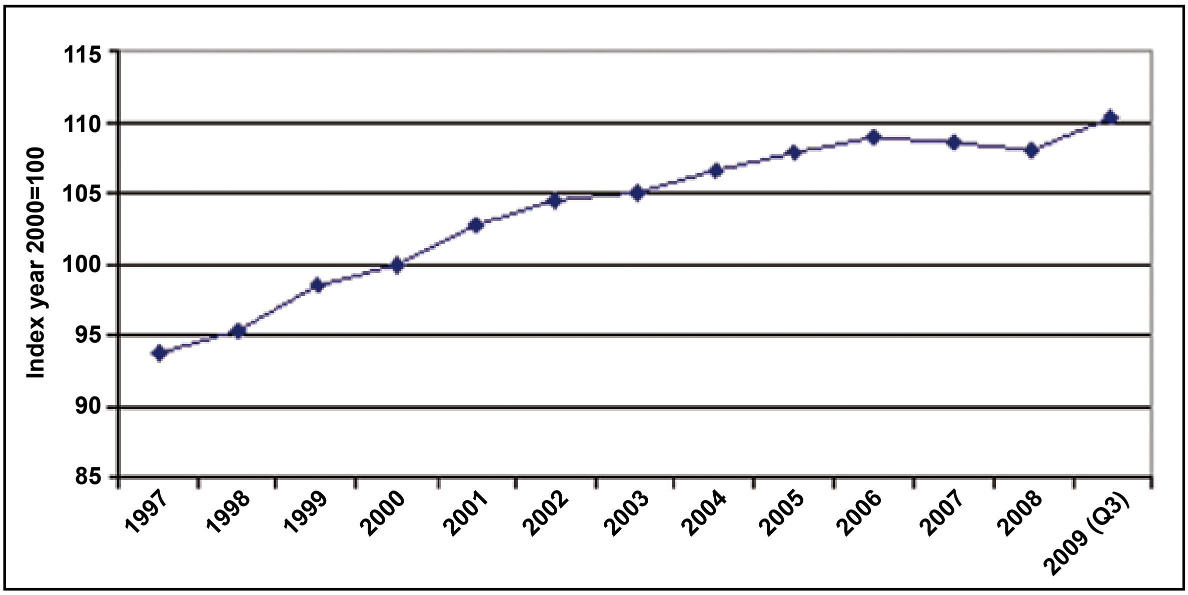
Source: ASHE

*There is some discontinuity in the data in 2004 and 2006 due to methodological changes.

Real earnings have also increased. By adjusting for inflation, the real increase in earnings for all employees between 1997 and 2009 has been about 18 per cent, equivalent to 1.4 per cent year-on-year (See Figure 3 on the next page).[5]

[5] The increase occurred in most years except between 2006 and 2008 when inflation was higher than earnings. It appears that positive growth has returned in 2009 due to negative inflation, but comprehensive data is not yet available to fully understand the impact of the recession

Figure 3: Real average earnings index, all employees 1997-2009



Source: Average Earning Index and RPI[6]

1.2 Earnings by occupation and industry

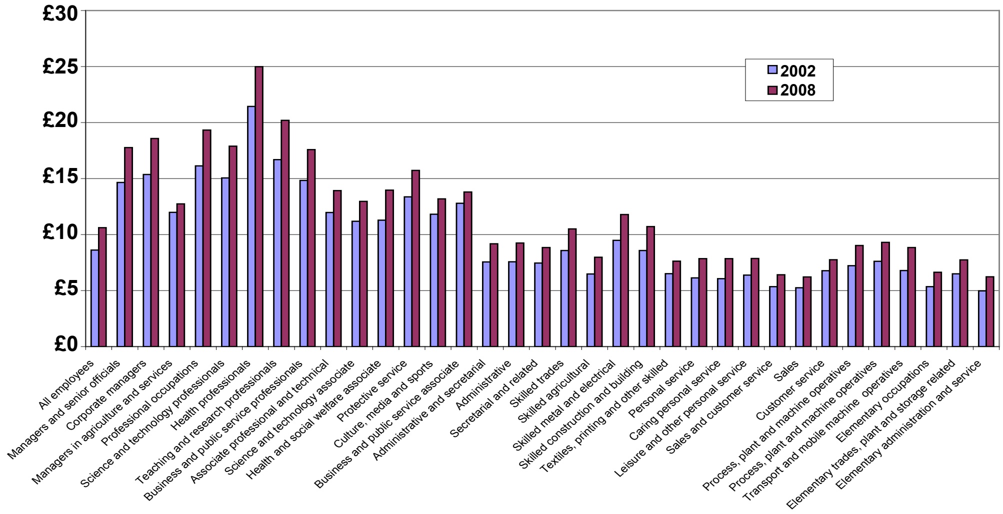
Between 2002 and 2008 all employee median hourly pay increased by 23 per cent. The increase ranged from a minimum of 6 per cent for agriculture managers to a maximum of 30 per cent for transport drivers and operatives. In 2008 the overall highest paid occupational group was health professionals with a median hourly pay of £24.99. The lowest paid occupational group was sales with a median hourly pay of £6.22 (See Figure 4 on the next page).

There is evidence to suggest that faster growing industries offer better pay than those in decline, with the most optimistic estimate from the former DTI suggesting 'new' industries pay 5 per cent more than average.

The highest earning industry is 'financial intermediation' (essentially, institutions that channel funds between lenders and borrowers); the lowest hotels and restaurants. The gap between them stayed about the same between 1997 and 2008 as both increased by over 50 per cent (See Figure 5 on the next page).

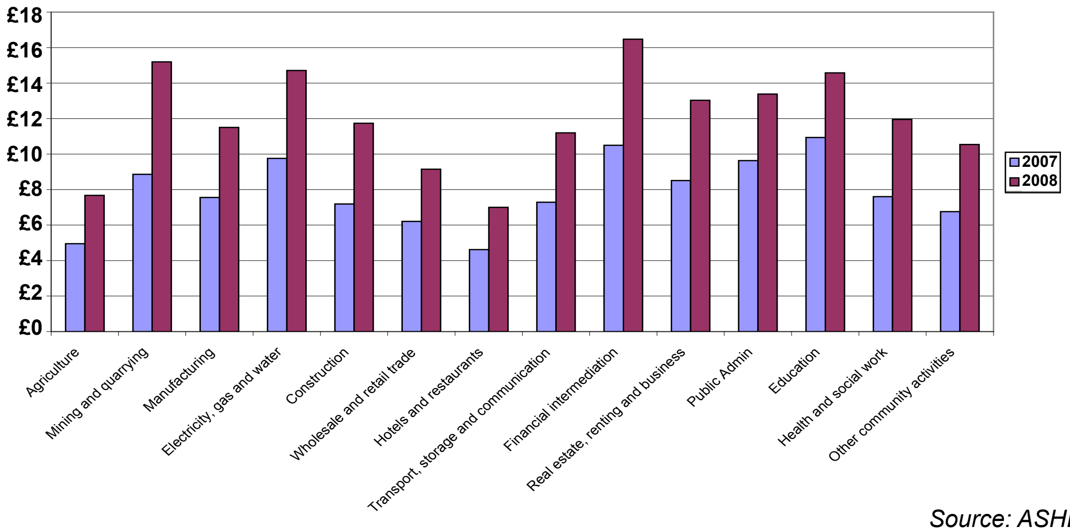
[6] The Average Earnings Index (AEI) is an indicator of how fast earnings are growing in Great Britain. Average earnings are obtained by dividing the total amount paid by the total number of employees paid, including those employees on strike and temporarily absent. The lead measure of change is the three-month average rate of increase. The index measures how earnings in the latest month compare with those for the last base year when the index took the value of 100. The current base year is 2000

Figure 4: Gross hourly pay by occupation, UK 2002 and 2008



Source: ASHE

Figure 5: Change in FT hourly earnings by industry, 2002 to 2008



Source: ASHE

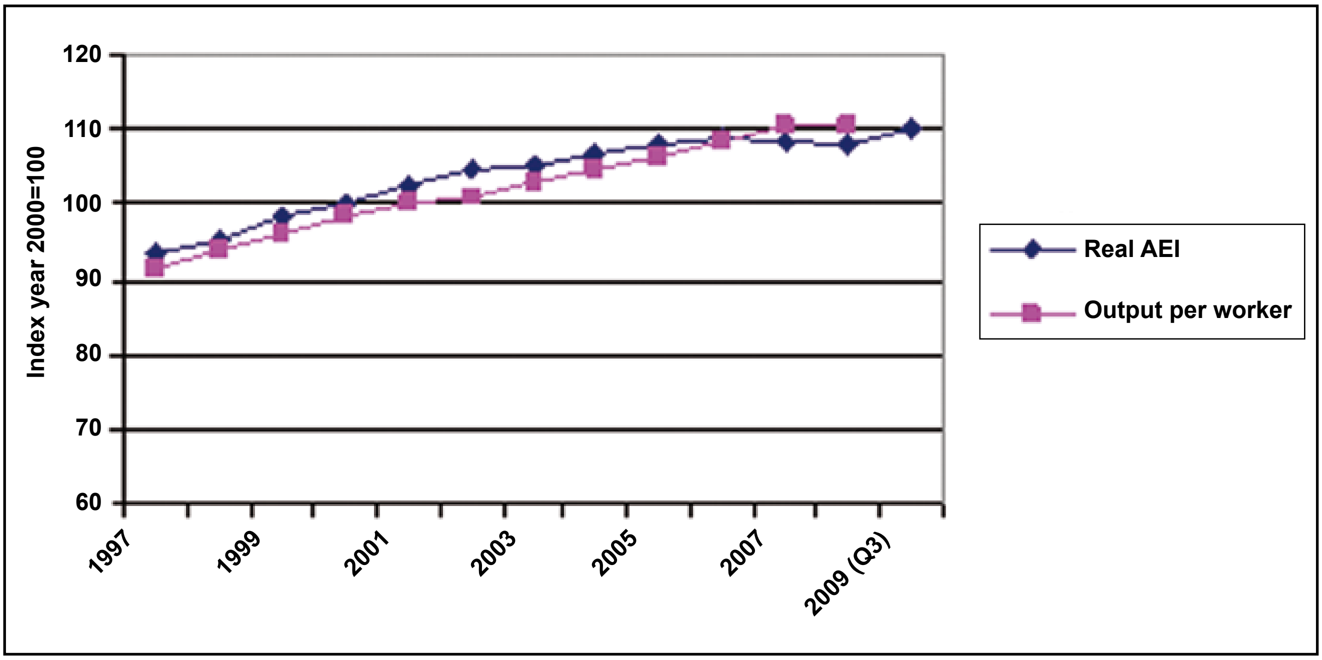
The largest increase was in the mining/quarrying sector but the levels fluctuated year by year. The lowest increases were in education and public administration at below 40 per cent between 1997 and 2008.

1.3 Explaining increases in average earnings

Shifts in the occupational structure explain much of the increase in wages. In 1998 17 per cent of workforce jobs were in the manufacturing industry compared to 10 per cent in 2009, a decline of over 1.5m jobs. On the other hand, jobs in banking and finance have increased from 17 per cent to 21 per cent of the total, and in public administration from 23 per cent to 26 per cent of the total.[7] This is important because the median wage in the manufacturing sector is less than these other industries, which would suggest that part of the increase in average earnings is due to an increase of jobs in better paid industries.

Additionally, the Office for National Statistics (ONS) suggests that a major reason for Annual Earnings Index (AEI) outpacing inflation are increases in productivity, which enable employers to increase wages whilst not having to simultaneously increase prices.[8] Figure 6 below compares the real average earning index against productivity using the ONS measure of output per worker and demonstrates a very close relationship between the two. The only year that productivity declined, 2008, coincided with the only period where real earnings declined.

Figure 6: Real average earnings index and productivity, all employees 1997-2009



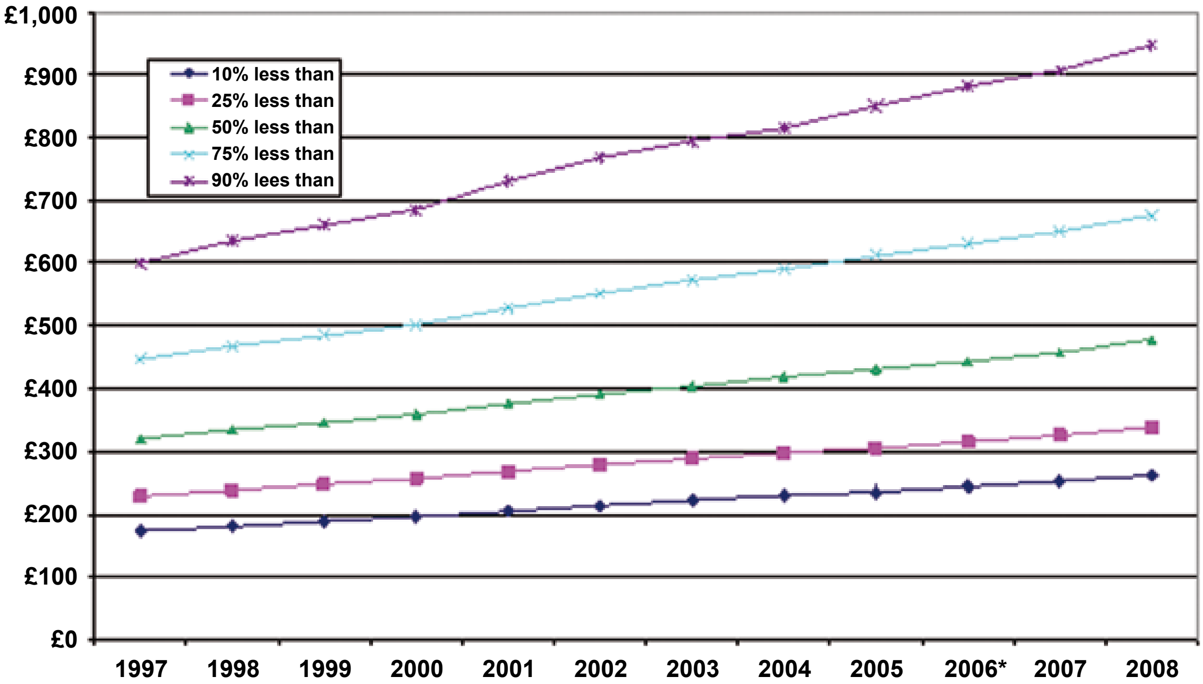
Source: ONS productivity statistics

[7] ONS, 2010
[8] ONS, 1999

1.4 Gap between the lowest and the highest earners

There was a faster increase in the earnings of higher earners since 1997 than lower earners, widening the gap between top and bottom (Figure 7).[9]

Figure 7: Gross weekly earning distribution, FT workers, 1997-2008



Source: ASHE

*There is some discontinuity in the data in 2004 and 2006 due to methodological changes.

Historically speaking, there has been a marked increase in wage inequality since about 1977 (See Figure 8 on the next page). The rate of increase was slower for women than it was for men.[10]

Wage inequality can be examined in more detail by tracking trends at the top decile (90), the median (50) and the bottom decile (10). Figure 9 on on page 17 examines overall wage inequality (90-10), 'upper tail' wage inequality (90-50) and 'lower tail' wage inequality (10-50) by decade.[11]

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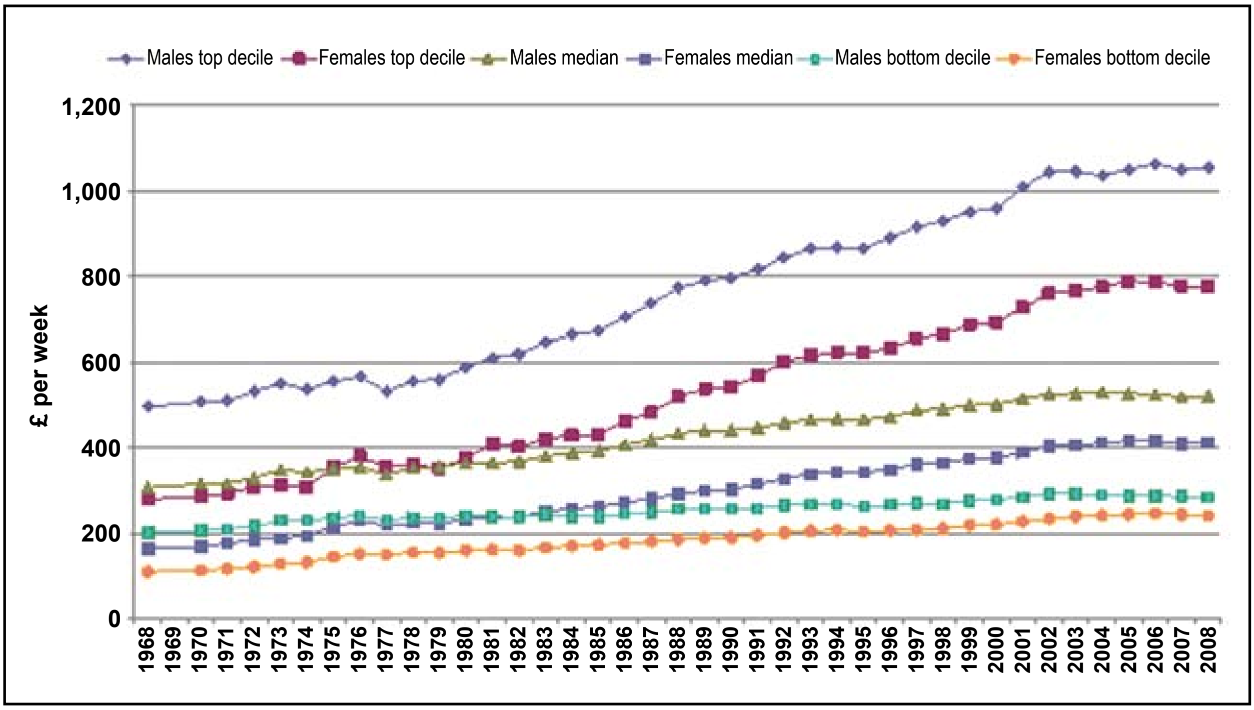
[9] Between 1997 and 2008 the top decile weekly earnings increased by 58 per cent compared to the bottom decile increase of 51 per cent. And in 2008, the top decile weekly earning was 3.6x greater than the bottom decile, up from 3.5x in 1997

[10] Since 1977, wages at the 90th percentile doubled for men (from £531 per week to £1,045 in 2002); the median grew by 56 per cent; and the 10th percentile grew by just 27 per cent. As a result, the 90:10 ratio for men widened from 2.3 in 1977 to 3.6 in 2002. For women, there was faster growth at all levels, but less of a rapid increase in the 90:10 ratio, from 2.4 to 3.2 (Hill, 2010)

[11] Machin, 2008

Figure 8: Full time weekly earnings since 1968



Source: 1968-1996 NES, 1997-2008 ASHE: 2008 prices

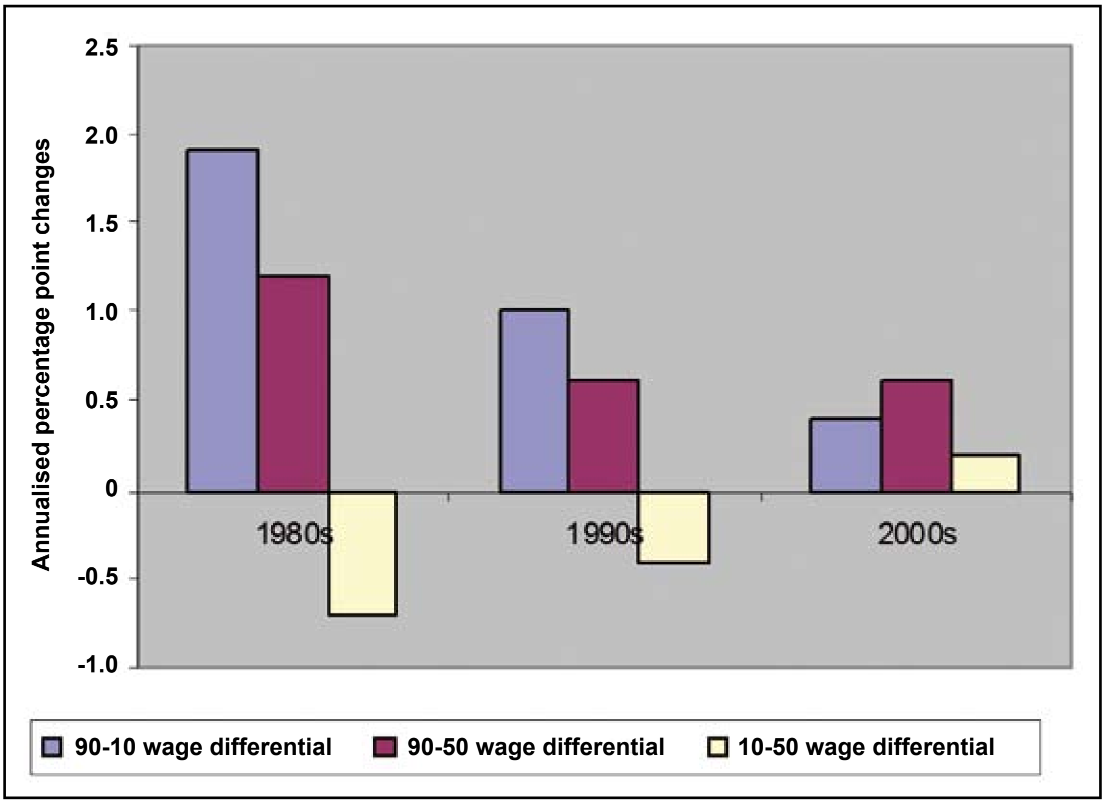
What we find is that wage inequalities increased dramatically in the 1980s, with both upper tail and lower tail inequality increasing (ie the top decile increased and the bottom decile decreased relative to the median). This trend continued in the 1990s, but at a slower rate. There is a notable change in the 2000s, however: although upper tail inequality continued to increase, there was a reduction in lower tail inequality as the bottom decile increased relative to the median – something that did not occur during the two preceding decades. As a result, overall wage inequality increased at a slower rate in the 2000s than it did in the 1980s and 1990s.

1.5 Explaining wage inequality: politics

Wage inequality has been a consistent characteristic of the UK labour market. There was increasing awareness of the problem in the 1960s and 1970s and consecutive governments attempted to address both differences concerning groups (for example Equal Pay in the 1970s) and differences concerning levels (macro-economic policies were implemented that had a redistributive element, eg limits on pay increases of 1973 and 1976). Between 1968 and 1977 the gap between the top and bottom was reduced: there was a large rise in the bottom decile and a decline in the top decile – although the degree to which this is attributable to government policies has not been assessed.[12]

[12] Atkinson, 2006; Atkinson, 2008

Figure 9: Hourly wage inequalities in the UK



Source: New Earnings Survey

After 1980, however, the trends reversed as government policies regarding pay were scaled back, resulting in a significant rise in the top decile and a fall in the bottom decile. Changes in legislation affecting trade union power during that decade and the abolition of the Wage Councils in 1993 removed labour market institutions that are known to compress the distribution of earnings.[13]

As is well known, New Labour was active concerning pay floors, but shunned calls for curbs on 'top pay'. There is a consensus among researchers that the national minimum wage (NMW) it introduced in 1999 was likely to have been the principal cause of the modest improvement of earnings at the bottom decile during the 2000s. A paper published by the Department of Trade and Industry in 2006 identified the NMW as the crucial factor that ended the pattern of lower than average wage rises for the lowest paid: 'The minimum wage has not only significantly reduced the incidence of low pay; it has helped to contain wage inequality'.[14]

[13] Brown, 2007; McKnight, 2000
[14] Fiztner, 2006

How important was the NMW? On its implementation in April 1999 there were concerns that the NMW was set too low. Although predictions suggested that the introductory rate of £3.60 would benefit 1.9 million workers, subsequent revisions suggested that the level was closer to 1.2 to 1.3 million – where it improved wages by an average of 15 per cent.[15] Furthermore, its impact declined up until May 2001 as it was not up-rated in line with average earnings.[16] Since then, however, the NMW has increased at a faster rate than average wages, first in 2001 and then between 2003 and 2007. By October 2009, the NMW had increased by over 61 per cent (equivalent to 4.9 per cent year-on-year) since its implementation, far higher than either average earnings (approximately 48 per cent) or prices (approximately 21–31 per cent).[17]

Thus, the NMW was a significant labour market intervention and is a plausible explanation for the reversal in the 2000s of the trend by which the bottom decile decreased relative to the median in the 1980s and 1990s.

1.6 Explaining wage inequality: technological change

There are a number of theories as to the underlying cause of wage inequality. Many argue that globalisation has worsened the lot of the lowest paid in the developed world. International trade, for example, has been shown to have an indirect impact on wage inequality and immigration may also adversely affect the least skilled.[18] Yet there is significant variation in earnings inequality in the developed world between countries with a similar level of development and with a similar level of exposure to globalisation, which would suggest that globalisation is not the only driver of wage inequality.[19]

There are concerns that structural changes from within the workplace have implications for wage inequality, besides any political or economic pressures from without. The introduction of technologies into the workplace is said to be generating far more labour market inequality than in previous years. One theory proposes that new technologies are replacing human labour in routine tasks but not in non-routine tasks. This increases the relative demand in high paid, high skill jobs (that typically require non-routine cognitive skills) and in low paid, low skill jobs (that typically require non-routine manual skills), but decreases the relative demand in the ‘middling’ jobs. These include clerical jobs and skilled manual jobs in manufacturing that typically require routine manual and cognitive skills – and can therefore be easily automated. Thus, there is a tendency towards wage inequality, with the wage and employment prospects of many of the workers working in ‘middling’ jobs declining; their jobs are rendered superfluous and replaced by jobs of worse quality.[20]

[15] CEP, 2008
[16] Dickens and Manning, 2002
[17] Low Pay Commission Report, 2010
[18] Borjas et al, 1997
[19] Glyn in Jenkinson, 2000
[20] Autor et al, 2003

Maarten Goos and Alan Manning analysed occupation change in the UK and concluded that employment in the UK is indeed polarising into 'lovely' and 'lousy' jobs.[21] They argue that since the late 1970s there has been an increase of high paid, high skill jobs, alongside low paid, low skill jobs – with professional and managerial occupations in finance and business services on the one hand, and low-paying service occupations on the other:

> *'Whichever way we look at it, there is a growing polarisation of jobs in the UK; there are more good 'MacJobs' and more bad 'McJobs'. The data show that there have been strong increases in the number of high paid jobs but also significant increases in the number of low paid jobs over the last 25 years. Craft and clerical occupations in non-service industries are disappearing while the importance of low and high paid service jobs has increased'.*[22]

There is considerable evidence to support this thesis. For a start, the clear and rising returns from higher education during the 1980s – a period of rapid technological change – and the fact that returns have not decreased despite a huge increase in the proportion of graduates entering the labour market in recent years, is a sure sign that there are plenty of 'lovely' jobs in existence. Studies have also shown that many of the new top-end jobs are inextricably linked to bottom-end jobs. For example, long working hours mean that many high paid workers, including women workers, increasingly demand marketised personal services and care.[23] These workers perform something of a supporting role for the high flyers – which gives weight to the thesis of the hollowing out of the labour market into 'lovely' and 'lousy' jobs.

Further evidence suggests that this trend continued into the 2000s with changes in earnings across the occupational structure between 2002 and 2008 lending support to the idea that jobs are polarising. These data suggest an increase in professional and managerial occupations as well as customer service occupations and caring personal service occupations. Notable also is a decrease in process, plant and machine operatives, skilled trades and administrative occupations. (The full detail of these occupational shifts can be seen in Appendix 1).

Research by Phil Brown, David Ashton and Hugh Lauder for the UK Commission for Employment and Skills suggests that service sector jobs will be subjected to very similar processes that have been applied to manufacturing. If new technologies can be substituted for routine knowledge work, there is likely to be increasing tensions amongst more skilled workers.

They suggest that these processes – which they term 'Digital Taylorism' – will ensure that skilled jobs will be very different from the archetypal 'graduate jobs' of the past. One example of how these processes play out is provided by a British premier banking relations manager at a global

[21] Goos and Manning, 2003
[22] Goos and Manning in Dickens, 2003
[23] Perrons, 2005

retail bank who describes the loss of his discretion to researchers. Where once the manager could determine the size of customer loans, today loans are determined by computer algorithms. In his own words the manager has become nothing more than a sales person, the knowledge and discretion that he once exercised has been rendered redundant: ‘a junior with a ready smile could now do my job’.[24] There is even some evidence that the classical professions such as medicine, finance and law may not be immune from such processes.

They also predict increasing competition amongst graduates for the best work and the best pay, with companies differentiating between their ‘knowledge workers’ in terms of function, competence and performance.[25]

Interestingly, there is mounting research on the significant differences in the returns enjoyed by university graduates.[26] The ‘superstar model’ describes a trend whereby customer preferences for particular producers or products are driving up the pay of the most sought-after knowledge workers relative to similarly skilled, but less ‘starry’ workers.[27] These tensions at the top are likely to increase in the years ahead.

1.7 Explaining wage inequality: social norms

For Paul Krugman of the *New York Times*, whilst politics, globalisation and technology are certainly plausible, they do not provide a conclusive account of the dramatic widening of wage inequality, as well as the general social acceptance of the super rich. He argues that economics and culture could have combined to create new social norms, which in turn endorse inequality: there has been a cultural shift towards greater financial permissiveness and a belief in charismatic leaders and the effectiveness of incentives.[28]

But what exactly are driving these new social norms? The greater tolerance for inequality could be linked to the individualisation and fragmentation of work. No longer is working a collective endeavour to the same extent as it once was.[29] The increase of incentive pay systems and the shift from hierarchical pay structures to flatter ones – facilitated in part because of the decline of collective industrial relations[30] – could also be a factor, as they enable more flexibility in rewards. Bound up with the idea of incentives is the norm that individuals are responsible for their own achievements and thus deserving of their rewards – and losses. Indeed, research has shown that organisations are more unequal the more pay is tied to performance (for example, in bonuses

[24] Brown et al, 2008
[25] Brown et al, 2010
[26] Ramsey, 2008
[27] Quah, 1996
[28] Krugman, 2002
[29] Antcliff et al, 2005
[30] Bryson et al, 2008

or commissions), than when it is not; and the shift to incentive pay affects nearly all of the wage inequalities at the top end of the earnings distribution.[31] Given the widespread acceptance of these social norms, moreover, it may be that the less well-off are more accepting of widening social divisions, due to a belief that they too have a chance of becoming rich.[32]

[31] Lemieux et al, 2007
[32] Quah, 1996

2.1 Earnings by gender

The gender pay gap has diminished in recent years. Between 1997 and 2008 women's nominal hourly earnings increased slightly more than men's, by 52 per cent compared to 45 per cent. This has contributed to the long-term trend in the reduction of the wage gap between men and women, from 37 per cent in 1970 (when the Equal Pay Act was introduced) to 22 per cent in 1997 and 16 per cent in 2008.[33]

The pay gap has decreased most quickly amongst those with university degrees. Between 2001 and 2007, the gap between male and female full-time workers decreased from 23 per cent in 2001 to 15 per cent in 2007 overall, but from 29 per cent to 19 per cent for those educated at a graduate level.

The pay gap between males and females does, however, increase with age. In 2008 there was only a 1 per cent median hourly earnings pay gap for those aged 22-29, whilst for those aged 40-49 the gap was 23 per cent. This distribution by age has stayed much the same since 1997.

Part-time work has significant bearing on the gender pay gap as a disproportionate amount of women are part-timers. In 1992 part-timers represented 20 per cent of all employees but 41 per cent of female employees; in 2006 the proportions were respectively 19 per cent and 39 per cent.[34] This is significant because part-timers are disadvantaged vis-à-vis their full-time counterparts, with full-time median hourly earnings consistently higher by about 40 per cent.

2.2 Explaining gender inequality

In 2004 the then Prime Minister set up the Women and Work Commission to examine the gender pay gap and consider recommendations to further reduce inequality.[35] The final report suggested several reasons for the narrowing pay gap, in particular the increasing acceptance of women in the workplace. More women are working and they are also having fewer children and giving birth later in life, which gives them more opportunity to establish themselves at work before taking a break to have children. In turn, this puts them in a better position once they re-enter the labour market.

There has also been a gradual movement in jobs from the traditionally male dominated manufacturing sector to the service industry that has allowed women to compete with men on a more equal footing[36] – the decrease of the gender pay gap amongst those educated at a graduate level is evidence of this. In addition, girls have been improving their performance at school and at

[33] The gap is larger when considering gross annual earnings due in part because males work longer hours and earn more overtime than females. In 2008 the gap between male and female median full time gross annual earnings was 28 per cent, down from 36 per cent in 1999

[34] Gallie and Zhou, 2009

[35] Prosser, 2006

[36] Blundell & Etheridge, 2009

university at a faster rate than boys. As such, there are a greater number of highly qualified women entering the workforce. In 2006/7 57 per cent of university students were female compared to 45 per cent in 1990/91.[37]

Yet significant barriers remain:

a. **Type of job**. Women generally work in less well-paid occupations, eg caring and catering. In part, this could be because jobs that attract men have more disadvantages that are compensated by higher pay, which could be reflected in the fact that job satisfaction is higher amongst women.[38] However, there appears to be a glass ceiling blocking woman from the most senior roles. This is supported by the fact that only a third of managers and senior officials are female; and among FTSE 100 companies only 10 per cent of directors and 3.4 per cent of executive directors are women.[39] In the public sector, meanwhile, the gender gap is only stark at the top end, after the 80th percentile.[40]

b. **Shorter and more interrupted work experience**. Due to care responsibilities, many women experience more interruptions in their working life. Given that employers generally value experience and reward employees accordingly, female workers are disadvantaged vis-à-vis their male counterparts.

c. **Part-time work**. More women work part-time and part-time work is generally less well paid, as discussed above.

d. **The gap in skills and qualifications.** This is more common in the older generation. When controlled, this qualification gap between older men and women reduces the pay gap.[41]

e. **Travel to work issues**. Due to childcare the time available for commuting is often less for women, which reduces their job options.

f. **Unobserved discriminatory treatment of women**. Discrimination confronts many women in the workplace, but it is difficult to observe in the labour market data. However, the UK has low perceptions of gender discrimination for the EU and there is evidence to suggest that part of the pay gap (which is large for the EU) could be down to choice rather than discrimination, with a higher proportion of women specifically choosing lower paid

[37] ONS, 2008a
[38] Shackleton, 2008
[39] Singh and Vinnicombe, 2005
[40] Chzhen and Mumford, 2009
[41] Longhi and Platt, 2008

work or a better work-life balance.[42] Thus, the pay gap alone may not a true signal of the employment opportunities available to women.[43]

According to some researchers, it is possible to quantify via statistical modelling the proportion of the pay gap that is explained by each of the above reasons, with the following results:[44]

- 38 per cent – by discrimination and personal choice – f. above
- 36 per cent – explained by lifetime working patterns and experiences – b. and c. above.
- 18 per cent – by the type of jobs typically available to women – a. and e. above.
- 8 per cent – by a gap in skills – d. above.

Thus, discrimination and personal choice are the most important factors, but the interruptions that many women experience in their working life – due to caring responsibilities – and the fact that there are more female part-timers than males also have a significant impact on the gender pay gap. Indeed, that the gender pay gap increases with age indicates that the impact of families and caring disproportionately affects women. What this suggests is that to further improve the gender pay gap requires greater flexibility for women in their working lives, improved access to childcare and an improvement in the quality of part-time work more generally.

2.3 Part-time work and gender inequality

One of the major reasons why part-time workers are disadvantaged is because their work is relatively low skilled. Part-timers possess lower skills, have limited opportunities for skill development and have poorer career prospects.[45] Yet these empirical observations do not explain why part-time work is lower skilled than full-time work.

There are two broad interpretations of why part-time work is relatively unskilled (and low paid) work. The first interpretation highlights the role of employers in the design of jobs, with part-time jobs purposefully designed on a low skill, low pay basis. This is especially the case where women cannot afford adequate childcare as their options in the labour market will be severely constrained.

The second highlights the influence of individual attributes, such as human capital or attitudes to work.[46] Thus, employers design jobs that fit the characteristics of those available to them, with the low skill, low pay nature of many part-time jobs reflecting the poor skills and qualifications of their employees – or their potential employees. It may also be the case that part-timers attach less importance to work and career development and more importance to a good work-life balance.

[42] Hakim, 2002
[43] Shackleton, 2008
[44] Olsen and Walby, 2004
[45] Gallie et al, 1998
[46] McGinnity and McManus, 2007

Thus, their lower quality of work is more down to choice than to constraint.[47] These two issues – human capital and attitudes to work – converge as education is considered to be a strong predictor of the importance individuals assign to their careers.

Both explanations have some weight. Research has shown that the institutional arrangements within which employers make decisions is extremely important in determining the quality of part-time work. In an analysis of the British and French banking industries, for example, the British were less likely to emphasise functional flexibility and more likely to use part-timers to meet short-term fluctuations in workload, in part because of their very different regulatory environments.[48]

Also, the modest improvement in part-time work in recent years is due in part to changes in regulation, with the European Union's part-time work directive of 2000 prompting a stronger concern for the equal treatment of part-timers in terms of training provision, as well as their integration into the mainstream workforce. Part-timers could also have benefited from the introduction of the national minimum wage legislation, given the strong association between low pay and part-time work: as employers have to pay more for low-skilled workers, they have greater incentive to invest in their skills.

But so too are individual attributes important. The skills and qualifications of part-timers – particularly women – have improved over the last two decades, which could have made them more focused on their careers, prompting employees to design better part-time jobs.

However, Duncan Gallie and Ying Zhou suggest that in general the rising skills of part-timers have not been reflected in their pay position. Only those part-timers in the highest occupational positions – in particular managers – enjoyed the combination of a rise in skills and relative pay, whereas many other part-time employees – in particular personal service employees – were not compensated by an improvement in pay once their skills had been enhanced. Increased opportunity to switch from full-time to part-time work could be benefiting those in the highest occupational positions, where part-time work has been relatively rare; once created, transparent skill/pay systems awarded employees adequate pay. In contrast, personal service employees were up-skilled in a situation where long established pay structures were in place, which adapted poorly to the change.[49]

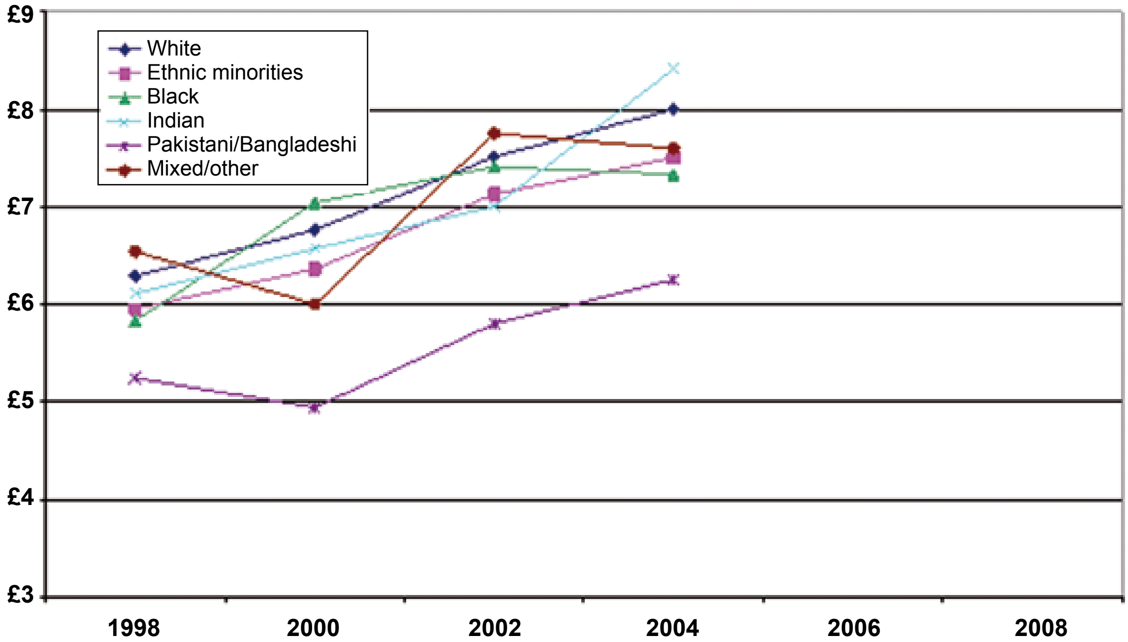
2.4 Earnings by ethnicity

The pay gap between ethnic groups is no longer particularly substantial, with the exception of the Pakistani and Bangladeshi community. These groups remain significantly worse off than others.

[47] Hakim, 1997
[48] O'Reilly, 1994
[49] Gallie and Zhou, 2009

Between 1998 and 2004, the gaps stayed about the same although they fluctuated by year, possibly due to small sample sizes. White hourly earnings increased by 27 per cent, compared to a 26 per cent increase amongst other ethnic groups (Figure 10).

Figure 10: Median hourly earnings per hour by ethnicity



Source: LFS

Between 1998 and 2008 the pay gap between the lowest 10 per cent of white workers and of other ethnic groups narrowed considerably (Figure 11 on the next page). A likely explanation is the introduction of the national minimum wage, which compresses the earnings of the lowest paid.[50]

There is a difference by gender with white men earning considerably more than men from other ethnic groups (with the exception of Indian males). Amongst women, however, the pattern is reversed with ethnic minorities earning more than whites. This may be influenced by the lower proportion of some female ethnic groups that are active in the labour market, as those who are active tend also to be the most qualified – and are therefore better paid.

The gap between men and women was consistently larger in the white population than any other ethnic group.

[50] Low Pay Commission Report, 2009

Figure 11: Pay gap by ethnicity and earning distribution 1998 and 2008

Source: Labour Force Survey

2.5 Explaining ethnic inequality

In 2006 the Equal Opportunity Commission published a research report[51] into pay difference by ethnicity and gender as part of their wider 'Moving on Up' initiative. The report found similar gaps to those noted here, and offered several explanations as to why they existed:

- **Type of Job**. Certain ethnic gender groups are concentrated in particular occupations, some of which are less or better paid, resulting in a gap in average earnings. For example, white women are concentrated in sales assistant and clerical jobs which are generally low paid; a large number of Indian men (1 in 20) are well-paid doctors; over half of Bangladeshi men work in the catering industry; and 1 in 10 Pakistani men are taxi drivers.[52]

- **Geography**. Ethnic minority groups are heavily concentrated in London and thus have a different range of jobs available to them in comparison to many white British workers.

- **Culture**. Cultural differences mean that some groups such as Bangladeshi and Pakistani women are less likely to participate in the labour market than others.

[51] Platt, 2006
[52] Ibid

- **Qualifications**. Different ethnic groups have different qualification levels that can explain wage inequality by ethnicity. Pakistani and Bangladeshi groups, for example, have lower qualifications, which partly explain their lower earnings. However, the younger generation are becoming more qualified and this could lead to an improvement in the relative position of the Pakistani and Bangladeshi community in the years ahead.[53]

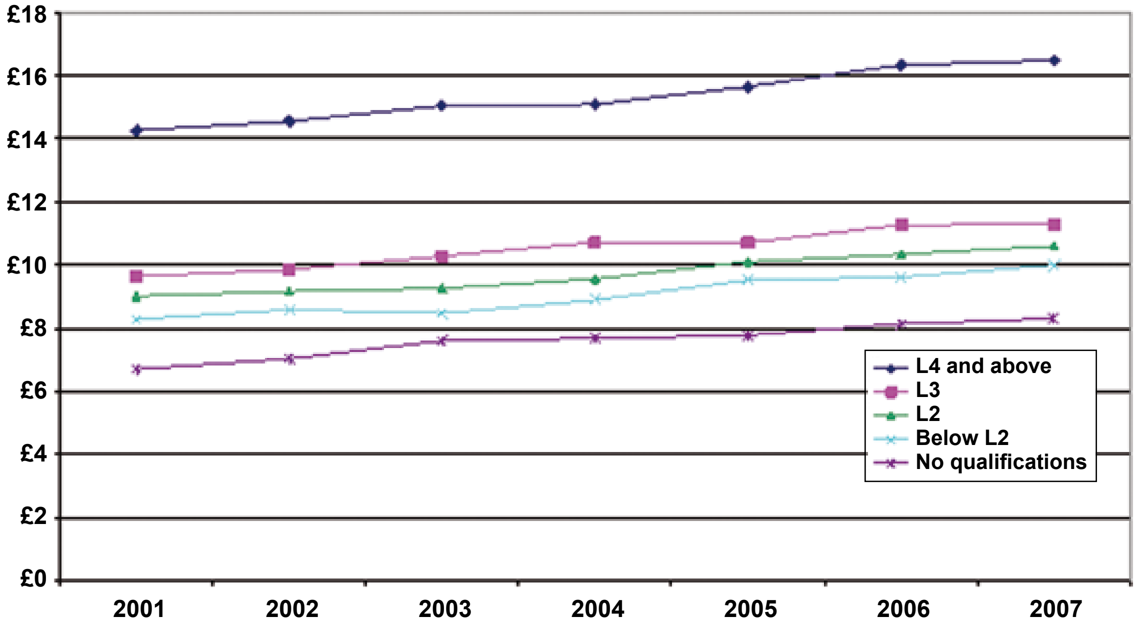
- **Overseas born and overseas qualifications**. A much higher proportion of ethnic minority groups were born outside of the UK or obtained overseas qualifications. These qualifications carry less weight in the labour market than a UK qualification. Furthermore, some ethnic minorities speak English as a 2nd language and are therefore likely to be less fluent that their white counterparts, which could block their access to better paid jobs, even if a suitable qualifications are held.[54]

- **Discrimination**. This is difficult to detect but pay differences remain that cannot be fully explained by the factors above. The Citizenship Survey suggests that many ethnic minorities perceive that they have been discriminated against whilst seeking employment, which could be a significant factor in the pay gap.[55] What is more, recent research shows clear evidence of discrimination, whereby jobs are offered depending on the apparent ethnicity of applicants' names on CVs.[56]

[53] Ibid
[54] Ibid
[55] Citizenship Survey, 2010
[56] Hills, 2010

There are rising returns from all levels of qualifications, although, somewhat counter-intuitively, the pay of those without qualifications increased at a faster rate than those with qualifications. Between 2001 and 2007 average full-time hourly earnings increased by 21 per cent, by 24 per cent for those without qualifications and by 16 per cent for those with Level 4 (L4) plus qualifications (Figure 12). One of the likely reasons for the greater increase of pay amongst the lowest qualified is the introduction of the NMW. The lowest qualified are much more likely to be earning the minimum wage, with 18 per cent of workers with no qualifications affected in 2008, compared to 6 per cent of the entire workforce.[57]

Figure 12: Average FT gross hourly earnings by level of highest qualification



Source: LFS

In recent years improving the skills level of the workforce has become a key government objective, at every level:

- At the lower end, there has been a drive to improve basic literacy and numeracy skills.
- In the middle, there has been a target to increase the proportion of the working population qualified to at least Level 2 (L2).
- At the top end, there has been an ambition to increase the number of people going to university.

[57] Low Pay Commission Report, 2009

Our findings are ambiguous as to whether these efforts have improved wage inequality.

Studies have shown a significant benefit to having strong basic skills: Level 1 (L1) or higher literacy has a 12 per cent return, L1 or higher numeracy has a 19 per cent return.[58] The government has sought to improve the level of basic skills across the working age population on the basis that basic skills improve job prospects and pay. In 2003, the Skills for Life survey found that 16 per cent of the working age population had literacy level below L1 (the level expected of an 11 year old in the national curriculum) and 47 per cent for numeracy levels.[59]

However, the evidence is unclear whether the pay of those who obtain such skills during adulthood is improved. A longitudinal survey between 2002 and 2009 compared two groups, both of which had low levels of basic skills; one group took basic skills courses over the course of the survey. There was no significant difference in their increase in net annual earnings[60], which would indicate that the government's drive towards delivering basic skills qualifications at an older age has had a minimal impact on the earnings of individuals and wage inequality more generally.

Further up the scale there has been a drive to increase the number of workers qualified to at least L2. Once again, the results are ambiguous. There are positive returns for those without school qualifications from a wide number of qualifications, including ONC/OND, City and Guilds, and higher level NVQ qualifications. However, other qualifications are not so beneficial. Lower L1 and 2 NVQs are not associated with a positive return, even for those without prior qualifications. Possible reasons for the lack of a return to lower level NVQs are that they are simply accrediting existing skills, ie the participants are not actually learning anything new; they are taken by the wrong people; or they do not facilitate the required skills. Finally, there is a suggestion that they are target rather than content driven.[61]

One of the main vehicles through which the government has attempted to deliver L2 qualifications is 'Train to Gain', which is a national service for businesses that helps to identify and source training that will improve the skills of their workforce and business performance. However, the initiative aims to improve the skills and performance of individuals in their current job, not directly increase their pay.[62] Some trainees subsequently receive a pay rise or a promotion, yet there is no way of detecting whether this is a direct result of the initiative or whether they would have happened regardless. Thus, the effectiveness of 'Train in Gain' in improving wages is inconclusive.

[58] BIS, 2009
[59] Skills For Life, 2003
[60] Ibid
[61] Vignoles, 2009
[62] House, 2009

The drive to increase the numbers of people attending university seems to be warranted: the average return from a university degree remains high and has not fallen over time. According to a study from the Department for Innovation, Universities and Skills (DIUS), the difference in gross hourly earnings for full-time workers and those educated at A-level or equivalent is 47 per cent.[63]

However, there is considerable variation even if average returns continue to perform well. Research by the labour economist Francis Green suggests that whilst returns were stable at the median and increased at the top end, they decreased at the bottom end. This he attributes to 'over-qualification', whereby employees possess educational qualifications that are in excess of those their jobs require.[64]

The Skills Survey provides one way of examining over-qualification as it asks respondents: 'If they were applying today, what qualifications, if any, would someone need to get the type of job you have now?' Answers can then be checked to the qualifications of the respondents. The results suggest that over-qualification is increasing: in 1992, 21.7 per cent of male graduates ended up in non-graduate jobs five years after leaving university; in 2006, the figure was 33.2 per cent. For female graduates the figures were similar: 23.8 per cent in 1992 and 32.1 per cent in 2006.[65]

The pay penalty for over-qualification is harsh: research typically found it to be in the range of 10 per cent to 25 per cent.[66]

There is also evidence to suggest that returns are not meeting the expectations of graduates. The average student expects to be earning around £19,000 in their first job, but the Higher Education Statistical Agency (HESA) reports an average of £17,000 for a starting salary in 2003 and the NatWest survey reported an increase in starting salaries from £12,659 in 2003 to £13,600 in 2004. Disappointment amongst graduates is only likely to increase in the years ahead.[67]

[63] BIS, 2008
[64] Green and Zhu, 2010
[65] Ibid
[66] Ibid
[67] Brown and Smetherman, 2005

The level and distribution of pay has a significant influence on efficiency, productivity and the general morale of any workforce; and there is increasing awareness of the crucial role that pay systems and structures have in attracting, retaining and motivating employees.

The most common system of pay remains the basic wage, whereby employees receive a fixed rate, either by the hour, week, month or year. Pay determination can be influenced by techniques that attempt to set pay 'objectively' such as job evaluation (especially in the public and voluntary sectors) or by collective bargaining arrangements, at 22 per cent of workplaces[68] (again, principally in the public sector, but they are also prevalent in some sectors such as manufacturing). However, as of 2004, by far the most common way to set pay was through a unilateral decision taken by management: 70 per cent of all work places use this method. This is the dominant method in the private sector (79 per cent versus 28 per cent in the public sector).

Table 1: Methods of setting pay rates

	1998			2004		
	Public	**Private**	**All**	**Public**	**Private**	**All**
Collective bargaining	79	17	30	77	11	22
Set by management	21	81	69	28	79	70
Individual negotiations	1	16	13	2	15	13
Any other methods[1]	39	8	14	32	2	7
Pay review body[2]				32	0	6

Source: WERS 2004

[1] In 2004 many responses coded as 'Other methods' were subsequently backcoded to specific methods, thereby lowering the incidence of 'Other methods' in comparison with 1998.
[2] In 1998, pay determination via independent pay review bodies was given as an example of 'Other methods' whereas in 2004 it was separately coded.

Although the traditional wage remains the system that affects most people, there has been a notable trend towards incentive systems. Critics suggest that basic systems are not flexible enough to either attend to individual preferences or incentivise employees to work harder. Incentive systems pay employees at a variable rate that is dependent, in part or in full, on individual, group or organisational performance or profit. They seek to:

- Elicit greater work effort from employees;

[68] Kersley et al, 2005; there has been a decline in both the number of private sector establishments covered by collective agreements and in union membership density. The Employment Relations Act of 1999 and the Information and Consultation of Employees Act of 2005 resulted in expectations of a change of trend, but to date, their effect has been modest (Marsden, Belfield and Benhamou, 2007)

- Enhance the commitment of employees to their organisation;
- Attract and retain quality employees;
- Promote fairness in the workplace, so that effort is appropriately rewarded;
- Monitor employee performance.

Substantial numbers of employees receive part (if not all) of their pay as an incentive. Between 1984 and 2004 the coverage of incentive pay grew from 41 per cent to 55 per cent of workplaces. Broken down by sector, incentive systems actually declined in the public sector (from 21 per cent to 11 per cent), but increased significantly in the private sector (52 per cent to 67 per cent).[69]

There are a number of different types of incentive pay. For example, Payment-by-Results links pay to performance and can be individual or collective. Whereas Individual Payment-by-Results (IPBR) links pay to individual output – the more individuals produce, the higher their pay – Collective Payment-by-Results (CPBR) applies the same principle to the collective, which might be a team or an organisation. Incentive pay also includes Profit-Related-Payments (PRP) and Employee Share Ownership (ESO).

- **IPBR**. There has been little change in the prevalence of IPBR between 1984 and 2004, at one fifth of all UK workplaces. IPBR has, however, always been less prevalent in the public sector and in 2004 was even slightly less so than in 1984.

- **CPBR**. There has been a substantial increase in the prevalence of CPBR between 1984 and 2004, from 15 to 25 per cent. Broken down by sector, CPBR declined from fifteen to nine per cent in the public sector and from 15 to 29 per cent in the private sector.

- **PRP**. The incidence of PRP more than doubled between 1984 and 2004, from 20 per cent to 45 per cent in the private sector.

- **ESO**. The incidence of ESO has also increased, from 14 per cent in 1980 to 24 per cent in 1984, and then to almost a third of private sector workplace during the 1980s.

The data suggest a relative shift away from IPBR: in 1984, IPBR was more common than other forms of incentive pay; by 2004, it was the least common. This is likely to reflect the belief that other forms of incentive pay are better placed to reward the cooperation and communication required by the more complex and inter-dependent forms of work that has emerged in recent years, and also by the service industry. There is also the belief that individual incentives foster competition and conflict, whilst collective incentives foster cooperation and cohesion.

[69] Bryson et al, 2008

The increase of PRP between 1984 and 1990 reflects the introduction of tax-advantageous schemes in 1987. At their peak, they covered around one in five employees, but from 1997 to 2000 they declined as the tax advantages were withdrawn. ESO schemes also respond favourably to tax concessions.[70] The increase between 1980 and 1984 was down to the introduction of tax breaks under the Approved Profit Sharing plan of 1978.

Also important are pay structures, which refer to the basic frameworks that determine specific rates of pay for specific jobs. Pay structures are often used in conjunction with pay systems so as to increase flexibility, promote skill acquisition and improve the link between individual and collective pay and the performance of the organisation.

The major trend in pay structures is a move away from hierarchical to flatter structures, whereby rates of pay are incorporated into fewer and broader bands – so-called broad-banding. This allows for pay increases without official promotion. Some organisations are also moving away from the traditional distinction between ‘white’ and ‘blue’ collar in their pay rates, so as to ‘harmonise’ their pay structures. Ultimately, these trends amount to a shift from valuing jobs to valuing individuals, with flatter pay systems more capable of rewarding individuals in accordance with their effort and contribution. The focus is on lateral career development rather than progression through a hierarchy. When introduced, broad-banding is often accompanied with incentive systems so as to facilitate movement within bands.[71]

[70] Pendleton et al, 2003
[71] ACAS, 2006

The major story of this report is that while most people gained in recent years, some gained far more than others: the gap between the 'haves' and 'have-loads' widened. A critical political intervention has been the national minimum wage which appears not just to have put a floor under low incomes, but also restrained the trend towards accelerating inequality that was apparent in the 1980s and 1990s.

What causes wage inequality? Explanations abound. In particular, our research suggests that the introduction of technologies into the workplace has been a significant driver. New technologies can replace human labour in routine tasks but not in non-routine tasks, which creates 'lovely' jobs at the top and 'lousy' jobs at the bottom at the expense of 'middling' jobs. Put simply, for every high skill, high pay worker, there are cleaners and carers who endure low skill, low pay jobs. 'Middling' jobs such as clerical or skilled manual jobs are being eroded.

There is also some evidence that new technologies may pose a threat to 'knowledge work' in service occupations (which is often seen as immune from the process) in much the same way as has happened in manufacturing. Some of the routine aspects of knowledge work are being 'captured' and 'codified' into computer software programmes. The more this process continues, the more likely it is that competition amongst university graduates for the best jobs and the best pay will increase. No surprise, then, that as many as a third of current graduates are already working in jobs that they believe do not require a degree.

This is not to say that recent attempts to increase the numbers of university graduates should be reversed, as there are countless 'social' returns to be had from having more people enter university. One policy that the government could pursue would be to disseminate more information on potential returns and how they relate to particular universities and degrees so that students are not disappointed. Policy makers could (and we would argue should) also focus on raising the *demand* for degree-level skills, for example, by encouraging firms to pursue high performance or high road strategies which seek to involve and develop staff, and encourage their contribution. However, this would entail examining – and seeking to influence – the inner workings of UK firms, something that may not be a political priority in the current environment.

Yet these factors do not provide a conclusive account of the dramatic widening of wage inequality, as well as the general acceptance of the super rich in the UK – as in the US. Globalisation and technological advance play out in other countries very differently, with smaller increases in wage inequality in countries such as Norway, Denmark, Sweden and Finland that have actively intervened to prevent such extensive inequality.72 Part of this is down to social norms. Prevailing social norms in the UK promote the idea that individuals are responsible for their own

[72] Glyn in Jenkinson, 2000

achievements and thus deserving of their own rewards, regardless of what is going on in the rest of society.

This is both reinforced and reflected by the decline of collective bargaining as a means of setting pay and the increasing incidence of incentive pay, although how far pay can be incentivised individually has its limits: the relative decline of Individual Payment-By-Results in comparison to more collective forms of incentives suggests that the linking of pay to individual performance can be detrimental to cooperation and cohesion in the workplace. Also important is the switch in pay structures from hierarchical to flatter structures, whereby rates of pay are incorporated into fewer and broader bands, which allows for more flexibility in rewards and promotions.

Nevertheless, whilst it is too early to say whether the fallout of the recent recession will affect attitudes towards inequality, it is important to appreciate that wage inequalities are not inevitable. In other words, they are social and political issues: 'All of these are matters over which citizens have some say; they are not purely spectators of an inevitable process'.[73]

[73] Atkinson, 2008

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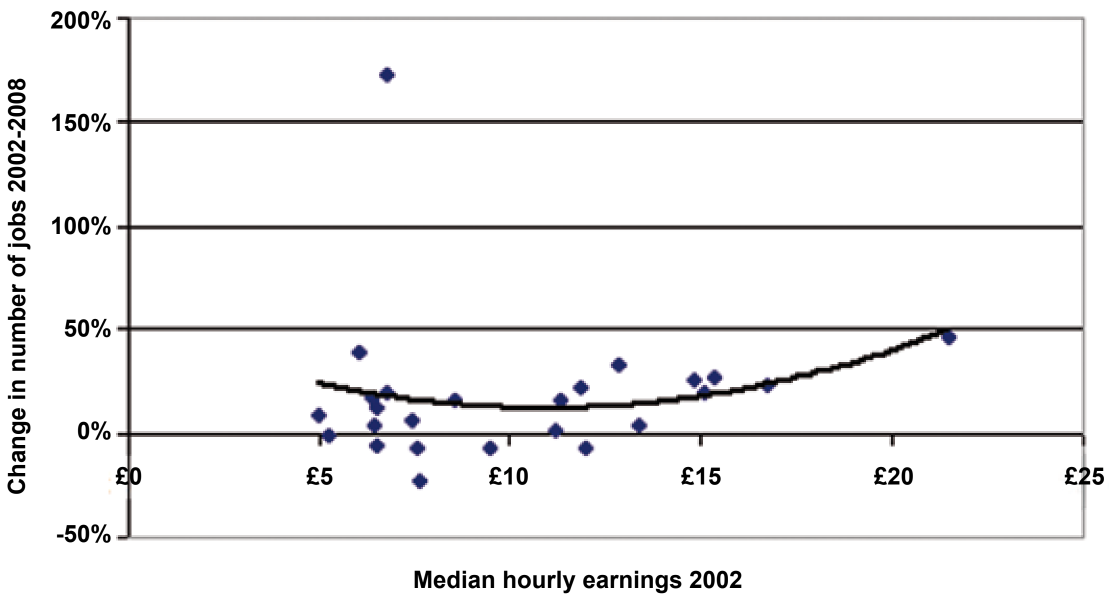
Table 2: Median earnings and number of jobs by occupation 2002 and 2008

	Median hourly earnings, 2002	Number of jobs (thousand) 2002	Number of jobs (thousand) 2008	Change in the number of jobs 2002 – 2008
Corporate managers	15.36	2,626	3,331	26.8 per cent
Managers and proprietors in agriculture and services	11.99	559	520	-7.0 per cent
Science and technology professionals	15.05	739	887	20.0 per cent
Health professionals	21.44	167	245	46.7 per cent
Teaching and research professionals	16.69	1,167	1,449	24.2 per cent
Business and public service professionals	14.83	552	699	26.6 per cent
Science and technology associate professionals	11.19	514	523	1.8 per cent
Health and social welfare associate professionals	11.29	1,022	1,184	15.9 per cent
Protective service occupations	13.37	377	392	4.0 per cent
Culture, media and sports occupations	11.82	237	291	22.8 per cent
Business and public service associate professionals	12.80	995	1,323	33.0 per cent
Administrative occupations	7.57	2,675	2,488	-7.0 per cent
Secretarial and related occupations	7.46	626	671	7.2 per cent
Skilled agricultural trades	6.48	112	117	4.5 per cent
Skilled metal and electrical trades	9.49	1,065	992	-6.9 per cent
Skilled construction and building trades	8.58	337	391	16.0 per cent
Textiles, printing and other skilled trades	6.51	408	387	-5.1 per cent
Caring personal service occupations	6.06	1,240	1,731	39.6 per cent
Leisure and other personal service occupations	6.38	341	403	18.2 per cent
Sales occupations	5.25	1,530	1,521	-0.6 per cent
Customer service occupations	6.77	137	373	172.3 per cent
Process, plant and machine operatives	7.61	1,139	889	-21.9 per cent
Transport and mobile machine drivers and operatives	6.79	616	740	20.1 per cent
Elementary trades, plant and storage related occupations	6.49	884	1,000	13.1 per cent
Elementary administration and service occupations	4.97	1,911	2,084	9.1 per cent

Figure 13 associates these changes in occupations with earnings. The curve suggests that those in the middle of earnings distribution tended to lose jobs in the 6 years between 2002 and 2008. The relationship is not a simple one, however. The growth in customer service occupations is a clear outlier, but tends to support the polarisation story as it has a relatively low hourly wage and has experienced considerable growth. Only when it is removed is there a statistically significant relationship between wages and changes in employment.[74]

Figure 13: Change in number of jobs and hourly earning by occupation 2002-2008



Source: ASHE

[74] Estimating a simple regression with the log of the median wage as an independent variable and employment change as the dependent gives a significant correlation, indicating that better paying occupations grew most over that time, but has an R2 value of only 0.184. Including a squared term for log wages, to account for a 'u-shaped' relationship, improves the fit considerably with an R2 of 0.360 – this implies that the curve is correct. However, both results are conditional on removing the clear outlier – Customer service occupations – from the model

Commissioned by The Work Foundation on behalf of The Good Work Commission

The Work Foundation is registered as a charity no: 290003

First published: June 2010

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