

Investigating the sectoral and regional effects of the 2003 and 2004 National Minimum Wage upratings

Low Pay Commission

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For and on behalf of Experian	
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Executive summary

INVESTIGATING THE SECTORAL AND REGIONAL EFFECTS OF THE 2003 AND 2004 NATIONAL MINIMUM WAGE UPRATINGS

- The established literature examining the impact of the National Minimum Wage (NMW) in the UK has not revealed conclusive employment effects either nationally or at a regional level. New research has, however, emerged showing effects on profitability.
- The literature appears to make a strong case for examining the interaction of sectors and regions, looking at a range of variables including employment, hours worked, profitability, productivity as well as firm formation and survival.
- ASHE figures reveal very clear regional differences in pay across the UK, with London as a clear outlier at the top end. In general, the lowest decile has seen pay rise faster than the median pay since the turn of the decade, though in few cases the rise has been as rapid as upgrades in the NMW.
- Retail has followed the same broad pay pattern as other sectors, though London has performed relatively badly within this. By contrast, hospitality, which is already one of the lower paying industries, has seen earnings for its bottom decile slip behind median wage growth outside of the south of England.
- The aim of this paper was to look behind the aggregate responses to the NMW to establish if there are specific regional and sector impacts. The hypothesis is that the nature of the NMW (a minimum rate that prevails in any part of the country) could have different effects on regions and sectors with very different wage distributions.
- The emphasis of this paper has been on the relative performance of industries within regions. Estimation has, therefore, largely been restricted to the retail and hospitality sectors because of the data limitations, albeit that these industries account for the bulk of workers affected by the NMW.
- Using this method, we have been able to find evidence of impacts on both employment share (especially in hospitality and, to some extent, retail) and on firm start-ups (for both retail and hospitality). Profit variables were not significant.
- The results contrast strongly with other work on the UK's NMW, which tend to find no effect. But this is the first study to focus on industries within regions and to look at both the introduction and the subsequent NMW upratings in an integrated framework.

1 Literature, data and issues

1.1 INTRODUCTION

This review has been produced by the Institute for Employment Studies (IES)¹ as part of the larger project with Experian for the Low Pay Commission (LPC). The objective is to undertake research on the sectoral and regional effects of the 2003 and 2004 up-ratings on employment, hours, profits, productivity and business start-ups and failures. Therefore, this review concentrates on the UK's National Minimum Wage (NMW) and these potential impacts.

The review consists of three parts. These cover:

- literature;
- data; and
- resulting issues and approaches.

The review is not intended to be exhaustive. Its purpose is to provide a background to, and guidance for, the selection of issues, data and methodologies for the project. This means that some aspects will not be explored, rather they will be noted for possible attention. In particular, the focus is on the recent literature, as this is most likely to be relevant to the current policy debate. Similarly, data sources will not be described completely, but examined for the potential information they provide.

1.2 LITERATURE REVIEW

1.2.1 Historic US debates

The question of the impact of minimum wages has been coloured by an historical debate in the United States. This was held between those who argued from a-priori grounds that a minimum wage would have a negative impact on employment and those who argued, mainly on empirical grounds, and later on theoretical grounds, that this was not the case.

An early approach to showing a negative employment impact of a minimum wage policy was by Meyer and Wise (1983, detailed references are listed in Appendix A) who examined the wage distribution. However, the method has

¹ This section was prepared by the Institute for Employment Studies, which is an independent, apolitical, international centre of research and consultancy in human resource issues. It works closely with employers in the manufacturing, service and public sectors, government departments, agencies, and professional and employee bodies. For over 35 years, the Institute has been a focus of knowledge and practical experience in employment and training policy, the operation of labour markets and human resource planning and development. IES is a not-for-profit organisation, which has over 60 multidisciplinary staff and international associates. IES expertise is available to all organisations through research, consultancy, publications and the Internet. IES aims to help bring about sustainable improvements in employment policy and human resource management. IES achieves this by increasing the understanding and improving the practice of key decision makers in policy bodies and employing organisations. The author is indebted to the assistance of Karen Ackroyd and Georgios Loukas of IES for their helpful contributions, and to Gill Howd for her time and attention with the final manuscript.

been used subsequently to show the opposite impact (Flinn, 2003), while a more recent paper shows a smaller negative impact (Doyle, 2005).

The debate in the US was re-sparked when Card and Krueger (1994) found that a minimum wage did not have a negative impact on employment, comparing evidence from the New Jersey and Pennsylvania fast food industries. This regional comparative approach was repeated a few years later (in Card and Krueger, 1998). However, Neumark and Wascher (2000) challenged this evidence, only for Card and Krueger (2000) to reply. In essence, the empirical evidence of a negative impact on employment was, at best, ambiguous.

Various reasons for not finding an employment effect have been put forward. These include the idea that the main impact is on teenage or youth employment (Neumark and Wascher, 2004). Earlier evidence also by Card (1992) found no impact on teenage employment when comparing US states, and an actual increase in teenage employment when looking at California (Card, 1991). Bazen and Marimoutou (2003), using a different technique, found a negative impact on teenage employment. Looking at the US, therefore, the evidence is ambiguous for any impact on teenage employment.

1.2.2 The UK experience

A wide range of potential impacts of the National Minimum Wage (NMW) on the UK labour market after 1999 have been sought in the secondary data, case studies or from qualitative studies. These include:

- employment
- training
- teenage employment
- pay distributions and differentials
- regions
- women
- the low-waged and low-skilled
- crime rates, and
- profitability.

Each of these areas is expanded upon below.

1.2.2.1 *Employment impact*

Largely informed by the historic US debates, much of the early literature concentrated on the employment impact, or, more accurately, the lack of one. Various data sources and approaches have been adopted. These include one using the 1998 Workplace Employment Relations Survey by Forth and Millward (2001), which examined the range of factors that combine to generate low pay. They found that more employer determined factors influenced low pay than individual characteristics. Although, the low paid were often low skilled or lacking other human capital attributes, the sector, size of employer and type of job undertaken were more important determinants.

Another paper that examined the impact of the NMW examined the geographical variation in wages (Stewart, 2002a). This paper used the differences-in-differences approach and found that, although the NMW had

a different effect on the wage distributions in different regions, there was no evidence of any impact on employment growth.

Stewart (2002b) used longitudinal data from three different datasets (LFS, BHPS and NES) to examine the introduction of the NMW in 1999. Using a differences-in-differences approach again Stewart found no significant adverse employment effect. In a later paper Stewart (2004a) estimates the employment effects of the introduction of the NMW in 1999 and the 2000 and 2001 up-ratings. Again, 'no significant adverse employment effects' were found for any of the demographic groups examined. More recent work by Dickens and Draca (2005) examined the impact of the October 2003 increase in the NMW. This again showed 'no clear, statistically significant evidence of employment losses, measured either in terms of employment outflows or inflows'.

A variant of the employment impact is a hypothesised impact on the working hours of the low paid. The argument being that hours are reduced to bring the pay back into line with what is affordable by employers. This is an argument that goes back to US debates, as Michl (2000) suggested that Card and Krueger (1994, 2000) used the number of workers, while Neumark and Washcher (2000) used pay-roll data that took account of changes in hours.

There is some evidence of a reduction in hours in the UK from employer based data from the New Earnings Survey (Stewart and Swaffield, 2004). However, the same study showed that looking at the same issue using the employee based Labour Force Survey (LFS) produced insignificant results.

1.2.2.2 Training impact

One theory of training provision implies that individuals take wage cuts to compensate employers for the costs in anticipation of future higher wages. In this context, it is hypothesised that since minimum wages mean that individuals cannot take wage cuts then training would be reduced.

Acemoglu and Pischke (2001) examined this hypothesis and found no impact of US minimum wage levels on training activity. Fairris and Pedace (2003), using more detailed US data, also found no evidence that minimum wages reduced average hours of training, or the percentage of the workforce receiving training. Arulampalam et al. (2004) using data from the British Household Panel Survey and the differences-in-differences approach, similarly found no impact of the NMW on training levels. Cubbit and Heap (1999) provide a theoretical model, which explains these results.

Rainbird et al. (2002) using a series of UK case studies in sectors particularly impacted by the NMW looked at the effect on training. Overall, they found no evidence of the use of the adult development rate and only one case of the use of the youth development rate. They concluded: 'that there is little evidence of the NMW having a direct impact on companies' training and development strategies'. Although, alongside other regulatory changes such as the Working Time Directive and the Care Standards in care homes, the NMW had prompted reviews of how low paid staff were managed and utilised.

Overall, the evidence is that there is no impact of minimum wages on training and, as such, this aspect of the debate is less important for policy makers.

1.2.2.3 Impact on teenagers

There exists a large literature on the impact of minimum wages on teenagers or young labour market entrants. Indeed, it is this literature that underlies the separate youth rate for the UK NMW. Baker (2003) using Canadian data, found the main impact on teenagers of a minimum wage was through a reduction of their employment, although this effect was modest. Chaplin et al (2003), using US data, suggested the main impact of a minimum wage was through an increase in high school drop-out.

By contrast Neumark and Nizalova (2004), also using US data, suggest that the impact of higher teenage minimum wages is lower long-run earnings and perhaps a lower likelihood of working. Williams and Mills (2001) using new time series techniques found a negative impact of minimum wages on US teenage employment. Huuneus (2003) also using US data suggests a larger impact on teenage employment. Overall, this US evidence is conflicting and hence very difficult to draw concrete policy conclusions from.

Dickerson and Jones (2004) use UK data from the Youth Cohort Survey to examine the decision whether or not to continue in education post 16. The study found that the stayers and leavers were two distinct groups and that wages on offer in the labour market had little or no influence on the decision. This in turn suggests that a minimum wage for this age group would have little impact on staying-on rates.

1.2.2.4 Impact on pay distribution and differentials

Dickens et al. (1994) provides a review of the use of wage distributions to assess the impact of minimum wages. This approach is based on Meyer and Wise (1983) who argued that it was possible to identify gaps in the wage distribution caused by minimum wages. The advantage of this approach is that it can be used with cross-sectional data in the absence of time series. Dickens et al. proceed to use the Meyer and Wise method to look at the impact of wage councils on UK pay distributions. However, they concluded that the minimum wages had knock-on effects higher up the wage distribution which caused problems with the method. This combined with difficulties fitting a two parameter model to the resulting distributions, meant that the results were open to debate.

Butcher (2005) used visual analysis of the distribution of wage increases before and after the introduction of the minimum wage and found that the NMW had consistently meant that those at the lowest end of the wage spectrum had seen relative increases rather than relative decreases in their wages.

The Labour Force Survey (LFS) was used by Dickens and Manning (2004a) who found a discernable effect on the wage distribution, but this was limited largely to the six or seven per cent of employees who were directly effected. Dickens and Manning (2004b) argues that as the NMW was set at a 'modest level' that it has had minimal impact on wage inequality and very small

spill-over effects. This analysis is based on their survey of care homes reported elsewhere (Machin et al., 2002).

1.2.2.5 Regional impact

Various authors have examined the impact at the regional level, and some of these have been mentioned. These studies all used the differences-in-differences approach. Stewart (2002a) found that there was considerable regional variation in wages across the UK, and hence variation in the impact of the NMW. Looking at the impact on employment growth in 140 areas of the country, Stewart found that this was not significantly lower in those areas where the NMW had a larger impact.

Rowland (2005) using a similar approach to Stewart, but looking at the US state of Oregon, produced similar results with the minimum wage having no significant impact on regional employment. Robinson (2002), also using the differences-in-differences regional approach, used the LFS to examine the impact of the NMW on the gender pay gap. This showed evidence for a reduction of the regional gender pay gap consistent with a positive impact of the NMW.

1.2.2.6 Impact on women

As mentioned in the regional section Robinson (2002) looked at the impact of the NMW on women's relative wages. Connolly and Gregory (2002) examined whether low paid women saw a reduction in working hours as a result of the NMW. They found, using the differences-in-differences approach, that there was no significant changes in women's hours in the first three years of the NMW.

1.2.2.7 Low-skilled and low-waged

Stewart (2004b), using longitudinal data from the British Household Panel Survey (BHPS), found no significant adverse employment effects. This result was also found to cover each of the four demographic groups covered (male and female adults and male and female youths).

Royalty (2000), using US data, examined whether or not increases in the minimum wage led to a reduction in fringe benefits, such as health insurance, retirement benefits and sick leave. The study found that increases in minimum wage levels led to a reduction in the provision or value of fringe benefits. However, another US study (Simon and Kaestner, 2003) did not find an impact. These fringe benefits are more likely to be determined by regulations in the UK, so this is less likely to be an issue.

Connolly (2002) examined the hypotheses that a NMW would lead to preferential recruitment of the better educated. The idea being that if employers could no longer pay low wages to the uneducated they would shift their focus to the more educated. A counter hypothesis was also put forward that there was no productivity advantage to using better educated people in low wage jobs and indeed there may be a negative impact. Using US data, Connolly showed that higher minimum wages were associated with better educated male workforce, but a less well educated female workforce.

1.2.2.8 *Impact on crime*

Hansen and Machin (2002) found an interesting impact of the levels of crime with a significant link between drops in crime at police force area level and the extent to which the area benefited from the introduction of the NMW.

1.2.2.9 *Impact on profitability*

A qualitative study by Neathey et al. (2004) found some employers in the hospitality and leisure sector reporting that they were unable to pass on the increased costs due to the NMW and this was impacting on profitability. Subsequently, Draca et al. (2006) found evidence from two data sources that employers in sectors with low wages were experiencing lower than expected profits. However, the same study also showed that there was no evidence that this lowered profitability was impacting on firm survival. Compared with other evidence for impacts of the NMW this appears to be to date the least ambiguous. This emphasises the importance of addressing this issue.

1.2.2.10 *Impact on low pay sectors*

Additionally, there have been a series of studies that look at specific low pay sectors either using qualitative or quantitative techniques. These sectors are:

- care homes
- hospitality and leisure
- textiles and clothing.

These are examined below.

1.2.2.10.1 *Care homes*

Many residential care home staff earn wages close to the NMW levels. Machin et al. (2002) examined the early impact on this sector as it was considered to be one where the NMW would bite hardest. They found that the NMW raised the wages of many of the sector's workers and hence changed the wage distribution. However, despite some evidence of employment and hours reductions there was no evidence of homes closures. An updated version of the 2002 paper was published as Machin and Wilson, 2004.

1.2.2.10.2 *Hospitality and leisure*

The Neathey et al. (2004) case study approach, already mentioned in other contexts, focused on the hospitality and leisure sector. This found some evidence of employers changing the way they trained and deployed low paid staff and some evidence of employers being forced to accept lower profits as increased pay costs could not be passed on to customers. Langlois and Lucas (2005) collected data from employers in the hospitality and retail sectors and found no negative impact on the employment of young people, and an under-utilisation of the development rate. This is mainly because vacancies are filled by part-time students.

1.2.2.10.3 *Textiles and clothing*

Another sector that has been judged as sensitive to the NMW is the textiles and clothing sector. This sector has been examined by Heyes and Gray (2001) which examines the responses of textiles employers in the West Yorkshire region. This found that the NMW had raised wages and that many

employers were actually paying over the NMW level in order to motivate and retain their staff. There was little evidence of labour shedding or increased use of youth or developmental pay rates. However, the NMW had prompted other adjustments, most notably a reduction in overtime payments and an increased requirement for multi-tasking.

1.2.3 Emergent consensus

It is of course always dangerous to talk of a consensus when economists are involved, however the following is an attempt to draw together the main themes from the literature reviewed above:

- It is clear that in certain sectors more workers benefit from NMW up-ratings than in other sectors, however even here employment effects have not been conclusively detected. In part, this may reflect headcount versus hours worked debates.
- Again it is clear that workers in certain regions are more likely to benefit from the NMW, however the evidence of a negative impact on employment in these regions is ambiguous.
- Last year, new research emerged showing an impact of the NMW on profitability, rather than employment or firm survival.

Therefore, there is a strong case for examining the interaction effects of sector and region, looking at a range of impacts including employment, hours worked, profitability, productivity as well as firm formation and survival.

1.3 DATA REVIEW

A wide range of potential data sources exist which would allow an examination at the regional level of the impact of the NMW. These include:

- Annual Survey of Hours and Earnings (ASHE)
- Experian's Regional Planning Service (RPS)
- Labour Force Survey (LFS)
- Annual Business Inquiry (ABI)
- VAT registration and de-registrations
- Small Business Service's SME data
- British Household Panel Survey (BHPS)

1.3.1 ASHE

The Annual Survey of Hours and Earnings (ASHE) is a relatively new source of data that can be used to inform analyses of low pay and the minimum wage.

A series of reports have been produced by the Office of National Statistics (ONS). The first (Daffin, 2004) looked at the pattern of pay between 1998 and 2003. Dobbs (2005) reported data from 1998 to 2004 and then again in Dobbs (2006) reported data from 1997 to 2005.

Reliable data is available at the regional, sectoral and occupational level for 2004 and 2005, with previous years generated from earlier New Earnings Survey data and hence slightly less reliable. Data is published in terms of the

median and average salaries as well as the deciles. The sector within region data will be particularly useful for the proposed modelling exercise.

1.3.2 RPS

Experian's Regional Planning Service (RPS) provides a proprietary twenty years time series at detailed regional and sectoral levels of employment, hours worked, productivity, profits and average wages paid. This will obviously be an important building block for the dataset that will have to be built for the analysis.

1.3.3 LFS

The Labour Force Survey (LFS) can in principle provide pay data at the regional and sectoral level. This data, particularly the hourly wages data, has been used in the past for minimum wage analyses (Skinner et al., 2002). However, the sample size means that this probably will be of less use at the regional and sectoral level.

1.3.4 ABI

Annual Business Inquiry (ABI) provides two linkable datasets at the regional and sectoral level one covers number of employees and hours worked the other turnover and profits data. This source is a major component of Experian's RPS dataset and as such will be vital for the modelling exercise.

1.3.5 VAT registration and de-registrations

The Small Business Service (SBS) publish details at the regional and sectoral level of VAT registration and de-registrations. This data is a generally accepted proxy for firm formation and collapse. This data when linked into the dataset will allow the examination of any effects of the NMW on firm formation and survival.

1.3.6 SME data

The Small Business Service (SBS) also produce a data series based on the Inter Departmental Business Register (IDBR) which can be used as an alternative source of data on firm formation and survival.

1.3.7 BHPS

The British Household Panel Survey (BHPS), although it contains useful wages data (eg Collier, 2000), is unlikely to be able to provide reliable enough data once disaggregated to the regional and sectoral level. Therefore, for the purposes of this exercise can safely be ignored.

1.3.8 What minimum wage measure?

Lemos (2004a) makes it clear that the choice of the minimum wage variable that is used in any analysis can influence the result of the analysis. Therefore, Lemos (2004b) offers a range of possible variables. As such it is necessary to make a conscious choice and test a range of variables in any analysis.

1.4 ISSUES AND APPROACHES

This part of the review examines the issues arising from the consensus impact of the NMW and the LPC's research brief. Then the review moves on to examine the data requirements and methodologies that can be adopted.

1.4.1 Issues arising from consensus

The consensus of research on the UK NMW, rather than research on minimum wages elsewhere, was outlined in Section 1.2.15. This is consistent with the brief we have from the LPC, which wants a regional and sectoral analysis of the employment, hours, profits, productivity and business start-ups and failures.

Looking at each of these in turn:

- **Employment** – it is probably settled that the NMW to date has not had a negative impact on employment, although this remains a theoretical concern and may not hold if the NMW increases significantly faster than average earnings
- **Hours worked** – it is unclear with differing evidence whether the NMW impacts negatively on hours worked, this makes the issue worthy of further attention
- **Profits** – last year the idea that some firms' profits might be negatively impacted by the NMW emerged from separate qualitative and quantitative studies, again making this worthy of further attention
- **Productivity** – measured in terms of output per hour worked may be the mediating factor between the hours worked and profits issues, hence the interest
- **Business start-up and failure** – continued business start-up and their success is seen as vital for the long term success of the UK economy, if the NMW is negatively impacting on profits it could also be impacting here.

1.4.2 Finding regional and sectoral impacts

The task then becomes one of building data sets that incorporate all these factors at a regional and sectoral level, information on wages, number of employees, hours worked, profitability, productivity, business formation, business survival for as long a run as the data sources allow.

In some cases, the data is only available at the regional or sectoral level and not at both, here the use of shift share approaches could be examined. In addition, it might be possible to include data on the regional and sectoral propensity to train employees.

Once such data set has been constructed, then a range of descriptive and analytical approaches can be adopted. The two main analytical techniques that might be of use are:

- differences-in-differences, and
- the use of dummy or indicator variables

These techniques are explored in more depth below.

1.4.3 Differences-in-differences

Studies which have examined the regional impact of the NMW within the UK have mainly used the differences-in-differences approach (eg Robinson 2005 and Stewart 2002b).

However, this approach is not without its critics, especially with the relatively short time series we will be using. Bertrand et al. (2002) point out some of the possible sources of error with the approach and care will have to be taken. One method of validating the results may be to collapse the data into large and small NMW increase years. Alternatively, if computationally possible, we could use the approach proposed by Bertrand et al. (2002), or more likely since it has been implemented within STATA the method suggested by Bruno (2004).

1.4.4 Regional and sectoral dummies

Another approach that could be used is a range of dummy variables to capture the regional and sectoral fixed effects (Judson and Owen, 1996). This approach probably requires longer time series than will be available. However, this is an alternative that may be worth exploring.

1.4.5 A measure of low pay

If we use the LFS or another data source with continuous wage data, it is possible to calculate the proportion of specific workforces at, or close to, the minimum wage. The ONS have produced new estimates using a new methodology and based on the ASHE data (Milton, 2004). However, this data only reliably applies to 2004 and 2005 when examining low pay at the regional and sectoral level.

This means that it might be necessary to adopt another approach based on the more detailed, and generally more reliable, estimates of the distribution of wages. This ASHE data has been generated back to 1998 and provides the mean, median and deciles. This implies that a direct proportion of the workforce at, or close to, the minimum wage is not possible using this basic ASHE data.

A compromise is to use the ratio of the ten per cent decile to the minimum wage level. If this ten per cent decile is below the minimum wage level we might have to use the 20 per cent decile. Another, reason for potentially adopting the 20 per cent decile is that often it appears that the ten per cent level is considered to be more unreliable by ONS. Some work using ASHE and the earlier NES (New Earnings Survey) data has used the ratio of the median salary to the minimum wage level. Although attractive, this does not pick up on the pattern at the low end of the income distribution as well.

2 Review of regional and industry earnings

2.1 REGIONAL DATA FROM ASHE

UK data sources provide a range of information for research of the National Minimum Wage (NMW). The two most frequently used are ASHE and the LFS. Each has advantages and flaws. ASHE provides good coverage of the wage distribution and disaggregation both by industry and geography. Its sample is large (1 per cent of the payroll), though time series analysis has been complicated by a major overhaul in 2004. The LFS is a smaller survey of employees available over a longer period. It has more limited coverage of earnings, but contains considerably more information on labour market and socio-economic characteristics.

In this chapter, we are interested in examining industry pay trends across regions and focus on ASHE workplace-based figures. As an initial illustration, we have looked at some key ratios for UK regions and industries. At the aggregate regional level, wide gaps in median wage rates are seen across the UK, with almost £5 per hour difference between highest (London) and lowest paying (North East) in 2005. The pattern of median pay shows the capital ahead by a wide margin at the top of the rankings, followed by the South East and the East of England, with other regions closely clustered below.

Table 2.1 Median pay in the UK's regions

£ per hour									Change since NMW (1999)	Rank 1998	Rank 2005
	1998	1999	2000	2001	2002	2003	2004	2005			
United Kingdom	7.29	7.59	7.85	8.20	8.54	8.86	9.26	9.56	26.0%		
North East	6.57	6.83	7.11	7.35	7.58	7.84	8.21	8.59	25.8%	12	12
North West	7.01	7.25	7.48	7.75	8.14	8.43	8.77	9.06	25.0%	4	5
Yorkshire & Humber	6.61	6.98	7.22	7.49	7.79	8.17	8.53	8.78	25.7%	11	10
East Midlands	6.63	6.86	7.05	7.40	7.76	8.12	8.45	8.82	28.6%	10	9
West Midlands	6.96	7.22	7.44	7.84	8.03	8.34	8.71	9.00	24.7%	5	6
South West	6.83	6.99	7.25	7.61	7.89	8.33	8.62	8.84	26.6%	7	8
East	7.23	7.54	7.80	8.13	8.34	8.73	9.08	9.31	23.4%	3	3
London	9.81	10.17	10.71	11.21	11.73	12.32	12.85	13.37	31.5%	1	1
South East	7.69	8.00	8.38	8.78	9.27	9.58	9.98	10.02	25.3%	2	2
Wales	6.70	6.93	7.19	7.43	7.65	7.94	8.56	8.74	26.1%	8	11
Scotland	6.91	7.24	7.41	7.82	8.21	8.38	8.72	9.15	26.4%	6	4
Northern Ireland	6.68	6.80	7.14	7.31	7.61	7.92	8.34	8.88	24.4%	9	7
NMW		3.60	3.60	3.70	4.10	4.20	4.50	4.85	34.7%		

Source: ASHE

Despite a convergence of north-south economic performance over recent years, there is limited evidence of a narrowing of median pay differentials (see table 2.1). Not only are the rankings largely unchanged over time, but also one of the biggest increases in hourly earnings was seen in the best paying region, London. There have, however, been tentative signs of change,

as the South East has lagged over recent years, while the East Midlands and Scotland have had median pay growth at a faster rate than nationally.

Table 2.2 Bottom decile pay in the UK's regions

£ per hour	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW	Rank 1998	Rank 2005
United Kingdom	3.98	4.16	4.33	4.50	4.75	4.98	5.18	5.35	28.7%		
North East	3.67	3.88	4.08	4.23	4.51	4.77	4.93	5.08	30.8%	12	12
North West	3.86	4.08	4.22	4.41	4.61	4.88	5.05	5.24	28.6%	6	7
Yorkshire and Humber	3.83	4.02	4.20	4.36	4.57	4.85	5.05	5.23	30.2%	8	8
East Midlands	3.81	3.99	4.13	4.34	4.57	4.77	5.01	5.20	30.4%	9	9
West Midlands	3.88	4.06	4.25	4.40	4.57	4.85	5.03	5.25	29.3%	5	6
South West	3.84	4.04	4.15	4.33	4.62	4.90	5.11	5.26	30.2%	7	5
East	4.00	4.21	4.35	4.57	4.74	4.96	5.19	5.34	26.9%	3	3
London	4.74	4.86	4.96	5.16	5.37	5.69	5.92	6.30	29.7%	1	1
South East	4.14	4.33	4.58	4.79	4.95	5.26	5.53	5.58	28.8%	2	2
Wales	3.75	3.94	4.09	4.32	4.53	4.77	5.04	5.20	32.1%	11	9
Scotland	3.94	4.11	4.25	4.47	4.70	4.95	5.09	5.29	28.8%	4	4
Northern Ireland	3.77	3.99	4.17	4.35	4.57	4.83	5.00	5.14	23.3%	10	11
NMW		3.60	3.60	3.70	4.10	4.20	4.50	4.85	34.7%		

Source: ASHE

Our main interest is the bottom end of the earnings distribution represented in ASHE by the bottom decile (see table 2.2). From the aggregate data, the regional ranking for this is similar to that for median pay, with earnings in London well ahead, the North East lowest and other regions bunched between.

Nonetheless, since 1999, the lowest paid workers have done relatively better than median ones in terms of percentage growth, with London, Wales and the North East rising fastest. Previously pay at the bottom end had not always kept up with average earnings, suggesting that the NMW has had an important impact in closing differentials.

But there is no region where the rise in the lowest pay band has quite matched the NMW itself (see table 2.2). In addition, there have also been rapid rises in the lowest decile in some regions, notably London, where the NMW has least bite, though the South East and East of England were below average.

Table 2.3 Ratio of lowest decile to median regional pay

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.55	0.55	0.55	0.55	0.56	0.56	0.56	0.56	2.2%
North East	0.56	0.57	0.57	0.58	0.60	0.61	0.60	0.59	4.0%
North West	0.55	0.56	0.57	0.57	0.57	0.58	0.58	0.58	2.8%
Yorkshire and Humber	0.58	0.58	0.58	0.58	0.59	0.59	0.59	0.60	3.5%
East Midlands	0.57	0.58	0.59	0.59	0.59	0.59	0.59	0.59	1.4%
West Midlands	0.56	0.56	0.57	0.56	0.57	0.58	0.58	0.58	3.7%
South West	0.56	0.58	0.57	0.57	0.59	0.59	0.59	0.60	2.9%
East	0.55	0.56	0.56	0.56	0.57	0.57	0.57	0.57	2.8%
London	0.48	0.48	0.46	0.46	0.46	0.46	0.46	0.47	-1.4%
South East	0.54	0.54	0.55	0.55	0.53	0.55	0.55	0.56	2.8%
Wales	0.56	0.57	0.57	0.58	0.59	0.60	0.59	0.59	4.8%
Scotland	0.57	0.57	0.57	0.57	0.57	0.59	0.58	0.58	1.9%
Northern Ireland	0.56	0.59	0.58	0.59	0.60	0.61	0.60	0.58	-1.4%

Source: ASHE

These issues can be further examined by calculating the ratio of the lowest pay decile to the regional median (see table 2.3). These figures show the capital as an outlier, with by far the widest spread between low earners and the median. There is evidence of a contraction of the distribution in all regions bar Northern Ireland and London, with Wales, the North East and the West Midlands showing the biggest narrowing of bottom decile and median.

There is little sign of convergence in low pay bands between regions, despite the existence of fixed nominal NMW. The ratio of the bottom decile in each region to the national pay median highlights this (table 2.4). The low paid in the South West, Wales and the East Midlands benefit the most on this measure and the East of England least.

Another measure of the impact of the minimum wage can be derived from the ratio of the lowest pay decile to the NMW. This is a measure of the potential bite that the NMW has on the lowest paid, with the North East most exposed and London least. The largest decline in this ratio was seen in the East of England, followed by the South East, Scotland and Northern Ireland. By contrast, relatively poorly paid regions such as the North East and Wales saw the least significant narrowing at the bottom end of the scale.

Table 2.4 Ratio of bottom decile to UK median pay

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.55	0.55	0.55	0.55	0.56	0.56	0.56	0.56	2.2%
North East	0.50	0.51	0.52	0.52	0.53	0.54	0.53	0.53	3.8%
North West	0.53	0.54	0.54	0.54	0.54	0.55	0.55	0.55	2.0%
Yorkshire and Humber	0.53	0.53	0.53	0.53	0.54	0.55	0.55	0.55	3.3%
East Midlands	0.52	0.53	0.53	0.53	0.54	0.54	0.54	0.54	3.5%
West Midlands	0.53	0.54	0.54	0.54	0.54	0.55	0.54	0.55	2.6%
South West	0.53	0.53	0.53	0.53	0.54	0.55	0.55	0.55	3.4%
East	0.55	0.55	0.55	0.56	0.56	0.56	0.56	0.56	0.7%
London	0.65	0.64	0.63	0.63	0.63	0.64	0.64	0.66	2.9%
South East	0.57	0.57	0.58	0.58	0.58	0.59	0.60	0.58	2.2%
Wales	0.51	0.52	0.52	0.53	0.53	0.54	0.54	0.54	4.8%
Scotland	0.54	0.54	0.54	0.55	0.55	0.56	0.55	0.55	2.2%
Northern Ireland	0.52	0.53	0.53	0.53	0.54	0.54	0.54	0.54	2.2%

Source: ASHE

In summary, the NMW has had a more than proportionate upward impact on the bottom end of the wage distribution across the country. Changes between regions are less obvious to identify in the aggregate data. They seem to be as influenced by economic conditions, as much as by exposure to the NMW, with the strongest improvements not seen in those regions where pay is lowest.

Table 2.5 Ratio of bottom decile to NMW

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	1.15	1.20	1.22	1.16	1.19	1.15	1.10	-4.4%
North East	1.08	1.13	1.14	1.10	1.14	1.10	1.05	-2.9%
North West	1.13	1.17	1.19	1.13	1.16	1.12	1.08	-4.6%
Yorkshire and Humber	1.12	1.17	1.18	1.12	1.16	1.12	1.08	-3.4%
East Midlands	1.11	1.15	1.17	1.12	1.14	1.11	1.07	-3.2%
West Midlands	1.13	1.18	1.19	1.12	1.16	1.12	1.08	-4.0%
South West	1.12	1.15	1.17	1.13	1.17	1.14	1.08	-3.3%
East	1.17	1.21	1.24	1.16	1.18	1.15	1.10	-5.8%
London	1.35	1.38	1.39	1.31	1.36	1.32	1.30	-3.8%
South East	1.20	1.27	1.29	1.21	1.25	1.23	1.15	-4.4%
Wales	1.09	1.13	1.17	1.10	1.14	1.12	1.07	-2.0%
Scotland	1.14	1.18	1.21	1.15	1.18	1.13	1.09	-4.4%
Northern Ireland	1.11	1.16	1.18	1.11	1.15	1.11	1.06	-4.4%

Source: ASHE

2.2 ASHE DATA FOR LOW PAY SECTORS

At the aggregate level, the low paid have done slightly better than the median worker since the introduction of the NMW. But does this conceal sector trends that are less favourable?

Previous work for the LPC has identified certain low pay sectors at the UK level. Initial inspection of ASHE data indicates that these are the sectors to concentrate on for regional analysis. According to the LPC definition, they are:

Low-pay Sector	SIC2003
Agriculture Forestry and Fishing	A (1000-2999) + B (5000-5999)
Hospitality	55
Residential Social Care	8531
Textiles	17, 18, 193
Hairdressing	9302, 9304
Retail	52
Security	746
Cleaning	747
Childcare	SOC code 612

There are limitations in mapping these to the ASHE data. Industry coverage extends only to 2-digit SIC industries, so 4-digit definitions cannot be matched. In this chapter, we have used the closest possible 2-digit approximation in this work, but often the low pay component is only a small fraction of the aggregate division, which otherwise covers a huge range of skills and pay.

This mismatch is chiefly a problem for business services (SIC 74) and other (mainly public) services (SIC 85, 93). Despite these limitations, there is good overlap and coverage in the two sectors that account for around three-quarters of all low paid jobs – retail (52) and hospitality (55).

At the regional level, there are also sample size issues in many ASHE 2-digit sectors (particularly in textiles and agriculture). This results in a plethora of missing or insecure data points. At a later point, it may be worth investigating SOC data as an alternative to SICs, although aggregation and sample size will likely remain an issue.

2.2.1 Agriculture, Forestry and Fishing

Unfortunately, at the 2-digit sectoral results were patchy, so we have presented just the agricultural (A or SIC 01,02, excluding fishing 05) sample here. Median values are available for all regions, except the North East and London, but there are many missing values for the lower decile, with only the East Midlands, East of England, the South East and Scotland complete (see table 2.6)².

The lowest decile of agricultural workers' pay has risen modestly relative to the industry median at both national and regional level. This is mirrored in other regions, except for the East Midlands and Scotland where the trend has been sharply in the opposite direction, with bottom decile pay very sluggish.

Table 2.6 Ratio of bottom decile pay to regional median for agriculture

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.72	0.73	0.74	0.72	0.73	0.74	0.74	0.75	2.8%
North East									
North West									
Yorkshire and Humber								0.76	
East Midlands	0.75	0.74	0.75	0.71	0.76	0.72	0.73	0.70	-1.0%
West Midlands									
South West								0.77	
East	0.73	0.73	0.69	0.74	0.74	0.71	0.76	0.73	2.0%
London									
South East	0.73	0.75	0.78	0.76	0.71	0.73	0.75	0.72	6.7%
Wales									
Scotland	0.68	0.81	0.79	0.81	0.80	0.77	0.77	0.72	-12.4%

Source: ASHE

Most regions have lowest decile ratios to the NMW of more than 1.0 (albeit the data are rather erratic), but none have kept pace with post-NMW upgrades except for the South East. In Scotland, the lowest decile pay has collapsed from a relatively high level at the start of the sample to only just above the NMW by 2005.

Table 2.7 Ratio of bottom decile pay to NMW for agriculture

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	1.11	1.15	1.16	1.13	1.15	1.11	1.07	-2.9%
North East								
North West								
Yorkshire and The Humber							1.09	
East Midlands	1.15	1.15	1.10	1.18	1.10	1.13	1.07	-6.6%
West Midlands								
South West							1.05	
East	1.11	1.13	1.22	1.13	1.11	1.11	1.07	-3.7%
London								
South East	1.14	1.22	1.22	1.17	1.14	1.21	1.15	0.7%
Wales								
Scotland	1.25	1.23	1.25	1.21	1.16	1.11	1.03	-17.3%

Source: ASHE

² Note that sector comparison is at the GB level as these figures are not included in ASHE.

2.2.2 Textiles

Sample problems were even more acute in these declining manufacturing sectors. From the published ASHE data, little insight was provided at 2-digit level for SIC 17,18 and 19, though there was limited information on the UK, North West, East Midlands and Yorkshire & the Humber at a higher level (SIC DB, excludes SIC 19).

Figures show the sector's lowest decile gaining ground on the median at the national level and in the East Midlands. But within North West and Yorkshire & the Humber, the lowest paid have done significantly less well than median workers. Convergence of the bottom deciles on the NMW has also been more pronounced in these two regions, with Yorkshire & the Humber at parity in 2005.

Table 2.8 Ratio of bottom decile pay to regional median for textiles

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.63	0.66	0.65	0.65	0.66	0.66	0.66	0.67	1.4%
North East									
North West	0.61	0.66	0.65	0.68	0.63	0.64	0.65	0.59	-10.5%
Yorkshire and Humber	0.68	0.70	0.70	0.60	0.65	0.67	0.66	0.66	-6.8%
East Midlands	0.65	0.67	0.66	0.68	0.70	0.72	0.70	0.70	4.6%
West Midlands									
South West									
East									
London									
South East									
Wales									
Scotland									

Source: ASHE

Table 2.9 Ratio of bottom decile pay to NMW for textiles

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	1.06	1.11	1.09	1.05	1.07	1.04	1.04	-1.7%
North East								
North West	1.08	1.11	1.10	1.01	1.09	1.03	1.03	-4.2%
Yorkshire and Humber	1.03	1.07	1.05	1.05	1.09	1.08	1.00	-3.0%
East Midlands	1.05	1.11	1.09	1.06	1.07	1.04	1.05	0.4%
West Midlands								
South West								
East								
London								
South East								
Wales								
Scotland								

Source: ASHE

2.2.3 Hairdressing

This sector is defined at 4-digit level by the LPC and the ASHE 2-digit breakdown (SIC 93 – other service activities) includes many other industries where low pay is not necessarily an issue. Moreover, while there is median pay information for all regions bar Wales, bottom decile results are only available for the North West, East and West Midlands, and London and the South East in a consistent time series.

Table 2.10 Ratio of bottom decile pay to regional median for other (mainly private) services

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.67	0.71	0.68	0.68	0.67	0.67	0.68	0.70	-0.4%
North East								0.81	
North West	0.65	0.69	0.69	0.69	0.69	0.67	0.70	0.75	7.9%
Yorkshire and Humber									
East Midlands	0.66	0.72	0.73	0.76	0.71	0.71	0.71	0.73	2.6%
West Midlands	0.76	0.70	0.74	0.74	0.69	0.75	0.74	0.73	4.4%
South West								0.72	
East								0.70	
London	0.67	0.65	0.61	0.58	0.65	0.60	0.59	0.59	-8.8%
South East	0.61	0.67	0.62	0.67	0.60	0.68	0.64	0.69	1.8%
Wales									
Scotland								0.73	

Source: ASHE

At the UK level, pay in the bottom decile has not risen quite as sharply as the sector median. But this is mainly the influence of London, where the bottom pay band has fallen well behind the median – all other regions had a positive trend.

In general the lowest paid workers in this sector earn very close to the NMW and regional differences are modest. Nationally and in London and the South East, pay in the bottom decile has more than kept up with upratings on average, but the reverse is true in the North West and the North East.

Table 2.11 Ratio of bottom decile pay to NMW for other (mainly private) services

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	1.00	1.02	1.04	1.02	1.03	1.01	1.00	0.4%
North East							1.00	
North West	1.02	1.02	1.00	1.03	1.03	1.05	1.00	-1.5%
Yorkshire & Humber								
East Midlands	1.04	1.00	1.09	1.00	1.01	1.00	1.01	-2.8%
West Midlands	1.00	0.94	1.02	1.00	1.06	1.00	1.00	0.0%
South West							1.03	
East							1.00	
London	0.99	1.06	1.08	1.08	1.05	1.04	1.03	4.3%
South East	1.01	1.03	1.11	1.03	1.14	1.07	1.03	1.9%
Wales								
Scotland							1.01	

Source: ASHE

2.2.4 Residential Social Care

As for hairdressing, the 4-digit definition cannot be precisely mapped against ASHE figures. Health and social work (SIC 85) is a particularly large and disparate sector, where median pay is above the UK all-industry level, but there are no sample issues in the data for the lowest decile in this sector.

Table 2.12 Ratio of bottom decile pay to regional median for health

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.55	0.56	0.55	0.56	0.56	0.58	0.59	0.58	3.1%
North East	0.54	0.55	0.57	0.54	0.61	0.57	0.60	0.59	6.1%
North West	0.55	0.56	0.54	0.56	0.56	0.58	0.59	0.60	6.1%
Yorkshire & Humber	0.55	0.55	0.54	0.56	0.56	0.58	0.58	0.59	7.7%
East Midlands	0.59	0.59	0.57	0.58	0.61	0.60	0.61	0.60	2.4%
West Midlands	0.53	0.57	0.56	0.56	0.56	0.58	0.59	0.58	1.8%
South West	0.60	0.61	0.58	0.61	0.64	0.62	0.61	0.62	2.4%
East	0.60	0.60	0.59	0.60	0.60	0.61	0.62	0.62	2.5%
London	0.56	0.58	0.55	0.54	0.54	0.55	0.56	0.54	-7.7%
South East	0.60	0.62	0.61	0.61	0.60	0.62	0.62	0.63	2.1%
Wales	0.55	0.59	0.59	0.59	0.60	0.61	0.61	0.60	1.1%
Scotland	0.57	0.57	0.56	0.55	0.55	0.58	0.58	0.58	1.2%

Source: ASHE

At the UK level, health sector pay has risen sharply, with the lowest decile benefiting in relative terms in most places. Regionally, London is the most interesting, with bottom decile pay growth falling sharply behind both the sector and the regional medians. Elsewhere, differentials have generally narrowed. Lowest decile pay has outstripped even the strong rises in the NMW since 1999 – except for London, Eastern and Scotland, where wages were relatively high in the first place.

Table 2.13 Ratio of bottom decile pay to NMW for health

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	1.15	1.19	1.23	1.16	1.22	1.22	1.17	2.5%
North East	1.06	1.12	1.10	1.15	1.14	1.19	1.11	4.7%
North West	1.12	1.15	1.22	1.13	1.19	1.16	1.15	2.6%
Yorkshire & Humber	1.08	1.11	1.16	1.09	1.17	1.17	1.13	4.3%
East Midlands	1.05	1.09	1.08	1.07	1.13	1.13	1.08	3.3%
West Midlands	1.11	1.16	1.19	1.10	1.17	1.17	1.13	2.1%
South West	1.11	1.16	1.22	1.17	1.21	1.19	1.13	1.8%
East	1.21	1.22	1.25	1.17	1.24	1.24	1.18	-2.5%
London	1.56	1.60	1.61	1.51	1.57	1.51	1.44	-8.0%
South East	1.16	1.25	1.28	1.23	1.29	1.24	1.24	6.8%
Wales	1.11	1.13	1.21	1.14	1.18	1.20	1.15	3.0%
Scotland	1.21	1.24	1.26	1.19	1.23	1.23	1.20	-0.3%

Source: ASHE

2.2.5 Cleaning and Security

This is a 3-digit definition for a sub-sector that, similar to health, includes many other (often well-paid) groups. Samples are not an issue for SIC 74 (other business activities) and a full range of regional readings for the pay distribution is available.

Table 2.14 Ratio of bottom decile pay to regional median for other business services

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.51	0.52	0.58	0.56	0.57	0.56	0.53	0.54	3.3%
North East	0.58	0.59	0.62	0.62	0.60	0.67	0.62	0.61	3.5%
North West	0.54	0.56	0.61	0.62	0.62	0.59	0.57	0.59	5.1%
Yorkshire & Humber	0.55	0.58	0.63	0.62	0.62	0.61	0.60	0.64	10.0%
East Midlands	0.59	0.63	0.65	0.69	0.68	0.66	0.63	0.62	-1.2%
West Midlands	0.53	0.57	0.61	0.59	0.62	0.62	0.63	0.62	9.3%
South West	0.60	0.59	0.66	0.66	0.64	0.61	0.60	0.58	-1.9%
East	0.53	0.54	0.63	0.59	0.62	0.61	0.58	0.60	9.6%
London	0.44	0.43	0.44	0.44	0.43	0.42	0.43	0.41	-4.3%
South East	0.52	0.55	0.59	0.57	0.55	0.54	0.56	0.57	3.0%
Wales	0.55	0.57	0.62	0.62	0.62	0.61	0.62	0.63	10.1%
Scotland	0.55	0.56	0.63	0.61	0.62	0.62	0.59	0.58	3.4%

Source: ASHE

Data show that the lowest paid decile has generally seen higher wage growth than both UK and regional medians for the sector. The most interesting exception appears to be London, where the bottom end of the pay distribution has lost considerable ground since 1999. Against this, the lowest paid in this industry have done relatively well in Yorkshire & the Humber and Wales. All regions have seen a decline towards the NMW (except Wales), though the change is most pronounced in the capital.

Table 2.15 Ratio of bottom decile pay to NMW for other business services

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	1.13	1.21	1.21	1.16	1.14	1.14	1.08	-4.4%
North East	1.11	1.11	1.18	1.04	1.15	1.06	1.01	-8.8%
North West	1.08	1.11	1.22	1.12	1.09	1.11	1.06	-2.1%
Yorkshire and Humber	1.08	1.09	1.10	1.08	1.06	1.08	1.06	-2.0%
East Midlands	1.13	1.17	1.17	1.12	1.08	1.08	1.04	-8.2%
West Midlands	1.07	1.14	1.19	1.10	1.11	1.11	1.04	-3.1%
South West	1.10	1.20	1.19	1.13	1.09	1.18	1.09	-0.7%
East	1.10	1.21	1.22	1.19	1.11	1.13	1.08	-1.6%
London	1.37	1.43	1.43	1.37	1.34	1.39	1.23	-10.5%
South East	1.20	1.28	1.26	1.19	1.17	1.29	1.19	-0.8%
Wales	1.02	1.13	1.15	1.09	1.04	1.06	1.03	1.0%
Scotland	1.14	1.22	1.19	1.16	1.14	1.11	1.05	-7.9%

Source: ASHE

2.2.6 Hospitality

This sector is second only to retail in importance for low pay jobs and neatly fits a standard 2-digit SIC definition. Despite this, published ASHE data is less complete than hoped for this industry, with a lack of results for the Midlands, North West, Wales and Yorkshire & the Humber before 2005. With the LPC's help, however, we were able to fill in the gaps for this key sector from the raw data.

Table 2.16 Ratio of bottom decile pay to regional median for hospitality

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.78	0.83	0.83	0.81	0.83	0.80	0.82	0.82	-1.6%
North East	0.86	0.86	0.91	0.86	0.87	0.83	0.86	0.82	-4.4%
North West	0.83	0.88	0.90	0.87	0.88	0.87	0.87	0.86	-2.4%
Yorkshire & Humber	0.87	0.93	0.94	0.91	0.91	0.88	0.86	0.88	-4.8%
East Midlands	0.85	0.90	0.95	0.92	0.93	0.93	0.88	0.89	-1.5%
West Midlands	0.90	0.90	0.90	0.93	0.89	0.86	0.85	0.81	-9.9%
South West	0.79	0.87	0.85	0.83	0.86	0.82	0.82	0.82	-5.4%
East	0.74	0.81	0.81	0.79	0.85	0.82	0.83	0.87	8.0%
London	0.67	0.68	0.72	0.67	0.69	0.71	0.68	0.75	10.3%
South East	0.75	0.80	0.76	0.74	0.81	0.76	0.78	0.80	1.1%
Wales	0.85	0.94	0.92	0.89	0.92	0.85	0.87	0.88	-6.9%
Scotland	0.78	0.88	0.89	0.83	0.90	0.84	0.83	0.82	-7.1%

Source: ASHE

Figures show the lowest paid generally losing ground to median workers, both by region and against the UK. But the trend is split. Differentials for the lowest paid workers improved in London, the South East and the East of England, while they have slipped behind elsewhere. In Eastern and the capital, wages also kept pace with the changes in the NMW, though much of the drop in other regions seems to have occurred in the final year of the data and may reflect a greater use of migrant workers.

Also worth noting is that only in London did pay in the bottom decile's hourly wage rates match the NMW in 2005, with regions such as the North East significantly below on this measure. Hospitality is the only one of the low pay sectors where this is the case, though again this is a recent effect, as only the North East lagged behind the NMW historically.

Table 2.17 Ratio of bottom decile pay to NMW for hospitality

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.97	1.00	1.00	1.00	1.00	1.00	0.93	-4.6%
North East	0.90	0.98	0.98	0.97	0.98	0.96	0.85	-5.8%
North West	0.97	1.02	1.02	1.01	1.02	1.00	0.93	-4.6%
Yorkshire & Humber	1.02	1.05	1.05	1.05	1.05	1.00	0.93	-9.0%
East Midlands	0.97	1.05	1.05	1.02	1.05	1.00	0.93	-4.0%
West Midlands	1.00	1.06	1.06	1.06	1.06	1.00	0.93	-7.2%
South West	1.00	1.00	1.00	1.00	1.00	1.00	0.93	-7.0%
East	0.98	1.00	1.00	1.00	1.01	1.00	0.99	1.3%
London	1.00	1.04	1.03	1.00	1.03	1.01	1.00	0.0%
South East	1.00	1.00	1.00	1.00	1.02	1.00	0.94	-5.5%
Wales	0.98	1.01	1.01	1.00	1.01	1.00	0.93	-5.4%
Scotland	0.97	1.00	1.00	1.00	1.00	1.00	0.93	-4.6%

Source: ASHE

2.2.7 Retail

Retail is the most important low pay employer, accounting for around half of all jobs, and the sector is clearly defined at the 2-digit level. There is full data coverage on the pay distribution across regions in the ASHE data. Despite the very strong growth in retail demand over recent years, median sector pay has lagged developments in many other industries (London aside). But the distribution of pay has generally narrowed, thanks to strong growth at the lower end of the scale. The chief exception is again London, where median pay for the capital's retail staff has been remarkably buoyant and forced down the ratio.

Table 2.18 Ratio of bottom decile pay to regional median for retail

	1998	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	0.76	0.76	0.79	0.78	0.81	0.79	0.80	0.81	6.4%
North East	0.79	0.79	0.82	0.79	0.85	0.82	0.84	0.87	10.7%
North West	0.74	0.74	0.77	0.76	0.80	0.77	0.81	0.82	11.0%
Yorkshire and Humber	0.80	0.78	0.81	0.77	0.79	0.80	0.82	0.83	7.4%
East Midlands	0.78	0.76	0.80	0.76	0.80	0.78	0.79	0.82	7.3%
West Midlands	0.80	0.77	0.80	0.79	0.82	0.81	0.82	0.86	10.5%
South West	0.76	0.77	0.83	0.80	0.81	0.79	0.82	0.84	8.8%
East	0.75	0.74	0.77	0.76	0.80	0.79	0.78	0.81	9.8%
London	0.77	0.80	0.81	0.82	0.86	0.83	0.78	0.74	-7.0%
South East	0.73	0.71	0.73	0.74	0.76	0.73	0.77	0.79	10.7%
Wales	0.76	0.77	0.81	0.81	0.83	0.83	0.76	0.84	9.5%
Scotland	0.78	0.76	0.80	0.79	0.82	0.80	0.83	0.84	11.4%

Source: ASHE

Sector comparisons against the NMW show downward convergence of the lowest decile in all regions. The shift has been most marked in London, though it remains the best paid of all regions in this sector. Almost everywhere else, the bottom decile had reached parity with the NMW by 2005.

Table 2.19

	1999	2000	2001	2002	2003	2004	2005	Change since NMW
UK	1.05	1.09	1.09	1.05	1.06	1.03	1.00	-4.5%
North East	1.00	1.05	1.05	1.02	1.04	1.01	1.00	-0.4%
North West	1.02	1.09	1.07	1.03	1.04	1.02	1.00	-1.9%
Yorkshire & Humber	1.03	1.08	1.07	1.04	1.03	1.02	1.00	-2.9%
East Midlands	1.04	1.08	1.08	1.05	1.05	1.03	1.00	-3.6%
West Midlands	1.03	1.06	1.08	1.02	1.04	1.02	1.00	-3.2%
South West	1.03	1.05	1.05	1.03	1.02	1.02	1.00	-2.5%
East	1.06	1.08	1.08	1.05	1.06	1.03	1.00	-5.3%
London	1.18	1.21	1.21	1.17	1.17	1.06	1.07	-9.9%
South East	1.07	1.11	1.14	1.08	1.09	1.06	1.02	-5.2%
Wales	1.01	1.07	1.05	1.00	1.02	1.01	0.98	-2.5%
Scotland	1.02	1.06	1.07	1.02	1.04	1.01	1.00	-2.1%

Source: ASHE

2.3 SUMMARY

From this brief overview of the ASHE data, there is a clear indication that the NMW has had an important impact on the pay distribution across the UK. In general, the lowest decile has seen pay rise faster than the median since the turn of the decade, though in few cases has the rise been as rapid as upgrades in the NMW.

Splitting by industry across regions leads to sample problems below the 2-digit SIC level. Nonetheless, this still allows us to investigate the two industries that account for the bulk of low pay in the UK – retail and hospitality. Retail has followed the same broad pay pattern as other sectors, though London has performed relatively badly in contrast to aggregate wage trends. By contrast, hospitality, which is already one of the poorer paying industries, has seen earnings for its bottom decile slip behind median wage growth outside the south of England.

Of the other industries, only health and other business activities yielded a full dataset for the GORs. It should be noted, however, that the low paying components of both are distinct 3-digit sub-sectors within highly disparate aggregates. In the health sector, the trend outside London has been for strong pay growth in the lower decile, while business services has seen more subdued performance and varied

While the effects of the NMW on pay differentials are clear, the purpose of this research is to test the impact on other variables such as employment, profits and start-ups. This initial review suggests that differences between industrial performance across the UK's regions are worth further investigation. However, data considerations hint that retail and hospitality are likely to provide the most promising for empirical work.

3 Estimation results

3.1 APPROACH

Our general approach is to examine economic variables (employment, profits, VAT registrations) by industry and by region, and to test for the impact of both the initial introduction and the subsequent upratings of the NMW on the wage bill simultaneously. The dependent variables are the industry shares of regional totals, while the potential impact of the NMW on the average wage bill is derived from the ASHE data.

3.2 QUANTIFYING THE IMPACT OF THE NMW ACROSS REGIONS

In undertaking econometric analysis, a key issue is identifying the different effect that changes in the NMW has had across the UK (see section 1.4.5). The previous chapter identified wide pay differentials across industries and regions, and we need a measure of the impact of the NMW to feed into any testable model of its effects.

But calculating the proportion of workers potentially affected by the NMW at any point in time is problematic. ASHE wage distributions do not allow a precise reading, as only the deciles are reported and the NMW bite point often lies below the lowest of these. Over a number of years, the ONS has developed a methodology for assessing the numbers of low paid using statistics from the LFS³. However, the results are only available by industry or by region and there are issues of comparability for the pre-ASHE years.

Previous studies have used various proxy measures of low pay (see chapter 1) such as the ratio of the lowest decile (or bottom two deciles) to median earnings. We experimented with similar formulations, but the results were unsatisfactory. Moreover, this method does not allow an integrated analysis of both the initial introduction and subsequent upgrades of the NMW. With the Low Pay Commission, we also investigated the possibility of using ASHE data on earnings, though this proved too difficult to complete within the deadlines.

As a result, we returned to the ASHE data and attempted to find estimates of the missing points of the wage distribution for each region's industry. This involved interpolating between the higher deciles and then linearly extrapolating the missing centiles before the first decile.

From these figures, we were able to gauge the bite of the NMW in each region and how this has changed over time. For instance, in 1999, about 9 per cent of workers were paid below the NMW in retail nationwide, but the

³ See <http://www.statistics.gov.uk/pdfdir/pay1006.pdf> for the latest figures and the updated methodology in http://www.statistics.gov.uk/articles/labour_market_trends/LFS_lowpay.pdf

proportion was 16 per cent in the North East and zero in London. By 2005, successive NMW upgrades had pushed the UK figure almost to 20 per cent, with 27 per cent low paid in the North East and 7 per cent in the capital.

We used these estimates in our NMW impact variable. This is calculated as the new NMW less the estimated wage summed for all centiles below the new NMW level, expressed relative to the total wage bill. This measure is the same as the area above the wage distribution and below the NMW (A1-C-B1 or A2-C-B2) to the left of the point where this new NMW bites (B2 or B1 on Figure 3.1). The ratio can be interpreted as the percentage impact on the wage bill.

Figure 3.1: Estimating the Potential Impact of the NMW Hospitality in the North West and the North East

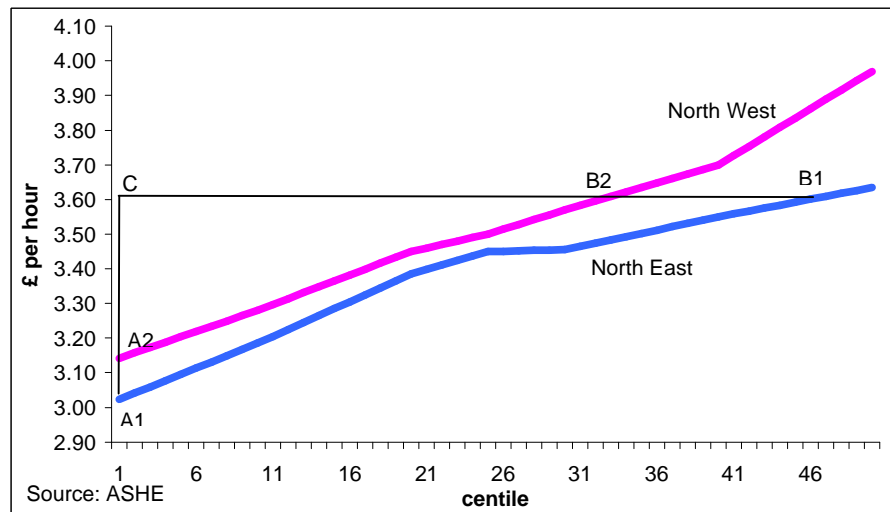


Figure 3.1 shows an example for the hospitality sector in the North East and North West. The pink and blue lines show the estimated wage distribution from ASHE data. Note that any point to the left of the 10th centile (lowest decile) is a linear extrapolation not an actual figure⁴.

The wage distribution in the North East is consistently lower than in the North West. In addition, the estimated potential impact of the NMW for the North East is the area A1-B1-C relative to the total wage bill (that is the mean multiplied by 100). The equivalent for the North West is area A2-B2-C. The larger area implies a potentially bigger NMW effect for the North East, reinforced by lower mean earnings. Table 3.2 summarises the calculations, showing a 2.2 per cent impact on the wage bill in the North East, compared with only 1.3 per cent in the North West.

Tables 3.1-3.2 give illustrative figures for the two main low pay sectors retail and hospitality and figure 3.2 shows the UK values graphically. As hospitality is generally the lowest paid sector, it is not surprising that the NMW has a bigger percentage impact on sector earnings. Our estimates also confirm that the 2001 uprating (proportionally the largest) produced a significant spike in the pay bill for both industries. In addition, the more

⁴ Regional relativities are not particularly sensitive to the extrapolation method used, as long as the relative wage distributions do not show large changes below the first decile.

recent rises (particularly the 2003-04 changes) produced a similar cumulative impact in hospitality and an even more marked upturn in retail.

Figure 3.2 Estimated Impact of NMW on UK average wages (assuming full compliance)

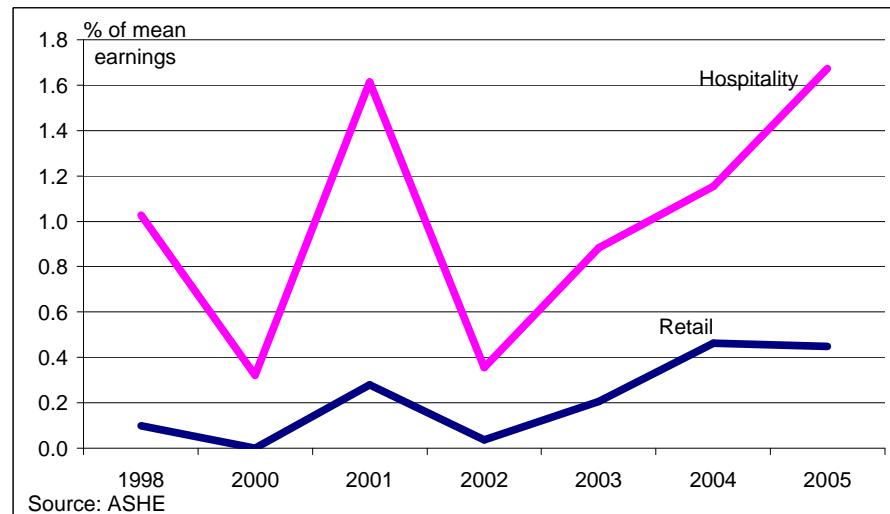


Table 3.1: Impact of the NMW on average earnings in retail (assuming full compliance)

% of average pay	1998	2000	2001	2002	2003	2004	2005
UK	0.10	0.00	0.28	0.04	0.21	0.46	0.45
North East	0.36	0.08	0.61	0.16	0.29	0.86	0.59
North West	0.17	0.00	0.35	0.04	0.29	0.58	0.47
Yorkshire and Humber	0.11	0.00	0.35	0.04	0.36	0.63	0.48
East Midlands	0.11	0.00	0.28	0.01	0.23	0.52	0.45
West Midlands	0.14	0.06	0.37	0.15	0.36	0.63	0.51
South West	0.25	0.02	0.59	0.08	0.49	0.63	0.50
East	0.06	0.00	0.32	0.03	0.15	0.45	0.41
London	0.00	0.00	0.00	0.00	0.00	0.23	0.11
South East	0.03	0.00	0.05	0.00	0.12	0.27	0.31
Wales	0.27	0.00	0.62	0.27	0.57	0.59	0.76
Scotland	0.12	0.03	0.35	0.14	0.32	0.80	0.51

Source: ASHE

This method has a number of flaws as a direct measure of the impact of the NMW. It assumes complete compliance with the prevailing NMW rate, which is unrealistic. Also, we match the April ASHE figures for any particular year to the NMW uprating. As a result, there is no allowance for wage increases between the ASHE point (April) and the NMW rise (generally October). For the initial introduction in the spring of 1999, we averaged 1998 and 1999 ASHE surveys.

But the measure is a proxy to test the potential impact of the NMW on employment and other variables, not a precise estimate. Furthermore, the time series look intuitively sensible. The regional ranking of effects is in line with pay differences, with the lowest impact on London and the highest usually in the North East (see figures 3.3 and 3.4). In the absence of a better benchmark, we have used this variable in all the subsequent estimation.

Table 3.2: Impact of the NMW on average earnings in hospitality

% of average pay	1998	2000	2001	2002	2003	2004	2005
UK	1.03	0.32	1.61	0.36	0.88	1.15	1.67
North East	2.20	0.61	2.49	0.58	1.42	2.96	3.65
North West	1.27	0.39	2.21	0.67	1.25	1.68	2.14
Yorkshire and Humber	1.26	0.46	2.43	0.45	1.28	1.80	2.77
East Midlands	1.69	0.49	2.06	0.84	1.21	1.55	2.75
West Midlands	1.33	0.39	2.09	0.41	0.96	1.47	1.40
South West	0.96	0.36	1.69	0.33	0.91	1.10	1.77
East	0.79	0.29	1.36	0.36	0.70	1.00	0.80
London	0.52	0.10	0.73	0.32	0.44	0.66	0.44
South East	0.83	0.30	1.22	0.30	0.54	0.87	1.35
Wales	1.27	0.57	2.40	0.73	1.27	2.14	2.34
Scotland	1.22	0.40	1.86	0.45	0.98	1.33	1.36

Source: ASHE

Figure 3.3: Estimated Impact of NMW on average wages in retail (assuming full compliance)

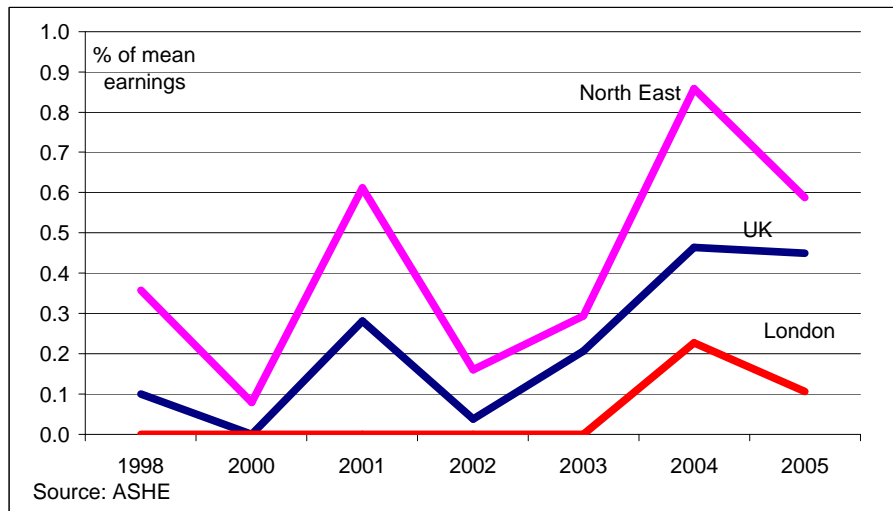
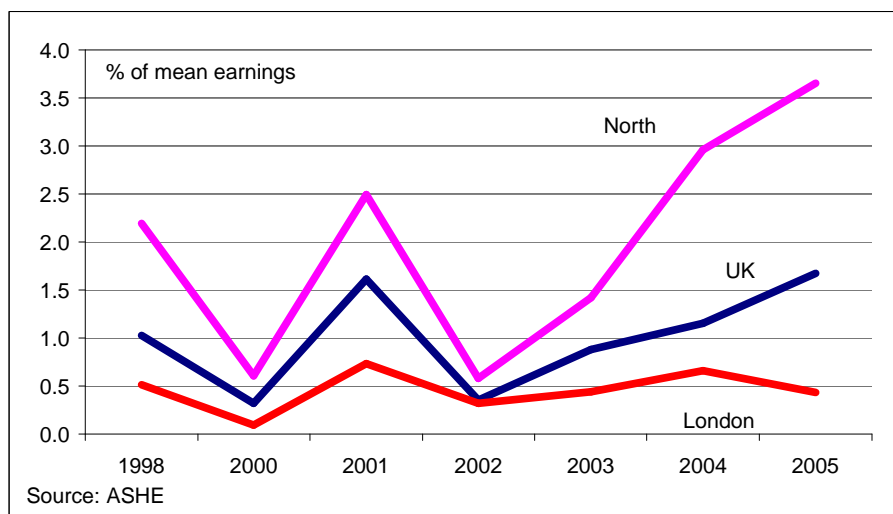


Figure 3.4 Estimated Impact of NMW on average wages in hospitality (assuming full compliance)

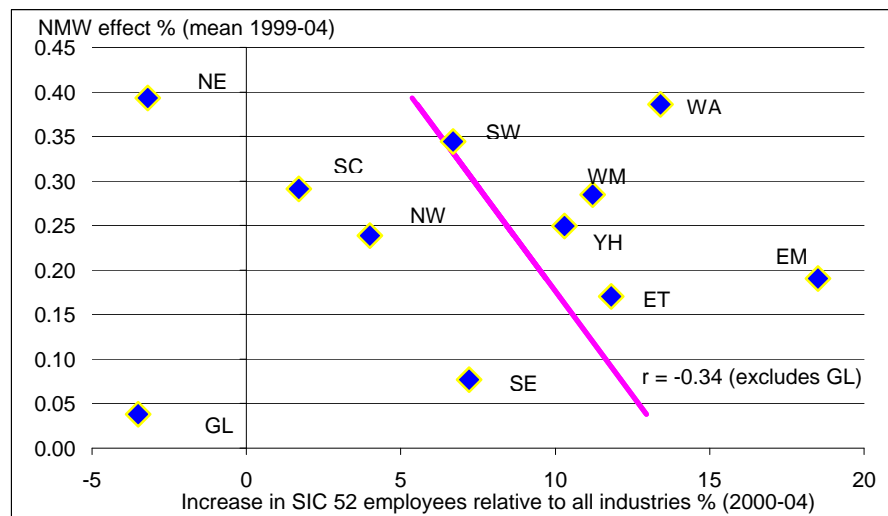


3.3 THE IMPACT OF THE NMW ON EMPLOYMENT

3.3.1 Initial comparisons

Once we have identified our measure of the NMW, the next step is to use this to test the impact on other variables. We start our investigation with employment, as this has generated the most research. Adverse job effects are a key argument against wage floors (see chapter 1.2.1-1.2.2). But, thus far, research has failed to find any firm relationship in the UK since 1999. The aim of the current study is to identify if aggregate analysis conceals significant effects at a finer geographic or sectoral detail.

Figure 3.5 NMW and employment in retail



Retail and hospitality sectors account for a majority of all low paid jobs. Figures 3.5 and 3.6 plot relative employment growth for these sectors (the change in (say) SIC 52 jobs⁵ between 2000 and 2004, minus all-industry growth) against the estimated NMW effect (averaged over the same period). Note that only the North East and London (for retail) and the North East (hospitality) saw the sector lagging the increase in total jobs. This is not surprising, given that this was a time of strong consumer spending across the UK, a trend that would strongly benefit both sectors.

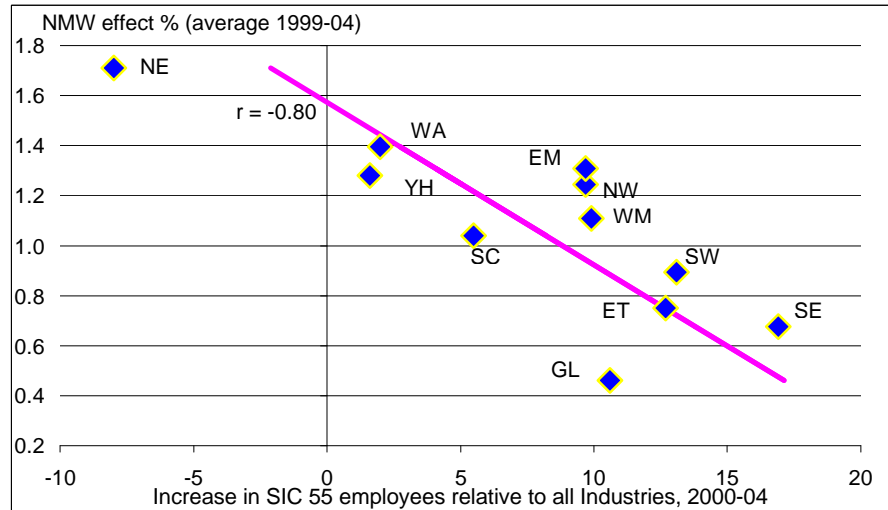
There is no discernable negative correlation between relative employment growth for the retail sector and the NMW effect. For this sector, the picture is complicated by London - an outlier, with poor relative job creation, despite only a modest NMW effect. The weakness in the capital's retail sector can probably be explained by the sluggishness of international arrivals after the 9/11 attacks. Tourists provide an important source of retail demand in cities and this setback hit the capital hard. There is a correlation for retail if we exclude London, but not a particularly strong one.

There is a more obvious negative relationship for the hospitality sector. Here, the capital is no longer an outlier, despite the post-2001 tourism effect. The regions where the bite of the NMW is hardest (North East, Wales,

⁵ Full-time equivalent basis, which uses employees data from the Annual Business Inquiry (available to 2004 by region), but weights the part time workers at 0.4 to account for their lower labour input.

Yorkshire & the Humber) saw the most modest relative rises in hospitality jobs, while the highest payers (London, South East, East of England) saw the strongest expansion in opportunities relative to local conditions. Overall the correlation was around 80 per cent across the UK regions.

Figure 3.6 NMW and employment in hospitality



3.3.2 A testable framework

We use the following general specification for our estimation of NMW effects:

Equation 1

$$\Delta \ln(FTEE_{i,r,t} / FTEE_{tot,r,t}) - \Delta \ln(FTEE_{i,GB,t} / FTEE_{tot,GB,t}) = b_1 \cdot RNMWE_{i,r,t-1} + b_0 + r_{i,r,t}$$

where:

- FTEE_{i,r,t} Full-time equivalent employees in industry “i” in region “r” for year “t”
- FTEE_{i,t} Full-time equivalent employees in industry “i” for all of GB for year “t”
- RNMWE_{i,r} Relative National Minimum Wage effect, which is NMWE_{i,r} – NMWE_{gb,r}
- NMWE National Minimum Wage Effect quantified as above.

The dependent variable in the equation is the change in industry employment relative to total employment in the region (i.e. the industry share) relative to the change in the GB average industry share.

This controls for both:

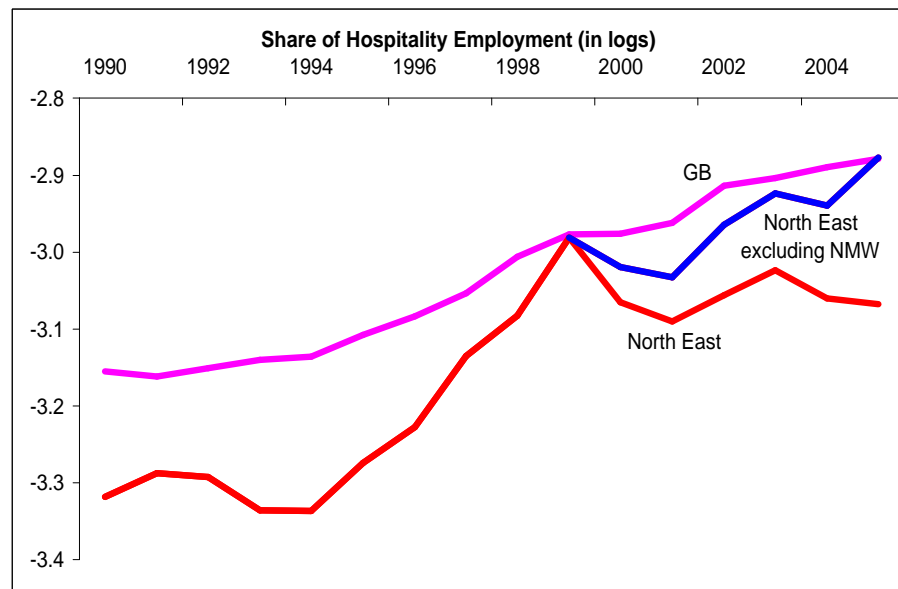
- changes in the strength of the regional economy by looking at industry employment in the region relative to total jobs
- changes in the strength of the industry nationally by expressing the variable relative to the proportional change in the national share

Equation 1 is estimated as a pooled regression, across both geography and time. Coefficient β_1 is imposed for all regions, whereas β_0 is allowed to vary between regions. This restriction means that we should detect both cross-sectional (cross-regional) effects and changes over time (to assess, for instance, if steeper NMWE upratings have a bigger employment impact). The validity of the restriction on β_1 is established by a standard f-test.

Note that in our specification RNMWE enters with a one-year lag. This was found to give the best results. It is also plausible given that changes to the NMW would not have an instantaneous impact on employment. For our analysis, the estimation period is chosen is 1995 to 2004, which includes several years before the NMW was introduced⁶. The results were sensitive to the estimation period chosen.

Results in the pooled regression for both retail and hospitality employment are summarised in table 3.3⁷. The estimation results do not reject the validity of the cross-region restriction on β_1 for either industry. The results show a significant (at the 5 per cent level) negative impact of the NMW on regional employment in the hospitality industry, confirming the evidence shown earlier.

Figure 3.7 Impact of the NMW on industrial structure



Because of the functional form, interpreting results is not straight-forward. The equation is not testing for an impact on total employment, but on industry job shares. A significant coefficient, therefore, suggests a shift in a region's mix. For instance, in the most affected region, the North East, the level of employment in hospitality is 15 per cent below what is expected if the NMW had not been introduced (see figure 3.7). But this need not be a

⁶ Note that, although we now have 2006 ASHE data for most of the variables examined, 2004 is the last full year available for most series at the regional level including ABI2 (profits) and VAT registrations.

⁷ We ran the same exercise on the other broad low-pay sectors (SICs 74 and 85), but failed to get any significant results. This is not surprising, given that the range of jobs in these industries is considerably wider and the low paid elements are generally a 3-digit sub-component. As noted previously, data restrictions prevent analysis of the 3-4 digit industries by region, while missing ASHE points hampered detailed investigation of low pay in manufacturing (Textiles 17-19) and agriculture.

negative development, as jobs in other higher-paying industries will have risen because of the NMW. The impact is opposite (though smaller in size) in other regions, such as London and the South East.

The results for retail are less clear. The coefficient indicates a negative impact of the NMW on regional jobs, but it is not significant at either the 5 per cent or 10 per cent level. The lack of a correlation may be due to some regional outliers, notably London. Because of this, we experimented with excluding regions the regression. A more significant negative coefficient at the 5 per cent level is obtained when London and the West Midlands were omitted.

Table 3.3 Pooled cross-section/time series estimation results for full-time equivalent employees in employment

	Retail	Retail with dummies	Hospitality
Estimated Coefficient	-0.044	-0.070	-0.039
Estimated t-statistic	-1.61	-2.38	-2.93
R²	0.10		0.13
F-Statistic¹	0.82		1.23

¹ For the restriction on b_1 . $F(5) 11,88 = 1.90$
 Estimation period = 1995-2004, 110 observations.

While it is possible to argue that 9/11 distorted retail in London, this reasoning is not entirely satisfactory. For instance, there was no similar effect on employment in the hospitality sector, which has an even greater reliance on American arrivals to the capital. In reality, the retail response may be complex, reflecting general capacity constraints in the industry, as well as global influences and the sharper downturn in the regional economy.

It is also difficult to explain why the West Midlands is an outlier on these results. The regression appears to be quite sensitive to the time period adopted. If we limit estimates to 2003, that is to the October 2002 NMW uprating, the t-statistic for the retail coefficient becomes significant at the 10 per cent level and the West Midlands is no longer an outlier.

Moreover, the estimated coefficient for retail becomes significant if we extend the period to 2005 and use employment updates from the ONS published after the ABI. For retail, the value is -0.05 with a (significant) t-statistic of -2.26. But note that this implies a much smaller employment effect than for hospitality because the NMW bite is much less in retail. By contrast, the results for hospitality worsen using the extra year, although they remain significant.

3.3.3 Differences from previous research

While our results are by no means the final word, they do show employment consequences, unlike previous studies for the UK. Stewart, for example, found no evidence of an impact either of the NMW introduction or the 2001 uprating at a sub-regional level in the UK (see chapter 1).

There are a number of important differences in the approach used here:

- This is a study of industry level employment by region, not total employment by local authority (as in Stewart). Although we focus on

specific low paying industries, the data restrictions tend to be more severe than for geography or industry in isolation.

- Stewart looked mainly at the one-year impact of the initial introduction of the NMW. By contrast, we are interested in more recent upratings, specifically in 2003 and 2004, and have examined the impact over time, as well as across regions. We also allow a one-year lag between changes in the NMW and the employment effect.

We can make our work more comparable with Stewart by estimating cross section relationships one year at a time - note that this implies that the constant, as well as β_1 , is fixed across the regions. For our data, this means that we have fewer observations - 11 regions rather than the 200 authorities in Stewart. But the exercise is worthwhile for comparative purposes.

The results are summarised in table 3.4 below. The following points are worth highlighting:

- When we look at individual years in isolation, the initial impact of the NMW is not significant for either retail or hospitality in line with Stewart's results.
- The only periods that indicate a statistically significant negative impact are 2003 and 2004 (which capture the 2002 and 2003 upratings) for the hospitality industry.

Consideration of industries means that we are limited to regional data and cross-section estimation means a low sample size. We feel that the pooled cross-sectional or time series approach is preferable, because it increases the sample size and allows us to extract more information from the data.

Table 3.4 Cross-sectional estimation results for FTE employees

	Retail		Hospitality	
	Estimated Coefficient	Estimated t-statistic	Estimated Coefficient	Estimated t-statistic
2000	-.082	-1.10	-0.030	-1.24
2001	-.047	-0.21	-0.042	-0.65
2002	0.0042	0.21	-0.030	-2.22
2003	-0.031	-.38	0.10	-2.34
2004	0.029	.58	-0.085	-2.81
2005¹	-0.043	-1.62	0.0054	0.46
Pooled 1995-2004	- 0.044	-1.61	- 0.039	-2.93

OLS, 11 observations

¹ 2005 is not used for the pooled estimates reported in Table 3.3 as the employment data are based on initial ONS estimates, rather than the ABI and subject to substantial revision.

3.4 THE IMPACT OF THE NMW ON OTHER VARIABLES

3.4.1 Profitability

We can investigate other variables using the same approach as in the previous section. Evidence from recent research has suggested that the NMW may have had an impact on profits in some low-wage industries. It is argued that if firms are not adjusting employment in response, the extra costs may be reflected in lower profitability in these industries.

We used the gross operating surplus data from the annual ABI2 update⁸ in our evaluation. This is the best source of at this level, available for all regions at a 2-digit SIC. Equation 2 adapts equation 1 for profits. But results indicate that there was no effect in the sectors where data are most satisfactory, retail and hospitality. Unlike employment, however, the estimation period is limited, covering 1999-2004, with ABI2 data, only available from 1998.

Equation 2

$$\Delta \ln(GOS_{i,r,t} / GOS_{tot,r,t}) - \Delta \ln(GOS_{i,GB,t} / GOS_{tot,GB,t}) = \mathbf{b}_1 \cdot RNMWE_{i,r,t-1} + \mathbf{b}_0 + r_{i,r,t}$$

where:

GOS_{i,r,t} Gross operating surplus for industry i in region r at time t

Table 3.5 Pooled cross-section/time series estimation results for the gross operating surplus

	Retail	Hospitality
Estimated Coefficient	- 0.23	- 0.011
Estimated t-statistic	-1.39	-0.17
R²	0.07	0.09
F-Statistic¹	0.89	2.2

¹ For the restriction on β_1 , F(5) 11,44 = 2.01
Estimation period = 1999-2004. 66 observations.

3.4.2 Company formation

Previous UK work investigating the NMW impact has indicated that even if profits are lower, this may not be having a significant effect on survival rates in exposed firms. Nonetheless, despite the lack of success in the previous section, it is worth re-visiting this area to probe regional and sectoral effects.

The Small Business Service (SBS) publishes VAT registration and de-registrations, plus stocks of registered companies at the regional and sectoral level⁹. This data can be used as a proxy for firm formation and collapse. Unfortunately, the industry breakdown is broader than the 2-digit SIC standard for most other variables at the regional level.

However, both distribution (SIC-2003 sector G) and hotels and restaurants (SIC-2003 sector H) can be isolated by region. These data also have the advantage of relatively long time-series, stretching back to 1994, when the last major uprating of thresholds occurred. Equation 3 adapts the previous formulation for VAT registrations.

Equation 3

$$\Delta \ln(VATR_{i,r,t} / VATR_{tot,r,t}) - \Delta \ln(VATR_{i,GB,t} / VATR_{tot,GB,t}) = \mathbf{b}_1 \cdot RNMWE_{i,r,t-1} + \mathbf{b}_0 + r_{i,r,t}$$

where:

VATR_{i,r,t} VAT registrations for industry i in region r at time t.

⁸ The ABI2 covers financial information on about two thirds of the UK economy, rather than employment as in the wider ABI1. At the Government Office Region level it includes 2-digit Division level data on turnover, gross value added, total purchases, costs and capital expenditure.

⁹ The SBS is an agency of the DTI, see www.sbs.gov.uk.

Table 3.6 Pooled cross-section/time series estimation results for the VAT stock

	Distribution	Hospitality
Estimated Coefficient	- 0.013	-0.0058
Estimated t-statistic	-2.66	-1.81
R²	0.33	0.25
F-Statistic¹	1.14	0.65

¹ For the restriction on β_1 , $F(5) 11,88 = 1.90$
 Estimation period = 1995-2004. 110 observations.

Results for VAT registrations indicate that the NMW has a statistically significant negative effect at the 5 per cent level for distribution. The evidence is less strong for hospitality, though the negative coefficient is accepted at the 10 per cent level. The results for this sector improve if we exclude the first year (1995) from the estimation period. This might be justified given some erratic trends in some regions.

Interpretation is similar to the employment equations. Results for retail imply that the NMW has lowered VAT registrations by 4 per cent in the North East's retail sector (and by 2 per cent in hospitality). Total start-ups in all industries are assumed to be unchanged, suggesting a shift in activity away from these sectors and into other higher-paying ones.

3.5 SUMMARY

The aim of this paper was to look behind the aggregate responses to the NMW to establish if there are specific regional and sector impacts. The hypothesis is that the nature of the NMW (a minimum rate that prevails in any part of the country) could have different effects on regions and sectors with very different wage distributions.

The emphasis of this paper has been on the relative performance of industries within regions. For example, asking if industry employment has done better relative to total jobs in the East Midlands than in London. Estimation has, therefore, largely been restricted to the retail and hospitality sectors because of data limitations, albeit that these industries account for the bulk of workers affected by the NMW.

Using this method, we have found evidence of impacts on both employment (in hospitality and, to some extent, retail) and on firm start-ups (for both retail and hospitality). Profit variables were not significant.

The positive results contrast with other studies of the NMW, which tend to find no effect. But this is the first to focus on industries within regions and to look at both the introduction and the subsequent NMW upratings in an integrated framework.

There is scope for further work. In theory, this analysis could be extended to the 3-digit SIC sectors that constitute the other fifth to a quarter of low paid workers. The NMW impact proxy variable would need to be re-calibrated, either by using raw ASHE or LFS data, though it is likely that the econometrics would be confined to examining employment effects unless ABI and VAT statistics could be further disaggregated by industry.

Appendix A

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