

Do company wage policies persist in the face of minimum wages?¹

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Abstract:

Most analysis of low wages is based upon observing the wage structure using information on the pay and growth in pay of individuals. While this allows analysis of some of the features of this segment of the labour market, one main driver it is unable to shed light on is the attitude of companies. This study uses large-scale individual employee survey data, with a unique job change variable, which identifies the employer of the individual. This enables us to investigate individuals both in terms of some of their own characteristics but also in terms of firm characteristics. Focussing on those paid at or near the minimum wage, analysing firm behaviour allows an assessment of how changes in the minimum wage affect (a) the price of a job, and (b) companies' decisions to set wages. Additionally, we also provide evidence to support the result of qualitative studies that employers are satisficers and set wages based upon rules of thumb, at least at the low end of the market.

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1 Introduction

The National Minimum Wage (NMW) was introduced in the UK in 1999 by the government as a direct response to the perceived growth in inequality in wages throughout the 1980s and 1990s. This was the first time the UK had had a minimum wage since the effective abolition of most Wages Councils in 1980. The ongoing role of the Low Pay Commission (LPC) was to “make recommendations on the coverage and initial level of a National Minimum Wage”. In making these recommendations, the LPC were instructed to “have regard to the following: the wider economic and social implications; the likely effect on the level of employment and inflation; the impact on the competitiveness of business, particularly the small firms sector; and the potential impact on the costs to industry and the Exchequer” (The National Minimum Wage First Report of the Low Pay Commission, 1998). The LPC relies significantly on research work on the employment effects of the NMW to make its recommendations.

Classical economic theory suggests that placing a floor on prices above the market clearing level in a competitive market will lead to excess supply; that is, a minimum wage that bites will lead to unemployment. Alternative theories, based upon imperfect knowledge or markets, or using alternative maximisation strategies, can demonstrate a much wider range of responses so that it is difficult to predict a priori the impact of the NMW. The stylized facts quoted support the latter view, that imperfections and structural factors in labour markets at this level offer some flexibility in the response to the NMW.

The majority of studies on the NMW have looked at this from the viewpoint of the worker. The results of this research have been much debated, but three common trends seem to emerge:

- The NMW does appear to be reducing inequality at the bottom of the wage distribution
- There is little evidence of an employment effect
- There is some evidence of increased training provision

However, jobs at this level are generally assumed to be fairly homogenous and to have low bargaining power (low skill, often part-time, often temporary, not unionised, offering little career structure etc), and so there is little opportunity for workers to influence wages. These are set by the firm with little or no reference to the worker. Qualitative and quantitative evidence supports the view that companies have significant choice in their wage setting policies. It is clear then that understanding how companies respond to the NMW is crucial for determining its effect.

The purpose of in this paper is to examine explicitly company wage setting policies through two novel mechanisms. The first exploits a variable unique to large scale datasets which allows us to examine the changing wage for a job. The second links employer and employee data together to look more broadly at how and if companies' wage policies respond to changes in the NMW. Our conclusions suggest that there are indeed strong company effects and that, in this sector of the market, firms use relatively simple rules-of-thumb when setting wages.

The next section describes the NMW and reviews recent work in the UK and abroad on minimum wages and the impact on individuals, companies and the labour market in general. Section three describes the data sets used here and how they can provide a unique view on the operation of the labour market. Section four looks at how the price for a job changes in response to the changes in the NMW, and identifies evidence for a relatively rigid wage structures. Section five tries to identify directly companies' own minimum wage policies, and examines the question of whether these are more affected by the NMW or by other companies wage policies. Section six concludes.

2 The impact of the NMW

2.1 The National Minimum Wage

The hourly NMW in April rates are listed in Table 1. According to the LPC, about one million low-paid workers had benefited from the NMW (LPC, 2005)². In general the NMW rose in line with the Average Earnings Index (AEI), but this hides significant variation in year. In 1998-2000 it fell in comparison with average earnings and in 2001 and 2002 it rose significantly faster. The LPC also recommended a bigger rise in the NMW than the AEI in 2005 and 2006. The justification for this was that there appeared to be no significant impact on aggregate employment or inflation (LPC, 2003; 2005), but that the NMW did boost pay for those at the bottom of the wage distribution without spillover effects further up the earnings curve.

The dynamics of wage inflation at the low pay end of the labour market is not fully understood; as will be shown later, wage setting does not appear to reflect neat proportional changes in earnings. While there is a general upward trend in earnings, the small wage changes at this end of the market seem dominated by a “rounding” effect. Therefore throughout this investigation, unadjusted NMW will be used.

² Rates can be lowered by giving allowances for accommodation, for example (LPC 2003); this analysis only concentrates on those paid at or above the minimum wage.

Table 1: UK hourly National Minimum Wages at April, 1999-2005

Adult rate								
(workers aged 22 and above)								
	NMW	NMW- adjusted AEI ^a	NWM- adjusted CPI ^b	AEI^a	<i>NMW</i>	<i>NMW- adjusted AEI</i>	<i>NWM- adjusted CPI</i>	AEI
	£				<i>Change from previous year (%)</i>			
1999	3.60	3.60	3.60	100.0	-	-	-	-
2000	3.60	3.45	3.58	104.3	0.0	-4.2	-0.6	4.3
2001	3.70	3.38	3.64	109.4	2.8	-2.0	5.5	4.9
2002	4.10	3.61	3.98	113.6	10.8	6.8	8.0	3.8
2003	4.20	3.60	4.02	116.5	2.4	-0.2	1.4	2.6
2004	4.50	3.69	4.25	121.8	7.1	2.5	6.8	4.5
2005	4.85	3.82	4.50	127.0	7.8	3.4	3.4	4.3

Youth rate								
(workers aged 18 to 21)								
	NMW	NMW- adjusted AEI ^a	NWM- adjusted CPI ^b	AEI^a	<i>NMW</i>	<i>NMW- adjusted AEI</i>	<i>NWM- adjusted CPI</i>	AEI
	£				<i>Change from previous year (%)</i>			
1999	3.00	3.00	3.00	100.0	-	-	-	-
2000	3.00	2.88	2.98	104.3	0.0	-4.2	-0.6	4.3
2001	3.20	2.92	3.15	109.4	6.7	1.7	5.5	4.9
2002	3.50	3.08	3.40	113.6	9.4	5.4	8.0	3.8
2003	3.60	3.09	3.44	116.5	2.9	0.2	1.4	2.6
2004	3.89	3.19	3.68	121.8	8.1	3.4	6.8	4.5
2005	4.10	3.23	3.80	127.0	5.4	1.1	3.4	4.3

Notes:

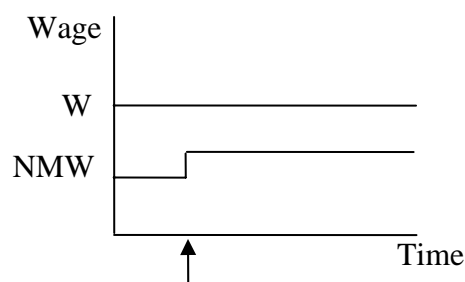
^a Average Earnings Index (AEI) in April not seasonally adjusted and include bonuses^b Consumer Price Index (CPI) include all items

(Sources: ONS and LPC)

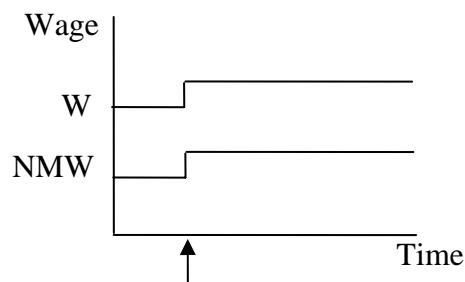
The way we look at the impact of the NMW can be characterised as “compression” and “relocation”. In this paper we use the terms “compression” and “relocation” to describe the extreme cases of how the NMW can impact on wages near the NMW.

Figure 1: An example of wages relative to the NMW in situations of compression and relocation

(a) Compression



(b) Relocation



Compression refers to an increase in the minimum wage having no effect on wages above the new level, but raising those below this level just up to the new NMW, as shown in panel (a) of Figure 1. Relocation implies that an increase in the NMW leads to a concomitant increase in the wage rate to maintain a differential, as shown in panel (b) Figure 1. Note that this analysis is in terms of monetary units, not percentages. This is more appropriate for this market segment, where jobs are advertised as “30p over the NMW” not “17 per cent over the NMW”.

To illustrate this, define for an individual,

$$w_i \equiv wage_i$$

$$x_i \equiv wage_i - NMW_{it}$$

Consider two years where the NMW rises from £4.00 to £4.20. Ignoring wage inflation, under compression and relocation there are two different effects on the wage (see Table 2). Under relocation, this year’s wage gap x_{it} should be a good predictor of next year’s wage gap x_{it+1} . Under compression, there should be little or no relationship for those whose wages in this year are less than next year’s NMW – wages should just lift up to the NMW, irrespective of the starting point. For those above next year’s NMW, wages do not adjust and hence the difference between the wage and the NMW falls, consistently for all workers.

Table 2: The difference between wage and NMW under relocation and compression

NMW _t =4.00		NMW _{t+1} =4.20			
		Pure compression		Pure relocation	
W _t	X _t	W _{t+1}	X _{t+1}	W _{t+1}	X _{t+1}
4.00	0.00	4.20	0.00	4.20	0.00
4.10	0.10	4.20	0.00	4.30	0.10
4.20	0.20	4.20	0.00	4.40	0.20
4.30	0.30	4.30	0.10	4.50	0.30
4.40	0.40	4.40	0.20	4.60	0.40

Pure compression implies a more competitive market, where differences in wages are the results of differences in human capital, industry structure etc. If the NMW is hoovering up the lower grades of worker, this achieves the objective of reducing wage inequality, but it also implies that lower skilled workers will increasingly find themselves competing with more highly-skilled workers for the same wage. With no opportunity to bargain down wages, this implies a rise in unemployment among the very lowest skill levels. This could also explain the increase in training: if firms are short of workers and need to pay higher wages, it may be that investment in training becomes worthwhile (see, for example, Arulampalam, Booth and Bryan (2002)).

Pure relocation implies the opposite: a relatively imperfect market where firms earn rents and so have scope to maintain a fixed relative wage structure. This structure may derive from a number of sources: tournaments or incentive schemes; age-related salary scales; or simply that the firm assesses human capital skills with respect to a variable base wage. Relocation implies continuing wage inequality (except perhaps on a percentage basis) but the employment effect is less clear- at least in the short term.

2.2 Economic Impact

Much of the recent research has focused on providing empirical evidence on whether the NMW has a positive or negative effect on the British economy in terms of employment and inflation. There are also a number of studies which have focused on the incidence of minimum wages for particular groups in the labour market. The evidence put forward so far seems to suggest that the NMW has no significant adverse impact on the overall economy, which may explain why its introduction has been less controversial than expected.

Sectors with low real wages are likely to be more affected, such as hospitality, care homes, and personal services. Machin and Wilson (2003) studied the economic effect on UK care homes sector, one of the lowest paying. They looked at wage and employment before and after the introduction of the NMW in 1999 and after the subsequent rise in 2001. Prior to 1999, 40 per cent of workers in this sector were paid below the NMW. Dickens and Manning (2002) found that there was a significant spike in the care home pay distribution at the NMW in 1999 and 2001. Studying care home closures they found no evidence that the NMW had an impact, although it has been suggested that NMW changes can take some time to work through if there are adjustment costs in employment. Overall, these investigations found that the NMW strongly reduced wage inequality, since there was little evidence of spillover effects higher up the wage distribution.

The NMW is likely to affect female-intensive sectors of employment, namely the retail sector, cleaners, child care workers and care assistants. According to various empirical studies, there is no evidence of a negative effect (see Stewart (2002) for a review).

In terms of the economic impact of the NMW on employment, studies suggest no overall employment effect. Stewart (2002) analysed the employment effect of 2000 and 2001 using micro-data studies of individual employment probabilities from the LFS and the New Earnings Survey (NES). Overall, the results indicate no adverse macro employment effects associated with NMW changes for any demographic groups (although Machin and Wilson (2003) did report some evidence of job losses). However, the magnitude of the effect is often on the margin of statistical significance.

The effects on training were studied by Arulampalam et al, (2002). They based their findings using a longitudinal difference-in-difference method and data from British Household Panel Survey and found that the probability of training increased 8-11 percentage points for workers covered under the NMW. As Metcalf (2004) notes, 'If the labour market was competitive it is predicted that the minimum wage makes it less profitable to employ unskilled workers. But in a non competitive labour markets the firm is getting a rent and so would like to retain the worker-and the firm now has an incentive to improve the productivity of the employee via training in order to restore surplus' (p.86).

Finally, Stewart and Swaffield (2005) examined the effect of the NMW on hours worked for employees near the NMW. Using two large scale surveys they found a significant reduction in paid hours for those workers whose pay was raised to the NMW.

Overall, the evidence from the research studies seems to suggest that the introduction of the NMW has led to marginal changes in the labour market, rather than any great structural shift.

2.3 How do companies react to the minimum wage?

The results in the previous section at first sight seem surprising. A very simple model of supply and demand would suggest that the increase in minimum wages should lead to compression of the wage distribution and lower employment on the extensive or intensive margin.

However, it is clear that in this area of the labour market there are many reasons why a narrow focus on a worker's individual cost and product is not helpful. Models where these low-value wages are set at a convenient level rather than an optimal one, are still consistent with classical economic theory in the context of complex company structures. First, simple wage structures may require less management time to implement, lowering the overall costs to the business. Second, such wages structures are easier to market to existing and prospective employees. Third, small differences in the productivity of workers are not of significant value to warrant individual-specific wage deals. Fourth, many low pay jobs are in the service sector where marginal product is difficult to assess accurately. Finally, pay scales which are designed to provide a career path may not be representative of the product of workers at any specific point in time. In addition, there are numerous models of imperfect competition where firms use wages to differentiate themselves or attract particular types of workers.

To investigate this effectively requires good information on employer practices and employees, which is in relatively short supply. Most studies looking into company-specific responses have used qualitative data and/or small scale observations.

Card and Krueger (1995) used small scale studies of several minimum wage schemes in the US and found that firms responded in many ways to increased wages of which reduction in employment was only one. Grimshaw and Carroll (2002) looked at a range of actions taken by small firms in response to the NMW. Using qualitative case-studies, they looked at how the NMW affected their firm's product market strategies, employment policies and practices and overall business performance. The case studies suggested that the NMW sets a benchmark pricing within particular product market; and that it may act as catalyst which encourages firms to shift out of low wage, low skill product markets into high-value niche markets, with some employment effects.

Incomes Data Services (2004) found that some companies were operating explicit policies to keep their lowest pay rates above the minimum wage; others increased pay rates further up pay structures to maintain differentials with the lowest grades. Similar findings from Cronin and Thewlis (2004) suggest that workers' demands for the maintenance of differentials was a driving force behind increases in pay further up the wage distribution. However, this was not the case for smaller firms due to the nature of employee/employer relations. For small firms, it is more likely that their pay differentials are being squeezed. Cronin and Thewlis (2004) also provide strong qualitative support for the idea that simple pay structures are more appealing for companies.

In summary, there is both theoretical support and anecdotal evidence for the idea that firms have the flexibility to set their own wages, and use it in this segment of the labour market. We now turn to the question of whether there is any evidence in a large-scale survey to support this conjecture.

3 Data

This study uses the Annual Survey of Hours and Earnings (ASHE)³ 1998-2004, a 1 per cent sample of PAYE (Pay As You Earn) tax records for those aged 16 and over. Sampling is random, but selected individuals are recorded repeatedly while in employment (periods without employment are recorded as missing values). ASHE is a statutory survey of employers requesting individual level information about their employees, carried out in April each year. Information requested included details of employee's hours, earnings and pension arrangements for a specific job. If an individual has more than one job, information on each job is collected separately from the appropriate employer.

One feature of ASHE, unique amongst large surveys, is the ability to identify whether an individual is doing the same job within the company. This effectively gives the rate for the job in successive years. One difficulty with doing linked employer/employee analysis is that intra-company moves are rarely identified. As these can account for half all of moves and have significantly different characteristics to between-company moves (Hart and Ritchie 2003), this can seriously distort inferences about the value of jobs. Hence, the availability of the same-job marker is crucial for evaluating companies' reactions to a changing environment.

The ASHE data is linked with the Inter-Departmental Business Register (IDBR) through a common identifier. The IDBR captures the structure of the ownership and control of firms and plants using three different levels of aggregation categories: 'local units' or establishments, 'enterprises' or firms, and 'enterprise groups'.⁴ There are some difficulties with making inferences on this linked employer-employee data (for example, PAYE data may be grouped at a "sub-enterprise" level which does not relate to an IDBR structure), but in general this linking allows for bringing firm data into employee models, and vice-versa. For descriptive statistics on the full data set and the low pay subsample of interest, see Tables A1 in the Appendix.

³ ASHE was developed in 2004 to replace the widely-used New Earnings Survey (NES) with improvements to the coverage of employees especially the low paid and to the weighting of earnings estimates; hence the 2004 figures may be expected to reflect low paid better. The data variables collected remain broadly the same up to 2004.

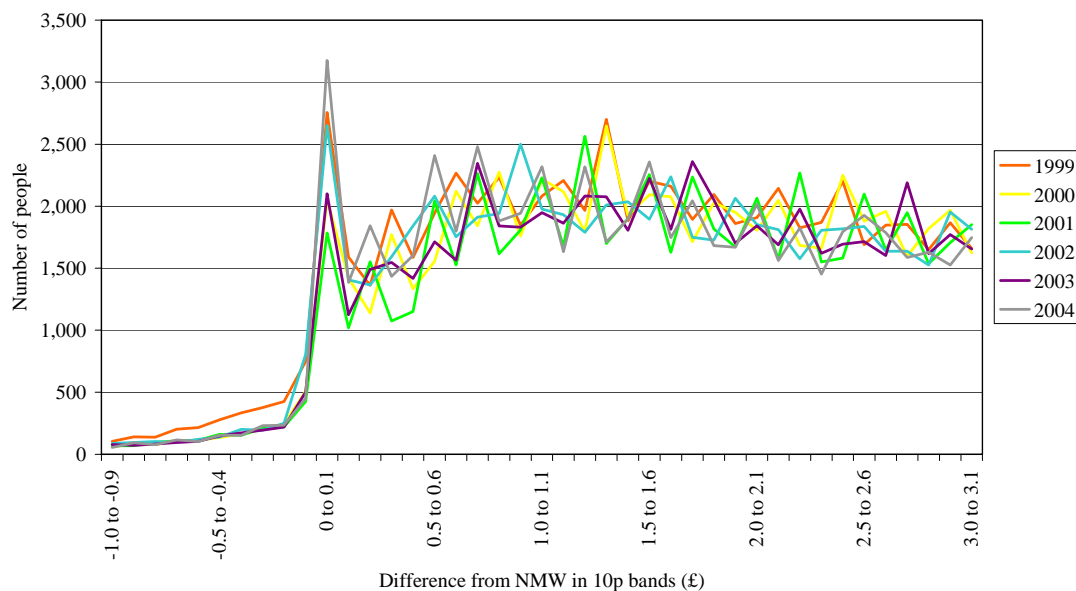
⁴ For further information on the structure of the IDBR see Criscuolo, Haskel and Martin (1998).

4 Do jobs maintain their value?

4.1 Is there evidence of compression overall?

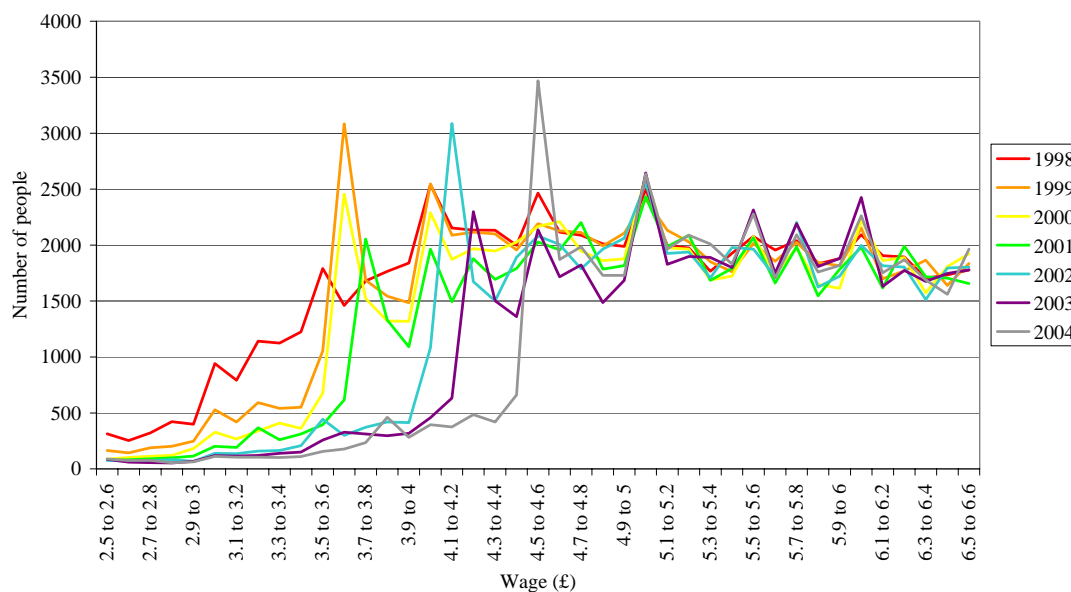
Figure 2 shows the difference between the hourly wage and the NMW in 10p bands for individuals' main job. Apart from the initial spike around the minimum wage and a drop just below the NMW, little clear pattern emerges over time or over the wage distribution. The distribution is not noticeably skewed except at the minimum wage, and even then the minimum wage is not always the modal wage. For 2001 and 2003 the peak does not appear at the NMW; for 2001 the peak is at £1.20-£1.30 above the NMW, for 2003 the peak is at £0.70-£0.80 above the NMW. Both these correspond to the £5.00 mark.

Figure 2: Number of people at various distances from the NMW in 10p bands, 1999-2004



This can be seen more clearly in figure 3, which shows absolute wage rates, rather than at relative rates. What is striking in this graph is the peak of wages at “focal points”: £5.00, £5.50, £5.75, £6.0, etcetera. Moreover, this pattern is even evident in the 1998 data (peaks at £3.00, £3.25, £4.00, £5.00...) before the introduction of the NMW, and hence is not a product of the latter.

Figure 3: Number of people at various hourly wages in 10p bands, 1998-2004



If there were significant compression of wages, we would expect to see a continual increase in the spike and a shift in the distribution towards the left. It is not clear from this diagram that either of these are happening. Certainly there is no ratchet effect on the initial spike.

However, it does not take into account the relative changes of the value of the NMW where average wage is affected by the changes in wage growth (see Table 1). Figure 4 shows the numbers at the NMW in each year and the corresponding change in the AEI-adjusted NMW. There is a strong positive correlation between the size of the increase in the NMW and the change in the numbers at the minimum wage. In 2000, 2001 and 2003, for example, the NMW increased by less than average wages, if at all, and the numbers at the minimum wage went down as wages were increased beyond the legal minimum. In contrast, 2002 and 2004 saw a large increase in those being caught by the relatively high NMW.

Figure 4: Number of people paid within 10p of NMW and percentage change in NMW rates, 1999-2004

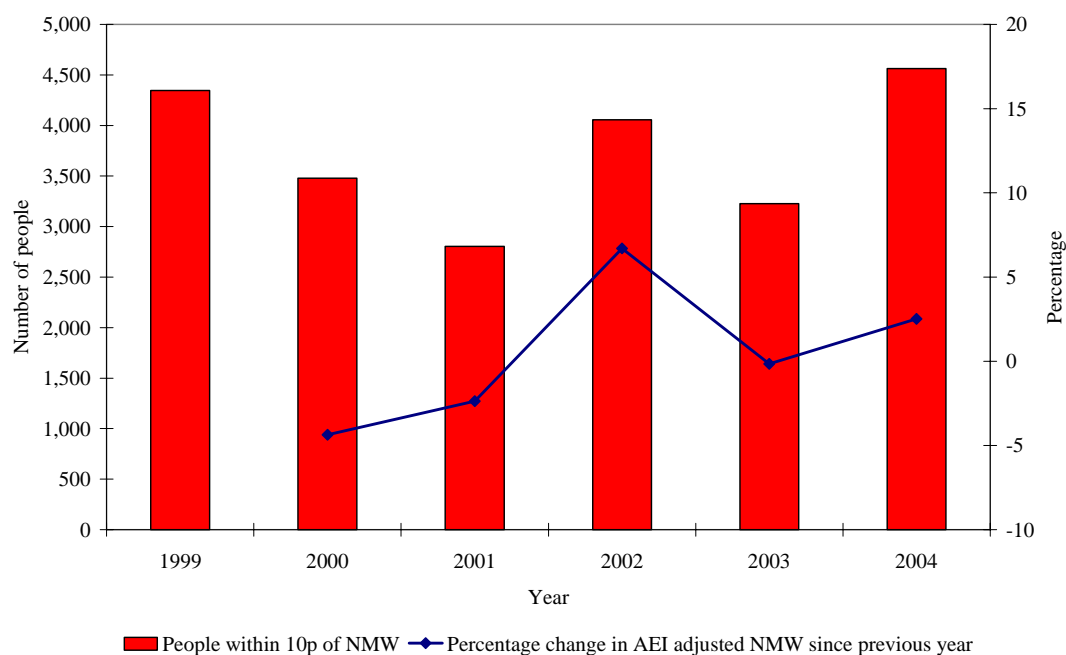


Figure 4 seems to show the opposite story to figures 2 and 3. However, figure 4 only shows what is happening at the NMW and it is quite possible that if there is only partial relocation a large increase in the NMW will pick up more workers.

These figures are static analyses of the numbers being paid at wage levels in a particular year and do not indicate the dynamic of responses to the NMW. For example, figure 4 suggests that there is not a permanent effect, but this cannot necessarily be inferred from the graph. To understand properly the impact of changes in the NMW, we need to look at the effect on the price for a job. This can be done by looking at changes in wage for individuals remaining in the same job and observing what effect a change in the NMW has on them.

Focusing on the movement around the NMW for those remaining in the same job and same company, the probability of moving to another band is plotted in Figure 5. Each line reports the difference from the NMW in 50p class bands at time t ; that is, it represents the chance of moving in bands from the NMW for different starting points⁵. The lines are averages over the period 1999-2004 as these yearly figures are almost identical. Charts for individual years can be found in the Appendix, Figures A1 to A5.

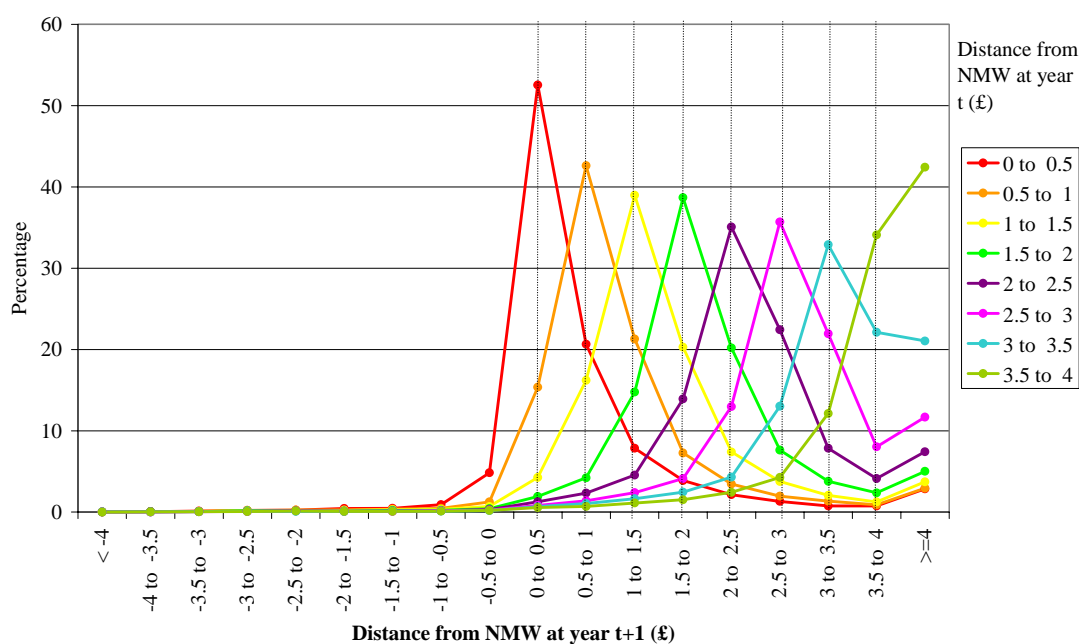
⁵ The analysis was also carried out at 10p bands; however, because of small numbers in the transition matrices, except around the focal points, these tended to be much more erratic. In addition, using a wider band allowed for some inaccuracy in the calculation of the wage rates, and in the effect of inflation.

Three features of Figure 5 are worth noting. First, the highest probability is that of remaining in the same segment in the following year. This is as true for those on the minimum wage as for other groups, indicated by the high peak for those who are £0 to £0.50 above the NMW, and supports Sloane, Murphy, Jones and Jones' (2004) model of 'low pay persistence' among the workers at the minimum wage.

Second, the peaks decrease as to the right, suggesting that the further away from the NMW the less the probability of staying in the same band.

Finally, regardless of where individuals start, the probability of moving to another band depends only upon the distance to the next band. For example, there is roughly 20 per cent chance of moving up one band irrespective of current salary position.

Figure 5: Change in wages in 50p bands from the NMW between year t and years t+1, average over 1999-2004



As these probabilities are relatively constant over time, this implies significant structural rigidities across the wage distribution which have persisted in the face of rises in the minimum wage. This seems inconsistent with figure 4, which showed numbers within 10p of the NMW, but this is not necessarily the case. For example, consider an individual whose pay would, in the absence of the NMW, increase at the rate of earnings inflation. With the NMW, wages in a particular year might be slightly higher than the "ideal" value due to the NMW, but in other years they could return to the target value. This would have an effect on the numbers at the NMW, but for the 50p bands described above the adjustments are too small to take the individual outside the wage range.

In summary, there are strong indicators of a relatively rigid structure of wages at this end of the labour market, with earnings being concentrated around simple-to-use “round numbers”. The NMW does appear to have an impact on the numbers at the NMW, but this does not seem to be a permanent effect.

4.2 Testing in a regression framework

These results so far indicate that there is some structural inertia in the market – that the NMW is not simply picking up more and more workers as the NMW covers higher wages. Referring to our earlier illustration of wage “compression” and “relocation”, we can test this more rigorously in a regression framework.

Define

$$d_t \equiv 1 \quad \text{if } w_t \leq NMW_{t+1} \quad [i.e. \quad x_t \leq (NMW_{t+1} - NMW_t)]$$

Cases with $x_t < 0$ are excluded as it is not possible to determine whether these are due to rounding errors, non-financial compensation, mistakes, or illegal wage rates. Then

$$x_{t+1} = \alpha + x_t \beta + d_t (\gamma + x_t \delta) + \varepsilon_{it+1} \quad s.t. \quad x_t, x_{t+1} \geq 0 \quad (1)$$

gives a testable hypothesis on the relative size of compression/relocation effects⁶. Under the alternative hypotheses the predicted values of the coefficients are shown in Table 3 and illustrated in Figure 6.

Although wage equations are typically estimated in log-linear form, the model is specified in levels because (1) the analysis is being carried out over a small range of wages, and (2) anecdotal evidence suggests that it is the actual difference rather than any percentage difference that is relevant in this market segment.

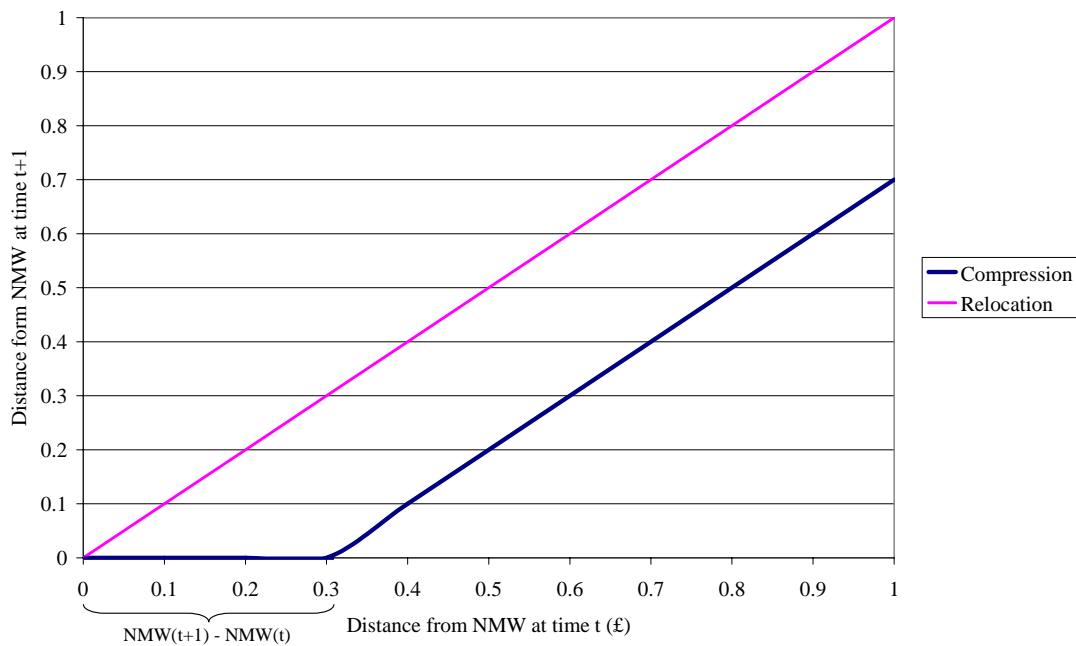
Table 3: Values of coefficients under alternative hypotheses

	Pure compression	Pure relocation
α	$NMW_t - NMW_{t+1}$	0
β	1	1
γ	$-\alpha$	0

⁶ Note that an intercept of zero implies that the mean wage in the market sector under examination increases at roughly the same rate as the minimum wage. A positive intercept implies that wages generally have increased faster than the minimum wage. As noted earlier, the changes in the minimum wage vary considerably over the years: in 2000, 2001 and 2003 the AEI-adjusted NMW was constant or fell, suggesting the strong likelihood of a positive intercept in those years as wages generally outstrip the NMW increase. This does not affect the interpretation of the compression/relocation argument, which depends upon the significance of the dummy terms.

δ	$-\beta$	0
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Figure 6: Values of coefficients under alternative hypotheses



The model was run for each of the years 1999-2003 separately using standard robust variance estimates. For each estimate the data was restricted to those who had been in the same job for both t and $t+1$. Alternative estimates additionally excluded those whose pay was affected by absence, or who had unusual pay patterns. The coefficient estimates were robust to these different specifications. It was run for four non-exclusive subsets: those earnings up to £1, £2, £3 and £4 over the NMW in time $t+1$. There were no significant difference between the latter three groups, and so only the results for those earning up to £0-£1 and £0-£2 over the minimum wage are included here, in Table 4 and Figures 7 and 8. Full results are in the appendix in Table A2.

It is clear that estimates provide no support for the compression hypothesis. The dummy slope coefficients are rarely significant, and when they are they are positive. Only in one year is there an indication of compression in the below-NMW segment, and this is only at the 10 per cent significance level in the smaller sample. The positive intercept is difficult to interpret. It implies that there is a general increase in the wage level but over and above this wage differences do seem to be maintained. This does imply an element of partial relocation as the proportional differences between wages are shrinking although the actual differences are being maintained.

Table 4: Coefficient estimates of distance from NMW at t+1

<i>Earnings 0-£1 from NMW_t</i>					
Coefficients in equation 1	1999	2000	2001	2002	2003
α_t	***0.618 (0.035)	***0.632 (0.05)	***0.523 (0.107)	***0.73 (0.051)	**0.945 (0.408)
β_t	***0.877 (0.054)	***0.808 (0.071)	***0.65 (0.14)	***0.821 (0.078)	0.411 (0.438)
γ_t		***-0.186 (0.07)	-0.025 (0.124)	-0.123 (0.119)	-0.384 (0.42)
δ_t		*1.411 (0.855)	0.326 (0.297)	*3.417 (2.042)	0.895 (0.597)
Number of observations	10,217	8,681	7,359	9,714	8,455
R-squared	0.02	0.03	0.01	0.02	0.00

<i>Earnings 0-£2 from NMW_t</i>					
Coefficients in equation 1	1999	2000	2001	2002	2003
α_t	***0.569 (0.026)	***0.564 (0.029)	***0.35 (0.038)	***0.665 (0.039)	***0.715 (0.206)
β_t	***0.967 (0.024)	***0.917 (0.023)	***0.871 (0.027)	***0.937 (0.043)	***0.759 (0.134)
γ_t		** -0.118 (0.056)	**0.148 (0.073)	-0.059 (0.114)	-0.155 (0.227)
δ_t		1.303 (0.853)	0.105 (0.263)	3.301 (2.041)	0.547 (0.428)
Number of observations	22,372	20,240	18,226	20,538	19,555
R-squared	0.09	0.11	0.07	0.03	0.00

Robust standard errors are in parentheses

* Significant at 10 per cent level, ** significant at 5 per cent, *** significant at 1 per cent

Figure 7: Current vs future distance from NMW, individuals £0.00-£1.00 above NMW_t

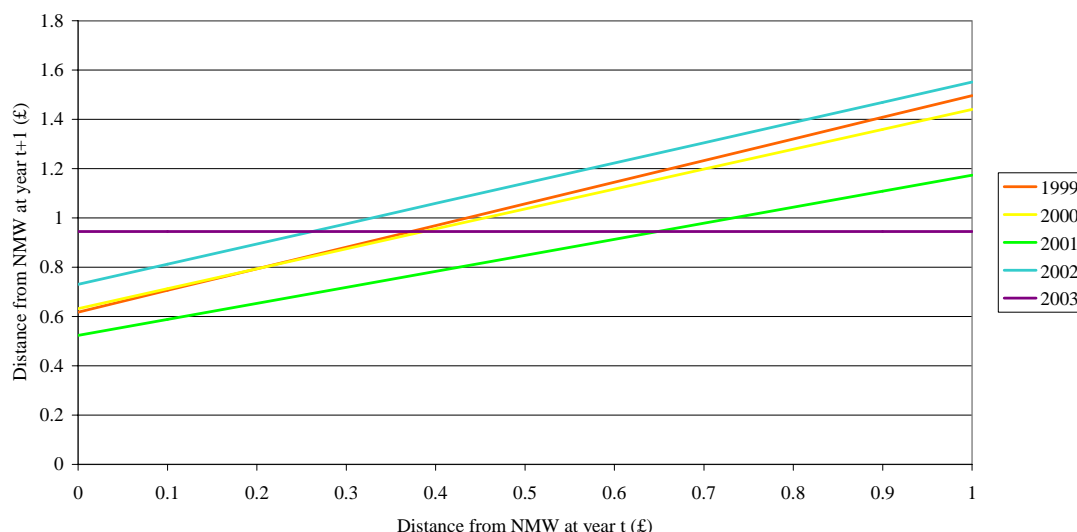
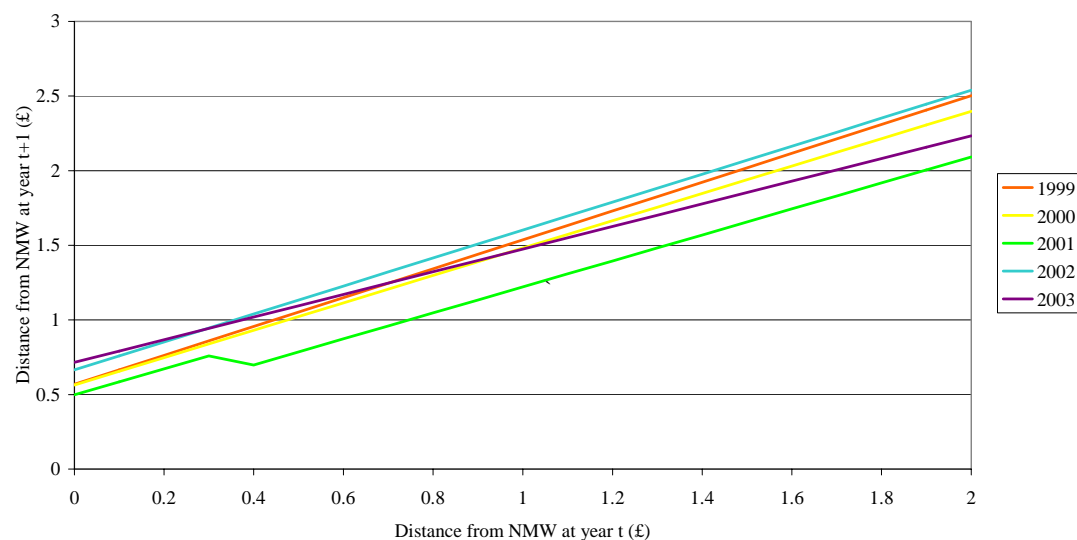


Figure 8: Current vs future distance from NMW, individuals £0.00-£2.00 above NMW_t



There is more evidence of only partial relocation/compression for those just above the NMW, as shown by the lower slope coefficients when restricted to the $NMW+\pounds 1$ sample. Again, there is no indication that those overtaken by the minimum wage behave in a significantly different way.

Pisani and Dickens (2005) also looked at wages just above and below the next-period NMW to study the employment effects. Their aim was to use the group with wages just above NMW_{t+1} as a control for those below. Unfortunately for the control group, but in line with the results here, they found small but significant shifts in all the wages in the region of the NMW.

In short, looking at individual wages, the evidence suggests that there is a surprisingly rigid labour market whereby the wages for a job do move in lock step with the NMW.

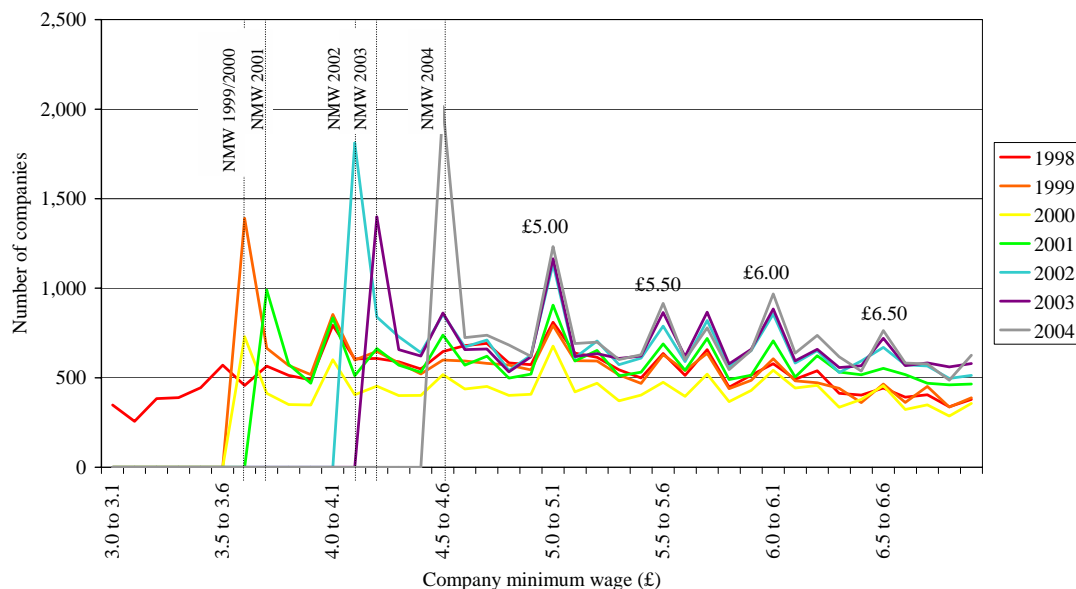
5 Evaluating companies' minimum wage policies

5.1 How do actual minimum wages compare to the official minimum?

Qualitative evidence suggests that some companies set their effective minimum wage above the NMW in order to maintain a competitive edge. Some reference to the NMW might also provide the foundation for a pay scale. Using the linked employer-employee data (ASHE-IDBR) a variable for “company minimum wage” (CMW) was constructed. The relationship between CMW and NMW can be investigated, to see whether this is a result of the NMW or a feature of the wider labour market at the lower end of the wage distribution.

Company identifiers were used to group employee records by company and year. Within a year the minimum amount paid to an employee was found by ranking the employees in order of hourly salary. The CMW for a company for a year is therefore estimated by the minimum amount paid to an employee in the company in the ASHE sample in that year. Selection of an individual to represent the company minimum wage was restricted to those with hourly rates greater than or equal to the national minimum wage. Figure 9 shows the minimum wages paid by all companies in the sample in 10p bands up to seven pounds. The line for 2000 shows lower numbers than for other years due to the smaller number of matched companies in the sample for this year.

Figure 9: Company minimum wages, 1998-2004



The results here are similar to Figure 4, which presented wages for all individuals, except that the peaks at focal points are even more striking. This is a reasonable result: if companies use these focal points as the foundations for wage rates, it is to be expected that a graph of

minima would show more pronounced peaks than one which also included wages of those above the minima.

For each year the most common company minimum wage is equal to the national minimum wage, but this only accounts for a relatively small proportion of the companies. Further away from the national minimum wage values the charts converge and peak at ‘round’ salaries, i.e.£5.00, £5.50, £6.00 etc. This supports the anecdotal evidence that companies pay their lowest earning staff at the NMW or at some “round” number above it.

The pattern for 1998, before the implementation of the national minimum wage, is similar to other years once £4.00 is reached. Again, this suggests that the national minimum wage only partially affects those at the low end of the pay distribution, as the tendency to set pay scales at certain focal points clearly pre-dates the NMW, and appears to be largely unaffected by it.

There are some problems with this definition. Most obviously, the person with the lowest wage may not be included in a company’s ASHE sample. If, for example, only one employee is sampled from a company, it is more likely that this would be from a senior member of staff (who have more stable job profiles) than a minimum-wage worker. In the later analysis, this possibility is lowered by only selecting those CMWs a short distance from the NMW, and only using companies where there are at least 10 observations.

A second problem concerns pay scales. It may be that a company’s notional pay scale extends down to the NMW; if however, there is no one at that point of the scale at the time of the survey, then the company will appear to have a CMW greater than the NMW. This is an insoluble problem when dealing with only realised wages, although there is a counter-argument that the company’s effective minimum wage is the lowest wage at which it can hire workers, irrespective of its pay scales.

Hence, the CMWs discussed in this section are likely to be an overestimate of the actual, real or notional minimum wages companies would wish to pay. Nevertheless, there is reason to believe that this is a good approximation of how companies operate.

In the ensuing analysis only companies with a low CMW and at least ten individuals in the ASHE sample are included. Investigation is focused on large companies as there is evidence that fixed pay policies are a feature of large companies (Cronin and Thewlis, 2004). Smaller companies are more disparate in their responses, and are also less likely to have set policies. This also reduces the problems associated with the identification of the CMW.

5.2 Are there consistent company effects?

Figure 9 shows that wages tend to cluster around certain “round” values. As this data comes from companies observed over time, it should be possible to test whether there are persistent company specific effects – what might be termed a “pay policy”. Because of the censoring of the wage at the NMW, this needs to be tested using a standard panel Tobit model:

$$x_{ft} = 0$$
$$x_{ft} = f(Z_{ft}) + \alpha_f + \varepsilon_{ft}$$

Where:

w_{ft}	wage for company f at time t
NMW_t	national minimum wage at time t
x_{ft}	$w_{ft} - NMW_t$
$f(Z_{ft})$	linear function of explanatory variables
α_f	effect for company f
ε_{ft}	error term for company f at time t

As above, cases with $x_{ft} < 0$ are excluded as it is not possible to determine the source of these potentially problematic numbers.

The model was run with a simple $f(Z)$ and a more complex $f(Z)$, and for both all industry and the retail sector alone. The simple model included:

1. Number of employees at enterprise level
2. Number of employees at plant level
3. Sector in which the lowest paid employee works (8 sectors)
4. Region in which the lowest paid employee works

The more complex model included the above variables and

5. Gender and age of lowest paid employee
6. Whether a private company
7. Whether a charity
8. Whether covered by a recognised collective bargaining agreement
9. Whether permanent
10. Full-time/part-time

As well as looking at the whole industry we selected the retail industry as a comparison because it is well known that many employees in this industry are paid at the minimum wage; the occupation of the employees paid at this level is likely to be similar across companies; and this sector is dominated by large companies which are known to employ structured wages.

The dominance by large companies and the large number of employees on low wages increases confidence that the CMW is being effectively measured.

In both cases of the Tobit model (all industries and the retail industry only) the standard deviation of the α coefficients is greater than the standard deviation of the ε coefficients. This implies that there is a significant company effect: the variation between companies is greater than the variation within companies. The picture for the retail sector alone is similar. The standard deviation of the α coefficients is smaller than for the all industry model but this is to be expected as retail companies are more similar to each other than all companies.

Table 5: Standard deviation of company and individual effects

Model		All industries		Retail industry	
		σ_α	σ_ε	σ_α	σ_ε
Tobit simple	1	1.41	0.82	0.67	0.32
Tobit extended	2	1.27	0.80	0.63	0.32

This model indicates whether there are significant company effects, but does not, by itself, indicate whether any significant effect is due to the difference from the NMW, or to more general labour market conditions. Running fixed-effects regressions on the difference from the NMW, and on the level of the CMW, does seem to indicate that firm's position relative to the rest of the market is the more important factor. However, these results are based on a subset of the data with the CMW being above the NMW and so may be subject to selection bias, and are therefore not reported here. Further work is being carried out to investigate the drivers behind a company's decision to pay the NMW. Overall, there once again seems to be more evidence that companies both have significant power in setting wages, and are using it to set wages relative to other companies.

6 Conclusion

Two themes stand out from this paper; first, the structural basis of wages at the bottom of the wage distribution appears to be resilient to changes in the NMW. There is strong evidence of relocation of wages, rather than compression. This can be seen both in the company minimum wages, but also in the way wages for a job have changed. This is an important new result, as the ASHE is one of the few large-scale surveys which can identify these effects.

Second, this seems to be occurring because companies have significant power to set wages at an appropriate level. This can be seen in the way individual wages have responded to the NMW. While a large number of companies pay the NMW, this is not the majority; nor does it seem to be increasing particularly. As important in setting wages is the prevalence of the focal points: £4.50, £5.00, £5.50, £5.75, and so on, implying that the determinants of wages are much more complex than a simple demand and supply model.

These results may be surprising, as previous studies have shown evidence of the compression of wages. It is worth recalling that the analysis here is carried out only the part of the distribution close to the NMW wage; there may be an overall compression effect which is not being picked up in this study. Additionally, the way a company sets its pay policy does not necessarily reflect the wage path experienced by workers moving across jobs and companies. Nevertheless, the results presented here are relatively robust to the different approaches taken.

There are three areas that would benefit from further investigation.

First, there is some evidence that companies are more different than alike; it could also be seen from the regressions on the retail sector that there are differences between sectors. Although the Tobit presented in section 5 found additional control variables had no significant impact, it has been suggested that the private/public split would be a fertile ground for further analysis.

Second, the latter part of this analysis concentrated on large firms. A number of low paying sectors, particularly in personal services, are dominated by very small firms, where the impact of small pay changes may be large and the financial resources are much smaller. This is an area where more detailed analysis may be profitable.

Finally, the NMW and adjustments to it do not change smoothly. Firms set wages relative to well-defined focal points, but the NMW does not follow these (the 2006 NMW of £5.05 leaps over the key focal point of £5; how will firms react?). Figure 9 also showed that the size of

the change in the NMW is important in determining how many employees are caught by the NMW. There is clearly more research to be done on these two different effects.

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8 Appendix

Figure A1: Change in wages in 50p bands from the NMW between year t and years t+1, average over 1999

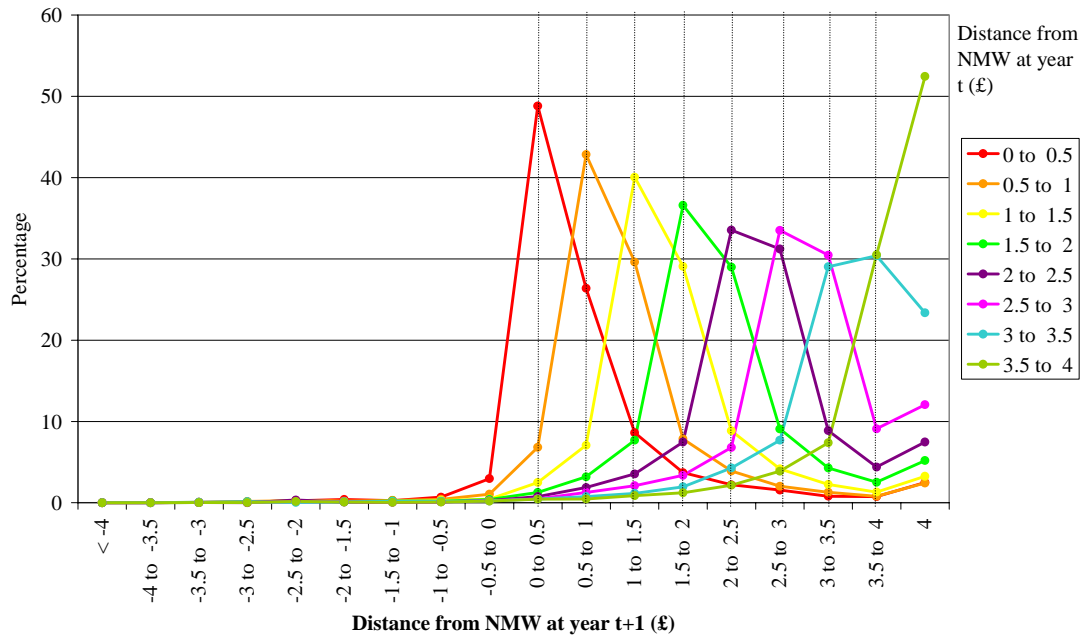


Figure A2: Change in wages in 50p bands from the NMW between year t and years t+1, average over 2000

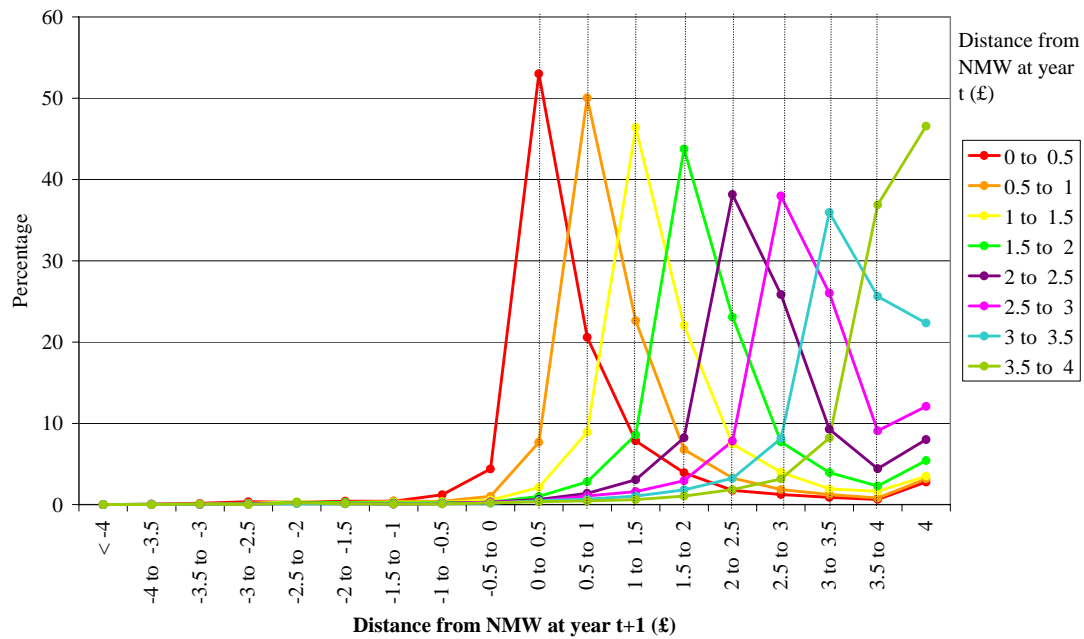


Figure A3: Change in wages in 50p bands from the NMW between year t and years t+1, average over 2001

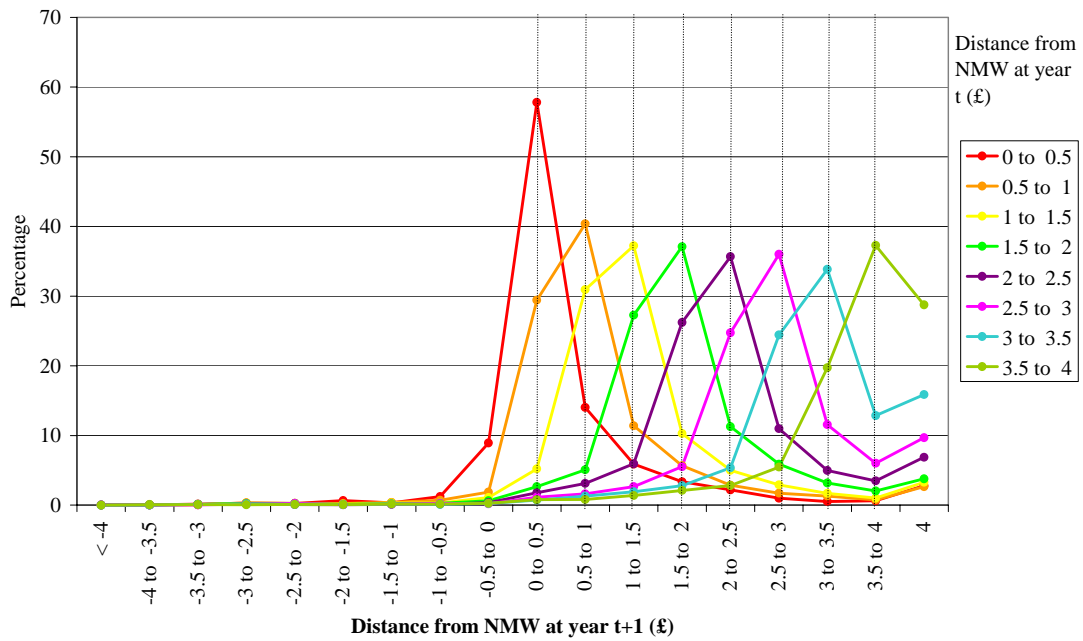


Figure A4: Change in wages in 50p bands from the NMW between year t and years t+1, average over 2002

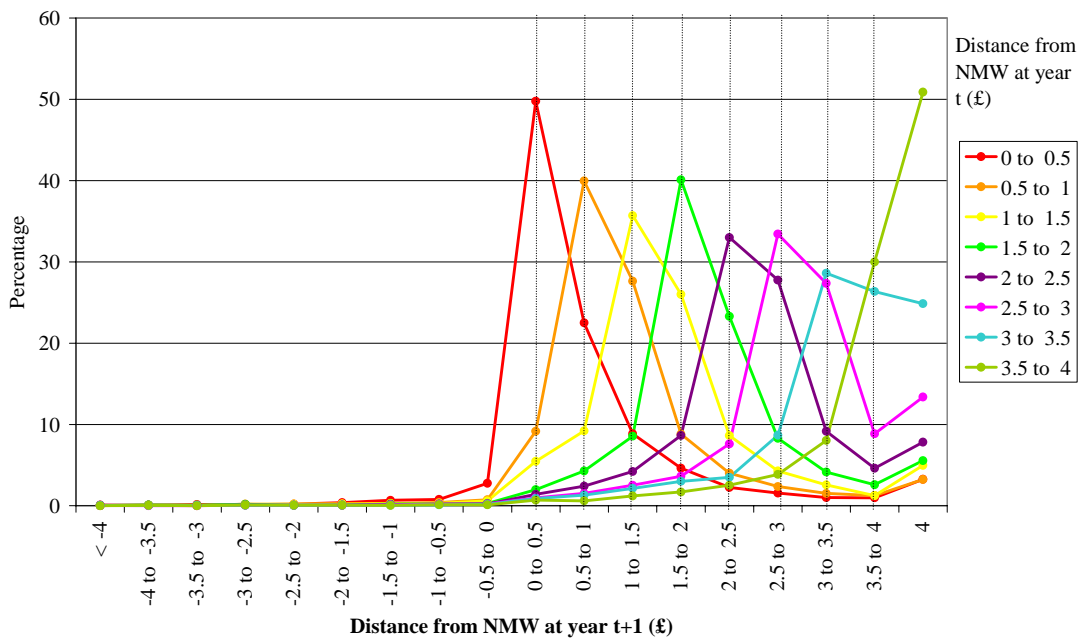


Figure A5: Change in wages in 50p bands from the NMW between year t and years t+1, average over 2003

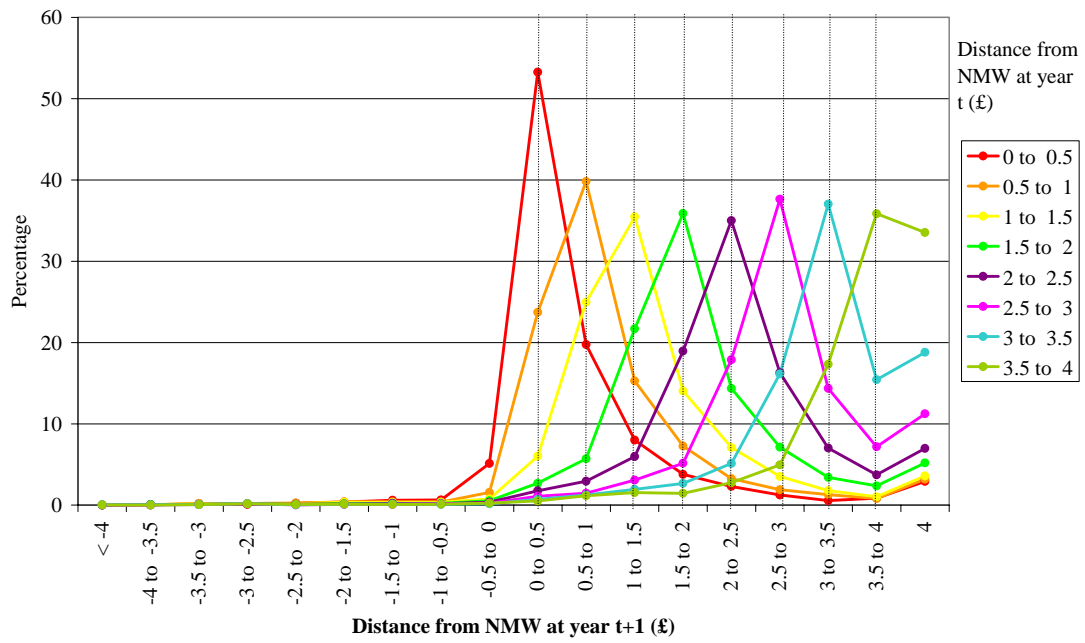


Table A1: Descriptive Statistics, 1998-2004

Variable	1998	1999	2000	2001	2002	2003	2004
<i>Reported in frequency</i>							
Sample Size	161,378	161,750	158,965	161,358	163,821	166,431	164,708
full time	119,752	119,360	116,090	117,325	118,241	119,672	117,108
permanent	X	X	143,157	149,862	151,175	151,356	149,690
same job and firm >1yr	124,690	126,521	123,041	121,389	123,224	129,358	130,277
> 1 job	X	X	X	9,866	9,964	11,516	10,186
Ageband 16-17	1,909	1,999	1,720	1,984	2,216	2,204	2,377
Ageband 18-21	7,994	8,245	8,407	9,049	9,168	9,279	9,419
Ageband 22+	151,475	151,506	148,838	150,325	152,437	154,948	152,912
<i>Reported in mean</i>							
hourly earnings	8.45	8.83	9.16	9.64	10.44	10.65	10.88
hourly earnings (male)	9.83	10.26	10.64	11.22	12.06	12.31	12.49
hourly earnings (female)	6.95	7.32	7.62	8.24	8.76	8.99	9.27
<i>Reported in percentage</i>							
North East	4.30	4.23	4.33	4.31	4.14	4.16	4.22
North West	11.04	11.16	11.10	11.19	11.02	11.15	11.08
Yorkshire and Humber	9.16	8.75	8.81	8.91	9.06	8.82	8.75
East Midlands	7.38	7.49	7.37	7.15	7.17	7.22	7.19
West Midlands	9.66	9.56	9.10	9.40	9.24	9.25	9.13
South West	8.34	8.32	8.61	8.47	8.42	8.67	8.75
East	8.97	9.12	9.17	9.14	9.24	9.03	9.14
London	14.31	14.50	14.58	14.27	14.58	14.19	14.21
South East	13.35	13.72	13.66	13.50	13.46	13.48	13.55
Wales	4.26	4.32	4.41	4.36	4.56	4.62	4.60
Scotland	9.22	8.83	9.07	9.20	9.12	9.23	9.31
Total	100	100	100	100	100	100	100

Variable	1998	1999	2000	2001	2002	2003	2004
<i>Reported in mean</i>							
North East	7.43	7.88	7.99	8.25	8.94	9.17	9.52
North West	8.00	8.29	8.57	8.91	9.63	9.89	10.13
Yorkshire and Humber	7.48	7.99	8.21	8.56	9.20	9.48	9.70
East Midlands	7.45	7.78	8.08	8.43	9.18	9.42	9.72
West Midlands	7.81	8.15	8.44	9.07	9.64	9.72	9.88
South West	7.80	8.03	8.26	8.76	9.50	9.79	9.98
East	8.23	8.54	8.93	9.30	10.08	10.45	10.62
London	11.50	11.94	12.54	13.32	14.38	14.71	14.93
South East	8.84	9.26	9.65	10.19	11.07	11.33	11.54
Wales	7.46	7.82	8.13	8.44	9.10	9.32	9.82
Scotland	7.85	8.26	8.48	8.98	9.76	9.70	9.87

Table A2: Regression results, individuals distance between NMW at year t

<i>0-£3 from NMW</i>					
Coefficients in equation 1	1999	2000	2001	2002	2003
α_t	***0.573 (0.019)	***0.515 (0.021)	***0.255 (0.026)	***0.66 (0.029)	***0.594 (0.129)
β_t	***0.962 (0.011)	***0.969 (0.011)	***0.96 (0.015)	***0.94 (0.015)	***0.873 (0.059)
γ_t		-0.067 (0.053)	***0.243 (0.068)	-0.055 (0.111)	-0.033 (0.16)
δ_t		1.25 (0.852)	0.016 (0.262)	3.298 (2.041)	0.433 (0.411)
Number of observations	34,536	31,945	29,068	31,276	30,388
R-squared	0.19	0.25	0.17	0.07	0.02
<i>0-£4 from NMW</i>					
Coefficients in equation 1	1999	2000	2001	2002	2003
α_t	***0.562 (0.016)	***0.497 (0.017)	***0.235 (0.021)	***0.644 (0.029)	***0.509 (0.098)
β_t	***0.973 (0.007)	***0.983 (0.008)	***0.972 (0.009)	***0.954 (0.012)	***0.934 (0.034)
γ_t		-0.051 (0.051)	***0.263 (0.066)	-0.038 (0.111)	0.052 (0.138)
δ_t		1.236 (0.852)	0.003 (0.262)	3.284 (2.041)	0.373 (0.409)
Number of observations	45,528	42,303	39,127	41,382	40,635
R-squared	0.30	0.35	0.26	0.12	0.03

Robust standard errors are in parentheses

* Significant at 10 per cent level, ** significant at 5 per cent, *** significant at 1 per cent