

# The Influence of the National Minimum Wage on Pay Settlements in Britain

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*Alex Bryson and Paolo Lucchino<sup>1</sup>, National Institute of Economic and Social Research*

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## 1. SUMMARY OF FINDINGS

- Around 30% of all workplaces mention the NMW as an influence on the pay settlement of their largest occupational group (LOG). These workplaces cover around 23% of all employees.
- The NMW is the third most quoted factor out of a possible nine, ranked well behind 'financial performance', but only slightly behind 'changes to the cost of living'.
- When the NMW is cited as an influence on the pay settlement of the largest occupational group, there is strong evidence of bunching of the size of the settlement around the size of the NMW increase.
- Around 15% of workplaces where the median wage is above £7.50 per hour mention the NMW as an influence on the latest pay settlement. We interpret this as evidence of the NMW having an influence on the settlements of at least some workers paid above the NMW.
- Higher-paying workplaces that cite the NMW as an influence on pay settlements tend not to pass through the full uprating, indicating that any influence of the NMW is being weighed against other factors as part of a broader calculus. This is consistent with the possibility of the NMW compressing wage differentials.
- In both the private and public sectors, the share of employees paid at or near the NMW is the strongest positive correlate of whether the NMW is mentioned as an influence on pay settlements.
- In the private sector, the share of women, part-time and non-British workers are all positively associated with the NMW being mentioned as an influence on pay settlements (even conditioning on pay). Industry, occupation and geographic region are significantly associated with whether the NMW influences pay settlements but lose most of their significance once pay and market competition variables are accounted for.

- For private sector workplaces, results suggest that the NMW is more likely to be mentioned as an influence on pay settlements the higher the level of decision-making and the larger the group of workers affected. This may be explained by access to richer information sets and more sophisticated evidence to inform pay determination.
- In the private sector, the way in which pay is determined for the largest occupational group is a relevant factor behind whether the NMW is mentioned as an influence on the pay settlement, even when accounting for workforce characteristics and pay. The NMW appears to 'step-in' in the absence of collective bargaining.
- In the public sector, very few characteristics emerge as positively correlated with the NMW being mentioned as an influence on pay settlements. These are the share of employees paid the NMW, being a multi-workplace organisation and having a single method for determining the pay of all non-managerial occupational groups.
- There was little association between workplaces' experience of the recession and whether they mentioned the NMW as an influence on the pay settlement of the largest occupational group. However, those mentioning the NMW had taken different measures in response to the recession than those that did not mention the NMW. For example, they were more likely to have absorbed the shock by reducing hours rather than employment.

## 2. INTRODUCTION

A statutory national minimum wage (NMW) was introduced in 1999 to ensure that no employer pays covered employees below the rate deemed appropriate under the law. Members of the Low Pay Commission (LPC) face two difficulties in setting the NMW. The first is whether the level at which it is set may adversely affect employers with NMW employees, for example, by raising wages to a level that may affect profitability. To date, there is little evidence to suggest that this is a widespread problem (Bryan et al., 2012). The second difficulty is the potential for the statutory rate to affect wage setting more generally in the economy. Problems may arise if the rate influences the pay claims of those above the NMW rate, as might be the case if they are concerned about maintaining pay differentials with the lowest paid workers. Employers may also feel pressure to maintain differentials relative to the NMW if they are to recruit and retain the quality of workers they need for their businesses. This may result in wage push inflation and potential job loss. This concern is, perhaps, particularly salient at a time when real wages and - in some cases - nominal wages are falling in the economy (Gregg and Machin, 2012), and after there has been a period over which the adult NMW has risen relative to average earnings (Low Pay Commission, 2012: 27-28).

It has been difficult for policy makers to identify whether the NMW does influence wage settlements in the economy due to data deficiencies. Most of what is known about the link between the NMW and pay settlements comes from specific case studies such as those published by Incomes Data Services (IDS, 2011a) and from monitoring based on non-random samples (IDS, 2012). Whilst insightful, they do not provide a picture that is representative of workplaces across Britain. Some have inferred what the NMW has done to pay setting by resorting to household and labour force surveys to explore the changing shape of the wage distribution (e.g. Dickens et al., 2012). Dolton et al. (2012) have undertaken panel time-series analyses at industry level. But these studies, which will be discussed in Section 3, lack information on pay settlements or the institutional features of workplaces that might shed light on the pay determination process.

This study fills this gap in knowledge through analyses of the Workplace Employment Relations Survey 2011 (WERS). WERS is a nationally representative linked employer-employee survey of workplaces with 5 or more employees. In 2011 managers responsible for employment relations at the workplace were asked: "Looking at this card, which of the factors listed influenced the size of the pay settlement or review for the largest occupational group (LOG)?" The NMW is identified as one of six specific responses. We use responses to this question to address five questions regarding the importance of the NMW for pay setting in Britain.

- How often is the NMW mentioned as an influence on pay settlements for the largest occupational group (LOG) at British workplaces?
- What sorts of pay settlements are affected by the NMW? The analysis considers the frequency with which pay is reviewed or negotiated; the size of the award and how it relates to awards for other managerial and non-managerial employees at the workplace.
- Does the NMW play any role in pay settlements for employees paid above the NMW level?
- What, if anything, is distinctive about workplaces that mentioned the NMW as an influence on the latest pay settlement? We examine characteristics of the workplace, such as pay determination arrangements, and characteristics of the workforce.
- What role has the recession played in amplifying or limiting the role of the NMW on pay settlements?

The next section introduces the concept of a pay settlement, or pay review, and briefly reviews what we know from other studies about the effects on the NMW on pay settlements. Section 4 discusses the data sources used in the analysis. Section 5 presents results on the salience of the NMW as an influence on pay settlements, both in general as well as in relation to possible ‘knock-on’ mechanisms on the settlements of workers paid above the NMW. Section 6 provides two-way and multivariate evidence into the distinctive characteristics of workplaces that report the NMW as an influence on pay settlements, giving particular attention to the type of pay determination methods in place. Section 7 briefly illustrates evidence on the interactions between the impact of the recession and the influence of the NMW on settlements. Finally, Section 8 concludes by discussing the policy implications of the main findings.

### **3. PAY SETTLEMENTS AND THE ROLE OF A NMW**

#### ***3.1 What are pay settlements and what do we know about them?***

In the early post-War period pay settlements were often the outcome of national pay bargaining between trade unions and employers, usually at sectoral level, usually on an annual basis. Further negotiation would take place at firm level as some firms sought to improve on the settlement negotiated across the industry. As early as the 1960s sectoral collective bargaining began to decline, with more and more firms ceasing to follow sectoral agreements (Brown et al., 2009:33-36). More recently all forms of collective bargaining between unions and employers have been in terminal decline so that by 2011 only 12 per cent of private sector workplaces recognised a union for pay bargaining and 31 per cent of private sector employees worked in workplaces with a union recognised for pay bargaining (van Wanrooy et al., 2013a). Only 2 per cent of private sector workplaces used sectoral pay bargaining to set the pay for any of their employees. In its place has come unilateral pay determination by employers, either at workplace or firm level. In the public sector unions continue to play an important role in setting pay at most workplaces, either through collective bargaining or Pay Review Bodies (PRBs), with much of this based on sectoral

arrangements. Even here, there are pressures on employers and PRBs to decentralise pay, so that it reflects local economic conditions. These changes in pay determination in Britain mean the phrase "pay settlement", with all its connotations of national pay arrangements dominated by trades unions, is no longer meaningful for many employers. Of course, employers still have to set pay for their employees, and they often do so in consultation with their employees, even if this does not involve formal negotiation with employee representatives. Today the term "pay settlement" or "pay review" may cover a range of disparate arrangements whereby the employer comes to a decision about whether to raise or even lower pay and, if so, by how much.<sup>2</sup>

For some years detailed knowledge about pay settlements in Britain relied on two data sources. The first was the Workplace Industrial Relations Survey (WIRS), a workplace survey that provided a lot of detail about settlements for manual and non-manual workers, and their relationship with union structures and features of workplaces. However, it occurred on a very infrequent basis, limiting its usefulness for policy makers keen to keep abreast of what was going on in the labour market (Blanchflower et al., 2007). This function was performed by the Confederation of British Industry's (CBI) Pay Databank, a data set created by researchers at CBI based on information they gleaned in a survey questionnaire sent to their member organisations (Brown et al., 2004). Although the CBI's membership base was not representative of the whole economy or the private sector, the information was very valuable in offering a glimpse into pay determination across many employers on an annual basis. However, the CBI Pay Databank was suspended in 2003 and is unlikely to return. Instead, analysts and policy makers have relied on various other data sources for information regarding pay settlements and reviews including XpertHR (formerly Industrial Relations Services), the Labour Research Department, the Engineering Employers Federation, and, perhaps most notably, Incomes Data Services (IDS). Although the IDS data does not purport to represent the population of workplaces in Britain it is nevertheless an invaluable source of information since it identifies trends in pay settlements on a regular basis.

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<sup>2</sup> From 1998 the WERS questionnaire referred to "pay settlement or review", reflecting the view that "pay settlement" was the "pervasive but out-moded terminology of collective bargaining" (Forth and Millward, 2002: 3).

At the depth of the recession in 2009, IDS estimated that around one third of private sector employers had frozen pay in their reviews, with the remaining two thirds increasing pay. However, the proportion freezing pay fell throughout 2010 and 2011 such that most medium- to large-sized firms were awarding pay increases in 2011 (IDS, 2011b). In the public sector, on the other hand, pay freezes began in 2010 and continued for two years. This freeze has been followed by a 1 per cent cap on pay increases running through to 2015–16. Based on its sample of over 1,000 employers, IDS estimated median pay settlements of 3 per cent in the private sector in 2011, with a median settlement of zero in the public sector (IDS, 2011b). The Low Pay Commission uses IDS, together with other sources, to track median pay settlements over time (LPC, 2012: 10).

The Workplace Employment Relations Survey (WERS, previously WIRS) is the only source of nationally representative data on pay settlements and reviews for workplaces in Britain. The survey interviews human resource managers face-to-face. The most recent survey, which took place between March 2011 and June 2012, asked managers about the most recent pay review or settlement for the basic pay of the LOG at the workplace. Although the survey does not identify precisely when settlements occurred, most are likely to have occurred in 2010 or 2011.

### *3.2 What we know about the NMW as an influence on pay settlements*

As noted in the introduction, it has been difficult for policy makers to identify whether the NMW influences wage settlements in the economy due to data deficiencies. Most of what is known about the link between the NMW and pay settlements comes from specific case studies such as those published by Incomes Data Services (IDS, 2011a) and from monitoring based on non-random samples (IDS, 2012). In its reports, the LPC uses IDS data, disaggregating it by low-paid sectors, to see what, if anything, one might be able to infer about the effects of the NMW on settlements in low-paying sectors. In 2012 the LPC drew three conclusions. First, while pay freezes were common in the private sector following the on-set of recession, they were less likely in low-paying sectors. Second, the advent of the NMW affected settlement



dates in low-paying sectors: a growing proportion of companies in low-paying sectors now settle in October, the month the new NMW comes into effect, whereas this is not the case elsewhere in the economy (LPC, 2012: 44). Some companies have stuck to their settlement dates but supplement this with a NMW-specific uprating for affected employees. Third, differentials between those on the NMW and those just above it have changed over time, with employers squeezing differentials in 2001-6 when the NMW rose sharply relative to average earnings, only for them to open up a little in subsequent years when the NMW rises were more moderate.

A second type of study analyses household and labour force surveys using econometric techniques to explore changes in earnings and their possible links to the NMW. These studies examine some of the questions we posed above. For instance, Stewart (2009) uses individual-level earnings data to examine the effects on NMW upratings on those higher up the earnings distribution - what are called "spill-over effects". His investigation, which covers the period to 2007, suggests any effects are relatively small and confined to those just above the NMW. Dickens et al. (2012) found the NMW led to higher wage growth for low-paid workers relative to others, but that differentials have been restored to some degree with the on-set of recession.

A third approach, adopted by Dolton et al. (2012), is to undertake panel time-series analyses at industry level which combine various data sources on pay settlements with industry-level data on wages. Their study goes all the way back to 1977, thus covering three periods of minimum wage regulation: years in which there was regulation at industry-level via Wages Councils; a short period in the 1990s when, following the abolition of Wages Councils, statutory minimum wage regulation was confined to agriculture; and the period since the introduction of the NMW in 1999. They find no significant effect of the NMW - nor indeed Wages Councils before them - on pay settlements. Instead, what appears to matter most is inflation (which is linked to higher settlements) and the past level of settlements, indicating some persistence in settlement trends.

Whilst insightful, these studies lack information on pay settlements that is representative of workplaces across Britain, and they lack the institutional features of workplaces that might shed light on the pay determination process. The value of

WERS is that it provides a nationally representative picture that permits analyses of many facets of pay settlements - including the influence of the NMW - and their correlates at workplace-level. Influences on pay settlements from the 1998 Workplace Industrial Relations Survey were explored by Forth and Millward (2000). At that time the cost of living was the most frequently cited influence, followed by workplace or organisational performance (op. cit.: 11-12). Ours is the first study to use workplace-level data to identify the role played by the NMW.

## **4. DATA AND ANALYTICAL APPROACH**

### ***4.1 Workplace Employment Relations Survey 2011***

WERS is a linked employer-employee data set that, with sampling weights, is a nationally representative survey of workplaces with 5 or more employees in the public and private sectors. It covers most sectors of the economy, the chief exceptions being agriculture, fisheries and mining. The 2011 survey is the sixth in a series going back to 1980.<sup>3</sup>

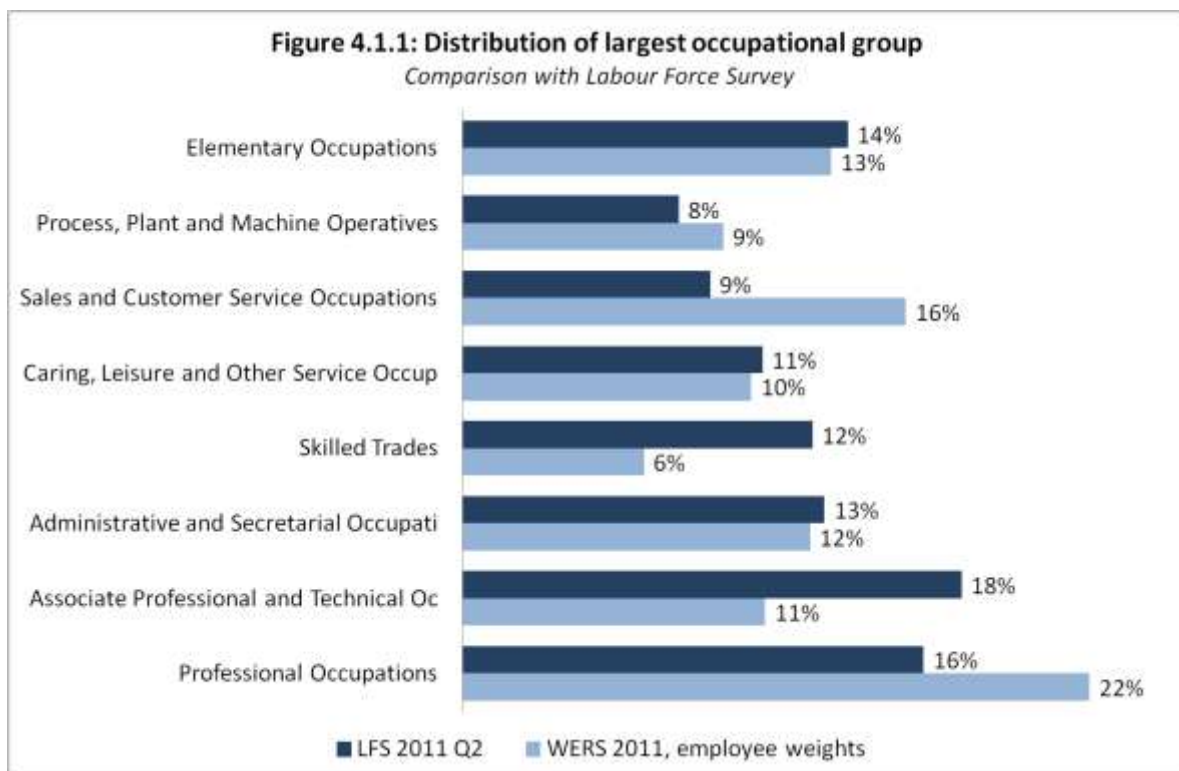
Fieldwork took place from March 2011 to June 2012. A total of 2,680 face-to-face interviews with managers were carried out, lasting 90 minutes on average.<sup>4</sup> Employees were asked to do a self-completion questionnaire. In workplaces with 25 or fewer employees, all were given the questionnaire. In larger workplaces, 25 employees were randomly selected to participate. A total of 21,981 employees completed the survey.

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<sup>3</sup> For more information on the history of WERS and its contribution to our understanding of employment relations see Blanchflower et al. (2007). For first findings from the 2011 survey see van Wanrooy et al. (2013a). A new book based on the 2011 survey was published in November 2013 (van Wanrooy et al. (2013b).

<sup>4</sup> In addition some 1,002 interviews were conducted with employee representatives, 797 of which were union representatives. These interviews were conducted either face-to-face or over the phone, lasting 30 minutes on average. However, we do not use these data in this study.

Managers responsible for employment relations at the workplace were asked: "Looking at this card, which of the factors listed influenced the size of the pay settlement or review for [the largest non-managerial occupational group]?" The NMW is identified as one of six specific responses. There is also an opportunity for respondents to mention other factors, which have later been back-coded by the WERS Research Team. We use responses to this question to investigate the role of the NMW in pay setting in Britain. These data relate to the settlement that covers the largest group of non-managerial employees at the workplace. Comparing WERS with Labour Force Survey data from the same period (Figure 4.1.1), the employment shares of the occupational groups for which we have information on settlements replicate the distribution of occupations in the Labour Force Survey relatively closely, with the exception of 'Sales and Customer Service Occupations', 'Skilled Trades' and 'Professional Occupations'. Note that some of this difference may be due to the fact that WERS is confined to employees in workplaces with at least 5 employees.



In addition to the information on factors influencing the size of the most recent pay settlement for the LOG, WERS asks how frequently pay was reviewed or negotiated for this group; whether the last settlement resulted in basic pay increasing, decreasing or remaining the same; the percentage change in the settlement;

whether unions agreed to any cuts; how the size of the settlement related to settlements for other non-managerial employees and managerial employees at the workplace; and what level the decision over the pay settlement was made at (workplace, higher level in the organization, national/industry/multi-employer level; Independent Pay Review Body; elsewhere); if above workplace level, whether workplace level managers were consulted prior to the decision; and whether management negotiated, consulted, informed, or did not inform employee representatives about the pay settlement/award.

WERS also includes an 'Employee Profile Questionnaire' where HR managers provide a rich set of information on the demographic and job profile of employees at the workplace. Examples of these are the share of employees by age, nationality and type of contract. We make use of this information when analysing the salience of the NMW as an influence on settlements by workforce characteristics.

As part of this questionnaire, managers are asked "How many employees (full- and part-time) at this workplace are currently paid £X or less per hour", where X is the then current NMW.<sup>5</sup> As fieldwork took place from March 2011 to June 2012, it spanned both sides of the October 2011 uprating, when the adult NMW was increased from £5.93 to £6.08. The text of the question was changed accordingly. In any subsequent reference to data from this question, we therefore simply refer to the share of employees 'paid the NMW or less'.

WERS includes both workplace- and employee-level survey weights. In most of our analysis we study behaviour across workplaces so we use workplace level weights. In some cases however, where the distribution across employees is more relevant, we use employee-level weights. These cases are clearly identified in the text and/or charts.

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<sup>5</sup> The amount was changed to '£6.08 or less per hour (£865 or less per month for a 37.5 hour week)' on the CAPI and CAWI programs on 04/01/12 to take account of the change in the National Minimum Wage rate for workers aged 21 years and older. Also on 04/01/12, the paper Employee Profile Questionnaires (EPQ) showing the new amount were made available. Therefore, over the period between 1/10/11 and 4/1/2012 the question displayed £5.93, which was below the going NMW rate. Around 14% of workplaces were interviewed over this period. Such workplaces are neither more nor less likely to mention the NMW than workplaces interviewed outside this period. Including a dummy variable identifying these workplaces in the multivariate analysis does not alter the results, and the coefficient on the dummy is insignificant.

## 4.2 *Annual Survey of Hours and Earnings 2011*

WERS holds information on weekly earnings (banded) and weekly hours for each worker in the survey. It is therefore possible to recover a measure of hourly earnings. However, assumptions have to be made about the distribution of employees within weekly earning bands, which introduces measurement error into the derived measure of hourly earnings.

To address this we match in data on hourly earnings from the Annual Survey of Hours and Earnings (ASHE). ASHE is a 1 per cent sample of all employees. Employers are required by law to complete the survey for the sampled employees, so response rates are high and the data are assumed to be very accurate. We use statistics derived from ASHE on hourly earnings by 4-digit Standard Occupational Classification codes and link these to the WERS employees through their occupational codes. We assign each employee in WERS the median and 20<sup>th</sup> percentile hourly wage from the hourly wage distribution of their 4-digit SOC group as indicated in ASHE 2011 published tables. ASHE 2011 data refer to April 2011, which is at the very beginning of WERS 2011's relatively long period of fieldwork. This temporal mismatch does not raise serious methodological issues with our imputation approach if one assumes that the relative position of 4-digit SOC pay levels did not change significantly over the 15-month period during which WERS data was collected.<sup>6</sup> Naturally, measures relating to the NMW (e.g. the share being paid below the adult rate) which rely on ASHE are based on the NMW threshold prevailing in April 2011, namely the adult NMW at £5.93 per hour.

Having merged the occupational hourly earnings from ASHE onto employees in WERS, we average the median and 20th percentile wages across employees at each workplace. Finally, we do the same for workers in the LOG so that these can be used to study WERS data on their pay settlement. In the analysis that follows,

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<sup>6</sup> We compared median wages by 4-digit SOC code in ASHE 2011 and 2012 (deflated by the growth in average earnings between the two surveys) and find reasonable support for this assumption.

these wage data are referred to, for short, as 'ASHE median wage' and 'ASHE 20<sup>th</sup> percentile wage' at the workplace.

Compared to the wage distribution derived from WERS, the resulting distribution of wages for the largest non-managerial occupational group merged from ASHE more accurately matches the lower end of the distribution as seen in the original ASHE data. This is particularly important if we are to be confident we are identifying employees paid at or close to the NMW. Firstly, while 8% of employees are paid below the adult NMW according to the derived hourly wage in WERS, this share is zero if measured using the merged values from ASHE. Although values merged from ASHE may underestimate the numbers paid below the NMW (because they are median values and because the ASHE omits employees paid below the National Insurance Contributions threshold), it is closer to the 1.0% estimated in the 2012 LPC report (LPC, 2012: 37). Secondly, the 10<sup>th</sup> percentile of the distribution obtained by merging data from ASHE onto WERS was found to be closer to that in ASHE published tables. However, it should be noted that while the 10th percentile in the hourly wage distribution from WERS was 80p less than that in ASHE, further confirming the presence of an excessively large left tail, the value estimated on the merged ASHE data is nevertheless 50p higher in the original ASHE data, suggesting an excessively compressed wage distribution. This means that we should still expect a fair degree of measurement error in our merged wage data. Specifically, we cannot exclude the possibility that workers with a merged wage of £6.50 or even £7.00 may actually be being paid the NMW. We return to this point later.

## **5. THE INFLUENCE OF THE NMW ON PAY SETTLEMENTS**

### *5.1 Pay settlements in WERS 2011*

As noted above, WERS fieldwork took place between March 2011 and June 2012, with management respondents being asked about the most recent review or negotiation of basic pay for the largest occupation at the workplace. Although the survey does not identify precisely when settlements occurred, most reviews occur annually so they are most likely to have occurred in 2010 or 2011.

The effects of the recent recession were still being felt when these pay settlements were being agreed. When asked 'At the last review or settlement, was basic pay for the largest occupational group increased, decreased, or did it see no change?' many managers indicated there had been a pay freeze: freezes accounted for around 27% of private sector settlements and 60% of settlements in the public sector. Although nominal wage cuts were virtually absent, positive inflation implies these settlements entailed real wage reductions.

The incidence of pay freezes showed significant variation by industry. In line with the presence of a public sector wage freeze, two fifths of (public and private) workplaces in health, education and community services, and nearly four fifths of workplaces in public administration implemented a pay freeze. Where pay settlements resulted in a pay increase, the mean increase was 3.8 per cent in the private sector and 2.4 per cent in the public sector.

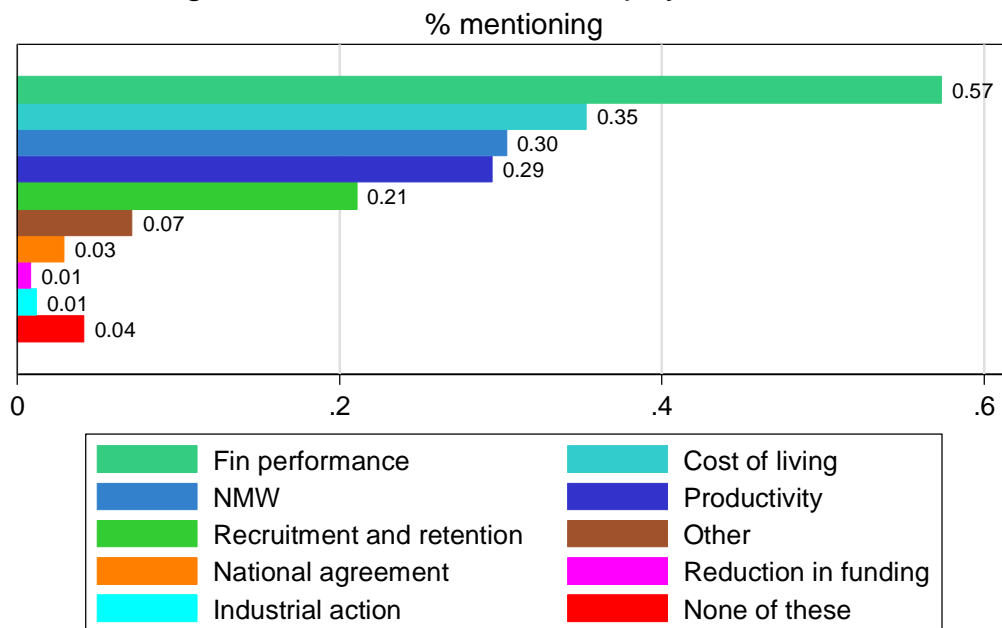
Responses to the question 'How frequently is basic pay for the largest occupational group at this workplace reviewed or negotiated?' indicated that at 86% of workplaces pay was reviewed annually, while 4% did so more frequently and 10 % reviewed it over a longer time period. As many as 16% of public sector workplaces indicated they reviewed pay less frequently than annually, most likely due to the presence of a two-year pay freeze.

### *5.2 Factors influencing pay settlements in Britain*

WERS asks HR managers: "Looking at this card, which of the factors listed influenced the size of the pay settlement or review for largest occupational group?" The NMW is identified as one of the possible responses, alongside financial performance; changes in the cost of living; productivity; recruitment and retention; national agreement; reduction in funding; and industrial action. There is also an opportunity for respondents to mention other factors, which have later been back-coded by the WERS Research Team.

As shown in Figure 5.2.1, around 30% of all workplaces mention the NMW as an influence on the settlement outcome. This makes it the third most cited factor, ranked well behind 'financial performance', but only slightly behind 'changes to the cost of living'. The workplaces where the NMW is mentioned cover around 23% of all employees.

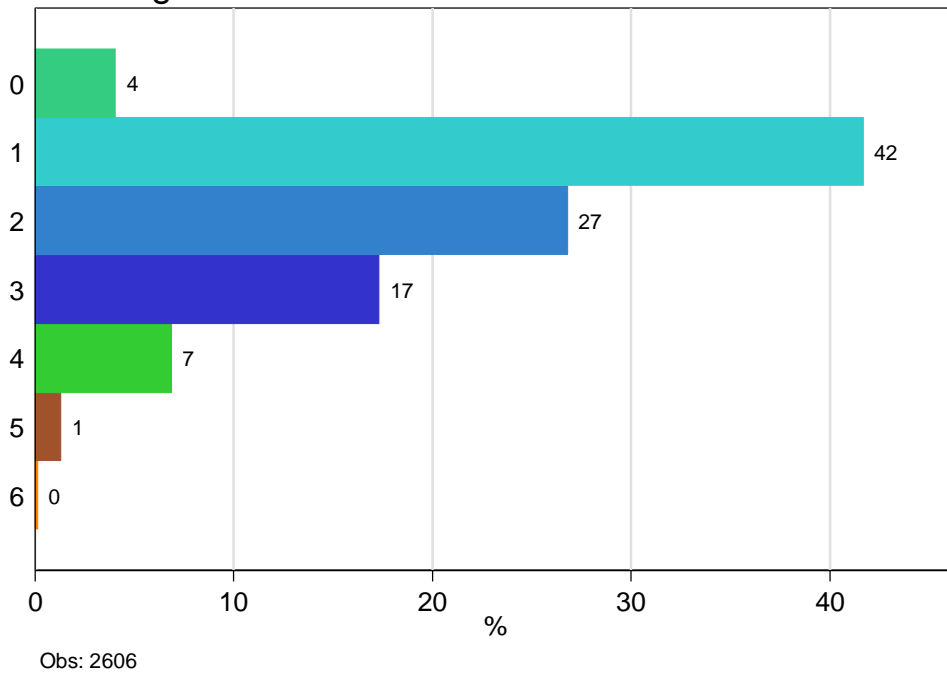
Figure 5.2.1: Influences on pay settlements



Obs: 2606

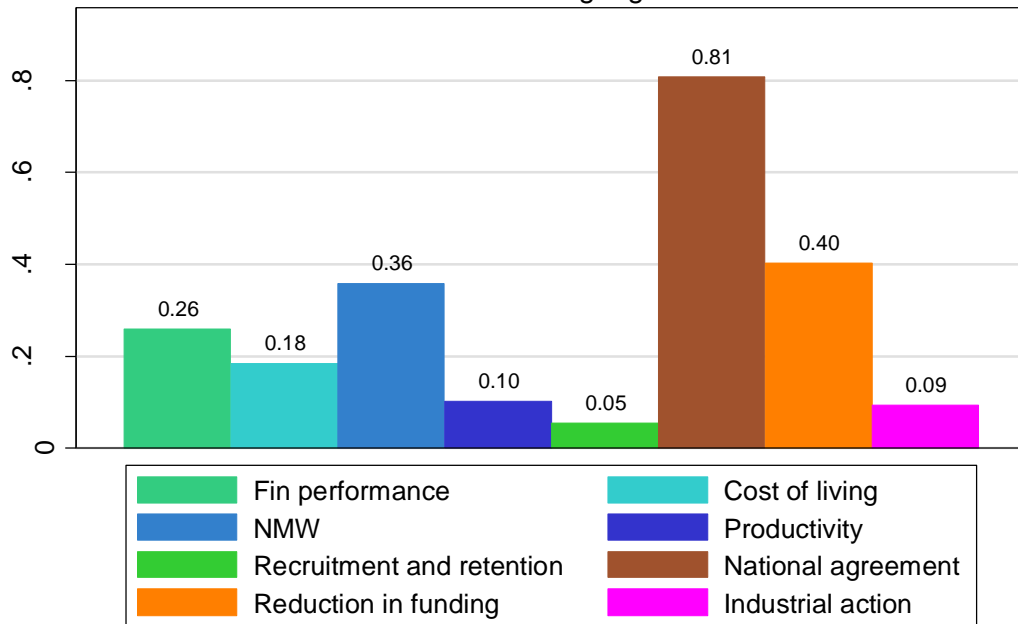


Figure 5.2.2: Number of influences mentioned



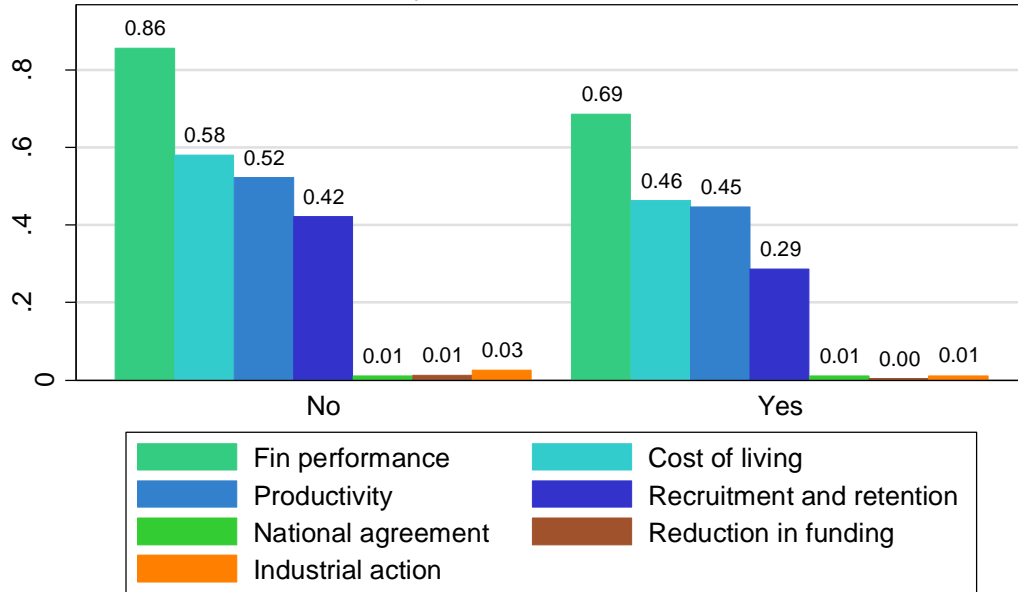
Around 42% mention a single factor and 69% mention either a single or a pair of influences (Figure 5.2.2). Some influences are more likely than others to be mentioned on their own. This is presented in Figure 5.2.3 below, which plots the fraction of single mentions conditional on the given influence being mentioned. The NMW is mentioned as the only influence at 11% of workplaces, just over a third of the times it is mentioned at all.

Figure 5.2.3: Single mentions  
 Conditinal on mentioning a given influence



In comparison to other influences, it appears somewhat more likely to be mentioned on its own. Put another way, other influences are less likely to be mentioned if the NMW is mentioned. This is apparent in Figure 5.2.4 below which splits workplaces mentioning at least one influence on their pay settlement according to whether they mentioned the NMW as an influence or not. The frequency with which the top four influences are mentioned is lower at workplaces that mention the NMW. These reductions are all statistically significant (at the 5% level). However, the ranking of most commonly mentioned influences is the same across workplaces that do and do not include the NMW as one of the influences.

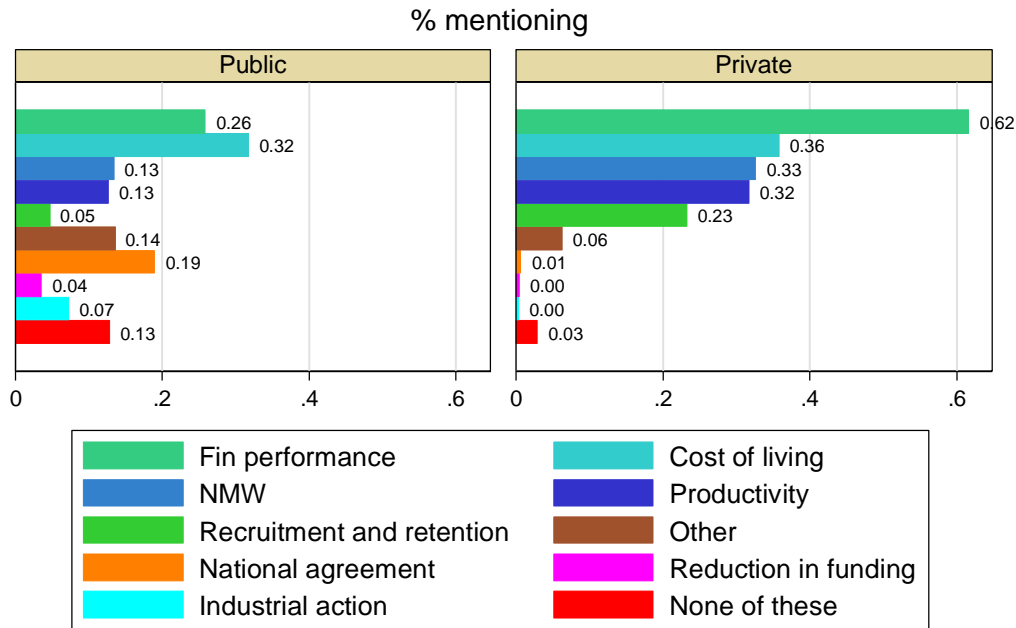
Figure 5.2.4: Other settlement influences mentioned  
By mention of the NMW



Obs: 1318

The NMW is twice as likely to be mentioned as an influence on pay settlements in the private sector as it is in the public sector. As shown in Figure 5.2.5, factors influencing settlements differ quite markedly across sectors. 'Financial performance' is mentioned as an influence in almost 2 in 3 settlements in the private sector, while it is much less frequently mentioned in the public sector. On the other hand, reflecting the higher incidence of national pay bargaining in the public sector, 'national agreement' is the third most quoted reason in the public sector, but virtually never mentioned in the private sector.

Figure 5.2.5: Influences on pay settlements



### 5.3 The nature of pay settlements affected by the NMW

In this section we compare the nature and outcome of NMW-affected pay settlements to those that were not influenced by the NMW. Some clear patterns emerge from this analysis.

Firstly, despite the NMW's annual cycle, the propensity of the NMW to be mentioned as an influence on the pay settlement is largely unrelated to the frequency of pay review. The NMW was mentioned as an influence in 28% of workplaces where pay is reviewed more than annually, 31% of workplaces where the review is annual and 23% of workplaces where pay is reviewed less than annually, but these differences are not statistically significant

Secondly, the NMW is more frequently mentioned at workplaces where the pay settlement outcome was an increase. Around 35% of workplaces where pay was increased mentioned the NMW as an influence to the settlement. Nevertheless, as

many as 20% of workplaces where pay did not increase also mention the NMW as an influence (primarily among other influences).

The chart in Figure 5.3.1 reveals this is not simply due to a preponderance of pay freezes in the public sector where the NMW is cited less frequently: the higher incidence of NMW mentions among increases over freezes is apparent in both the public and private sectors.

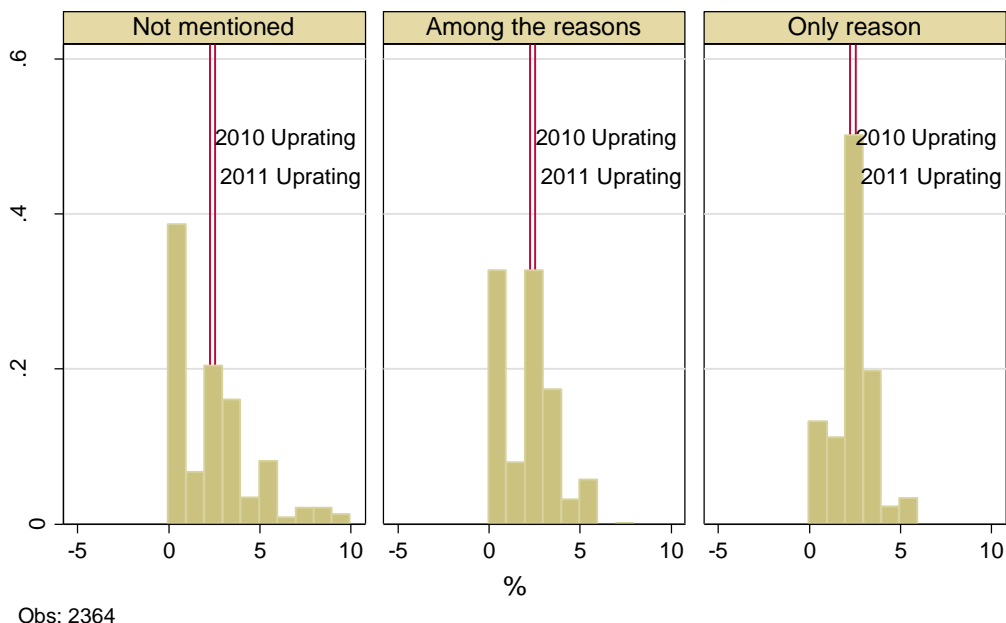
Figure 5.3.1: Is the NMW affecting pay settlements?



Obs: 2502

A second clear result is that, when the NMW affects a pay settlement, the size of the award tends to bunch around the percentage change in the NMW. We see this in the graphs of the distributions of settlement award size by mention of the NMW in Figure 5.3.2. Workplaces where the NMW is the only influence mentioned show significantly fewer freezes and a spike at the percentage change of the NMW (indicated by the red lines for 2010 and 2011). A similar, but weaker, pattern is evident where the NMW is mentioned among other reasons.

Figure 5.3.2: Distribution of pay settlements  
By influence of the NMW



#### 5.4 Does the NMW play any role in pay settlements for employees paid above the NMW level?

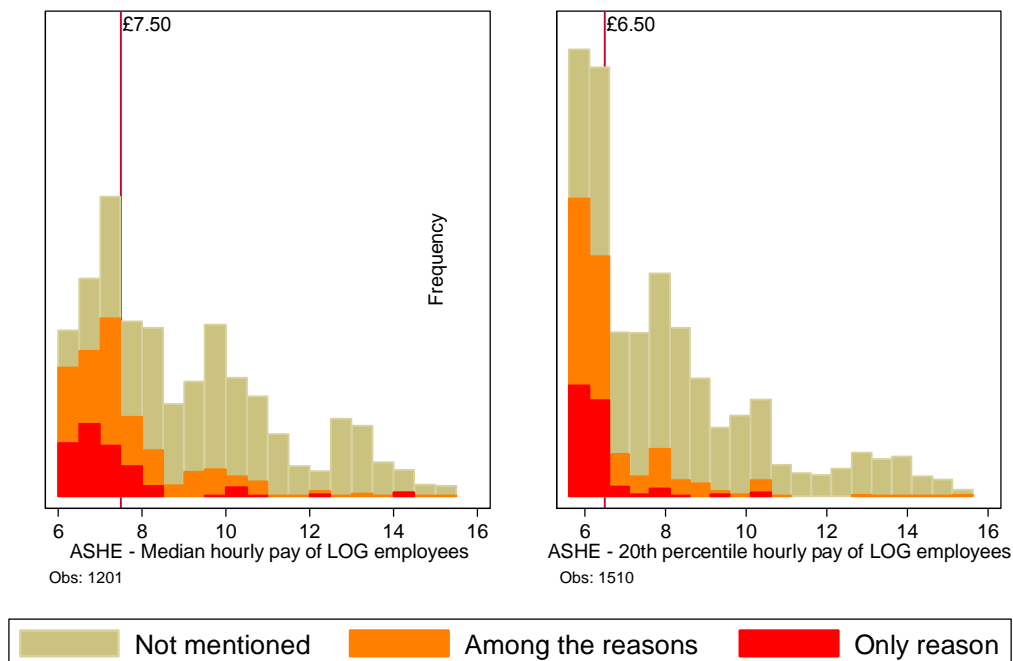
To explore whether the NMW has a knock-on effect on pay setting for workers paid above the NMW, we distinguish between pay settlements for largest occupational groups paid at or around the NMW level and those paid above the NMW level.

One would expect to find that the NMW is mentioned more often for occupational groups whose average median wages are near the NMW. Similarly, occupational groups where a large part of the wage distribution is near the NMW (as indicated by the 20<sup>th</sup> percentile in their wage distribution) should also be affected by the NMW. However, if the NMW is cited as an influence on the pay settlements of employees paid above the NMW, this would be evidence of the NMW having a knock-on effect on pay setting for higher-paid employees.

The left panel in the Figure 5.4.1 plots the employee-weighted distribution of median hourly pay for the LOG and highlights how the share of workplaces mentioning the

NMW (alone or alongside other influences) varies with wage levels. The right panel replicates the chart using the ASHE 20th percentile hourly wage for the LOG. As expected, the incidence of the mention of the NMW is very high at the lower tail of the distribution (up to a median wage of £7.50). Given our workplace level wage slightly overestimates wages (see Section 4), we conclude such workplaces are likely to be ones employing a substantial share of workers paid the NMW and where we would expect the NMW to have a direct influence on pay determination.

Figure 5.4.1: Mention of the NMW across the wage distribution

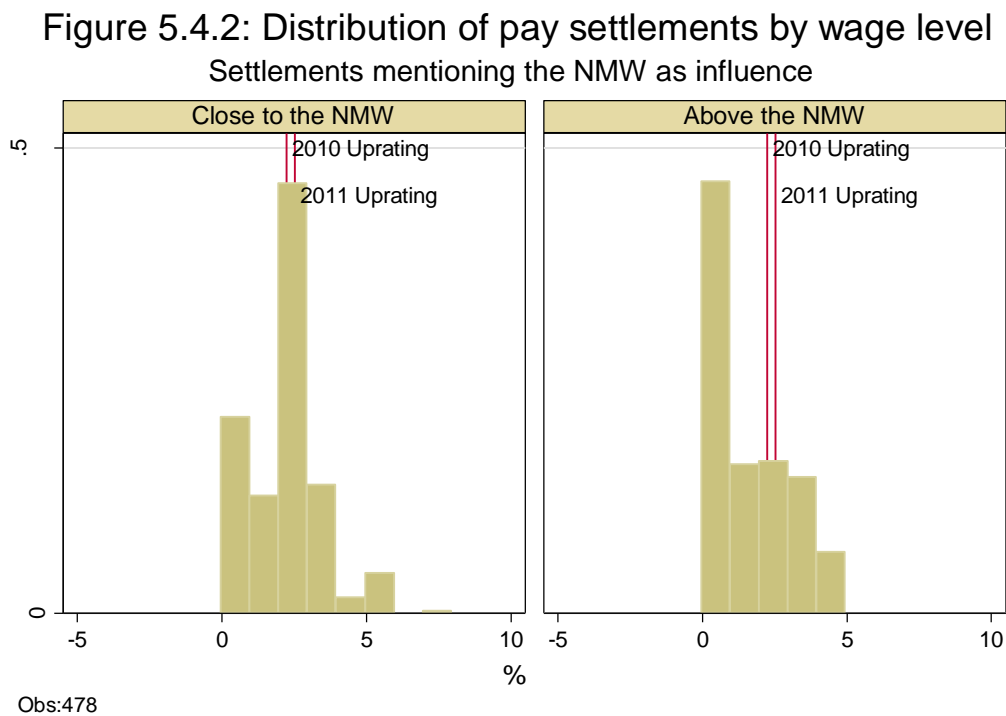


However, there is a sharp drop in the prominence of the NMW being mentioned as an influence on settlements once the LOG's median wage reaches £7.50. This seems to mark the end of the section of the distribution that will be subject to the direct effects of the NMW and the start of the section that may experience ripple effects caused by the NMW. In what follows, we use this cut off whenever we refer to workers paid 'close to the NMW' or 'above the NMW'.

Around 15% of workplaces where the ASHE median wage for their LOG is £7.50 or more mention the NMW as an influence on the most recent pay review or settlement. Similarly, just under 15% of the workplaces whose LOG have an ASHE average 20th percentile wage of at least £6.50 mention the NMW as an influence on pay

settlements. It would therefore appear that the NMW is having an influence on the settlements of at least some workers paid above the NMW.

We have established that the NMW is cited as an influence on pay settlements for a minority of workplaces with employees paid above the NMW, but what is the settlement rate in those cases? This is what we show in Figure 5.4.2. Considering workplaces where the NMW is mentioned as the only influence, we plot the distributions of the percentage changes in pay separately for workplaces where the average median wage for the LOG is close to (up to £7.50) or above (£7.50 or above) the NMW.



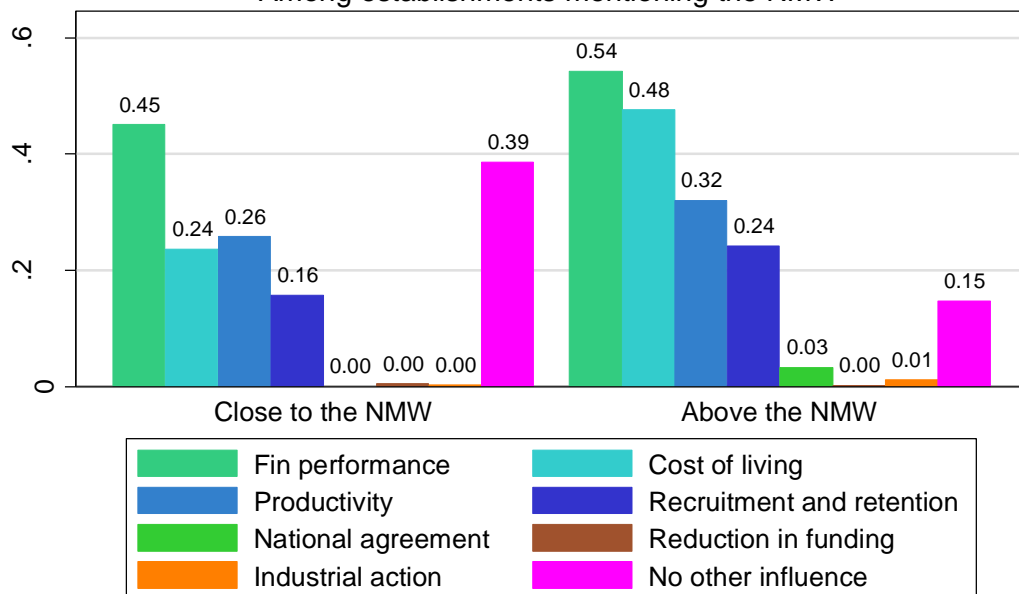
We can see a clear spike tracking the size of the NMW uprating among workplaces paying their LOG close to the NMW. This spike is not apparent when we look at workplaces paying their LOG above the NMW. Furthermore, the share of freezes is much lower at workplaces paying close to the NMW. The mean change is 0.85 percentage points higher at these workplaces than it is for workplaces where the LOG is paid above the NMW, and this difference is statistically significant. This evidence suggests that while some higher paying workplaces may be influenced by the NMW, they may not be passing through the full increase as much as workplaces



where workers are paid close to the NMW (many of which will have no alternative to doing so, if their workers are paid exactly the NMW). The implication is that, in spite of some knock-on effects of the NMW on wage setting for higher paid workers, there has been some erosion in wage differentials.

We attempt to uncover the motivations behind the mentioning of the NMW at workplaces where workers are paid above the NMW by looking at what other influences are mentioned by managers at such workplaces. Specifically, Figure 5.4.3 considers exclusively workplaces that mention the NMW as an influence and plots the fraction of workplaces mentioning each of the other influences, separately for workplaces with workers paid close to the NMW and those with workers paid above the NMW.

Figure 5.4.3: Other influences mentioned, by wage levels  
Among establishments mentioning the NMW



Obs: 342

Comparing the two, some key differences can be identified. Firstly, we see that higher-paying workplaces mentioning the NMW are less likely than lower-paying workplaces to mention the NMW on its own. In particular, such workplaces are almost twice as likely to mention the NMW together with 'cost of living' considerations. These differences are statistically significant. Similarly, higher-paying workplaces mention 'Recruitment and retention' more frequently than lower-paying

workplaces, though this difference is only significant at the 10% level. On the other hand, differences across financial performance and productivity are not significant.

The relatively more frequent mention of 'recruitment and retention' among higher-paying workplaces suggests that employers might be trying to maintain competitive wage differentials between occupations. On the other hand, the association between mentions of the NMW and 'cost of living' considerations suggests these workplaces look to the NMW uprating as a benchmark for a fair and adequate pay rise. In both cases, the goal might be to ensure employee pay keeps pace with reference points about pay by other employers and workers' real terms remuneration. However, the fact that higher-paying workplaces are found, on average, not to pass through the full uprating, indicates that the above reasons are likely to be weighed against other relevant factors as part of a broader calculus. This is consistent with the possibility of the NMW compressing wage differentials.

In the above, we have considered circumstances in which the NMW is mentioned as an influence on the pay settlement for the LOG, even when that group is paid well above the NMW. We can also use WERS to look at the relative size of the pay settlement received by the LOG compared to the settlement for other occupations in the workplace. Where the LOG obtained an increase in the last pay settlement, HR managers are asked: "Was this increase higher, about the same, or lower than the average increase for a) managers at this workplace and b) all other non-managerial employees?".

Our analysis indicates that while the relationship between LOG settlements and managerial settlements does not differ systematically depending on whether workplaces mention the NMW as an influence, this appears to be the case across groups of non-managerial employees.

Figure 5.4.4: Pay award for LOG vs other employees  
By relative pay of LOG vs non-LOG and NMW mention

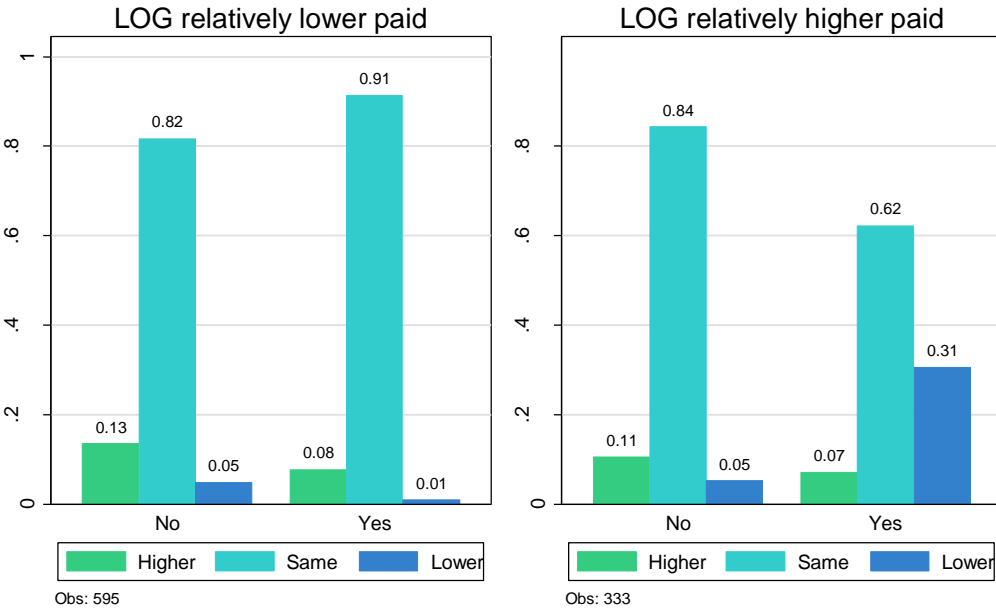


Figure 5.4.4 contrasts the relative size of LOG vs. other non-managerial settlements across workplaces depending, firstly, on whether average wages of the LOG are lower or higher than the average wages of other non-managerial employees, and within these subgroups, by whether they mention the NMW as an influence on the settlement of the LOG. Where the LOG is relatively lower paid (the left-hand panel), LOG settlements influenced by the NMW are more likely to be the same as for other non-managerial employees than those LOG settlements where the NMW was not mentioned (91% versus 82%). They are also less likely to be higher (8% versus 13%). These differences are statistically significant. In this case, it is possible that the NMW uprating is used as a benchmark for uprating the wages of other, more highly paid, non-managerial groups at the workplace. On the other hand, among workplaces where the LOG is relatively highly paid (right-hand panel) LOG settlements are more likely to be below those for other non-managerial employees when the NMW is mentioned as an influence on the LOG settlement (31% versus 5%). In these settings, it appears lower paid non-managerial employees receive pay settlements in excess of those for the higher-paid LOG, perhaps to ensure that

NMW-driven settlements do not increase wage differentials relative to lower-paid employees.

## **6. CHARACTERISTICS OF WORKPLACES WHERE SETTLEMENTS ARE INFLUENCED BY THE NMW**

We now shift our attention to uncovering what, if anything, is distinctive about workplaces that mentioned the NMW as an influence on the latest pay settlement. We explore three main sets of workplace characteristics. We start by analysing contextual variables (e.g. industrial sector and region) and key workplace features (e.g. firm size); we then consider pay determination methods (e.g. collective bargaining vs. pay set by management) and finally we assess the relevance of employee characteristics.

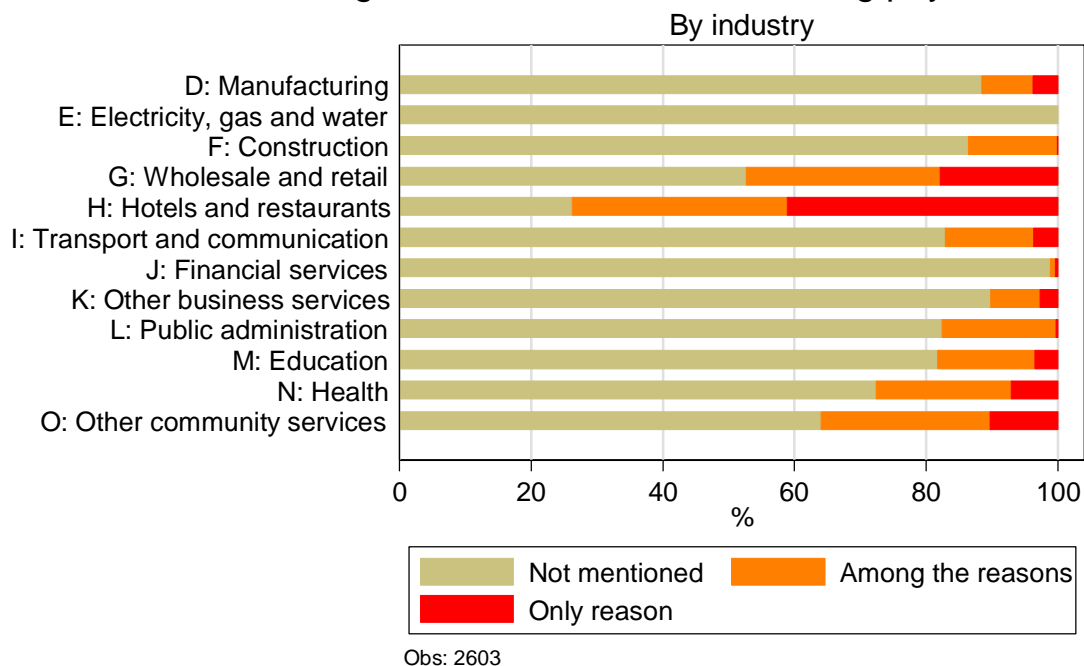
In the first instance, we present descriptive two-way relationships between these variables and whether the NMW is mentioned as an influence across the whole economy. Where possible, we use graphs to do this, so as to give an immediate impression of the relationships. Where relevant, the text supplements the graphs with information on the statistical significance of the results presented. Finally, at the end of this section, we use multivariate analysis to establish which factors are independently associated with the NMW being mentioned as an influence on the pay settlement of the LOG.

While immediately intuitive, two-way tabulations can of course be misleading. Relationships emerging between two factors may be driven by a third omitted variable. We are therefore careful not to present graphs where the multivariate analysis indicates they might be misleading.

### ***6.1 Workplace characteristics***

The workplace's industrial sector emerges as strongly correlated with the mention of the NMW. As Figure 6.1.1 shows, as many as half of the workplaces in the 'Hotels and restaurants' and 'Wholesale and retail' sectors mention the NMW as an influence (in many cases the only influence) behind pay settlement outcomes. On the other hand, the NMW appears to affect no workplaces in the 'Financial Services' or 'Electricity, gas and water'.

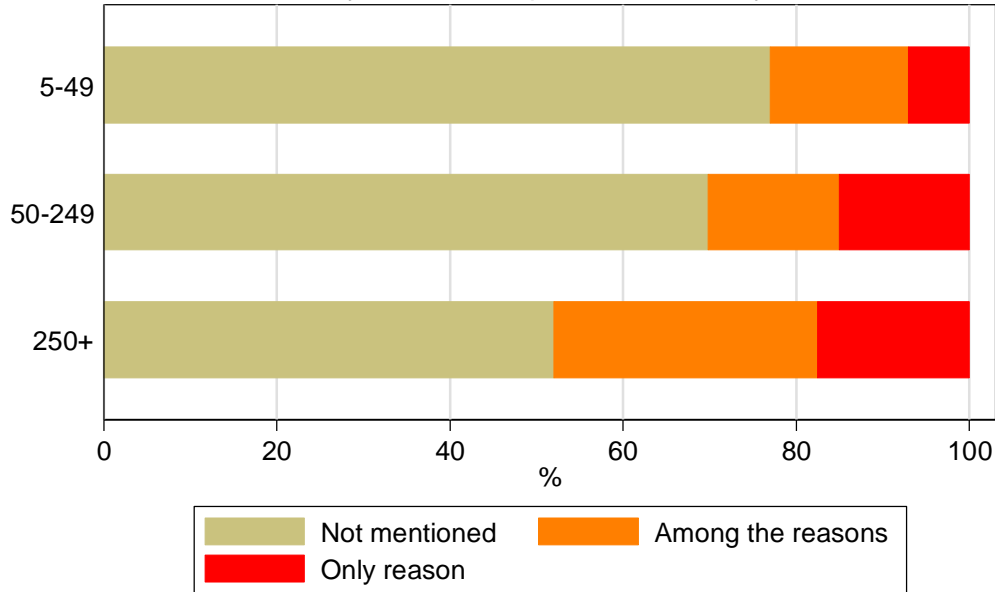
Figure 6.1.1: Is the NMW affecting pay settlements?



The size of the firm also emerges as a strong correlate of NMW mention (Figure 6.1.2). Firms with more than 250 employees are roughly twice as likely to mention the NMW compared to firms with at most 49 employees.

Figure 6.1.2: Is the NMW affecting pay settlements?

By size of firm, private sector only



Obs: 2584

Finally, we find systematic variation in the prevalence of the NMW as an influence on settlement by Government Office Region, generally following variation in nominal pay levels across regions. On the other hand, there is no clear pattern by foreign or family ownership or by legal status.

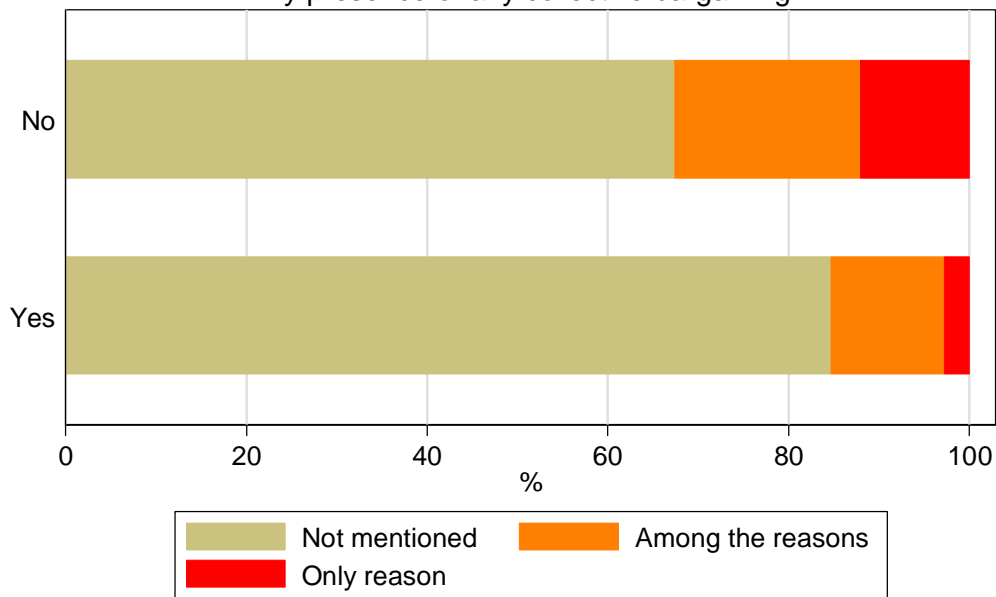
### 6.2 Pay determination arrangements

Whether the NMW is mentioned as an influence on the pay settlement for the LOG is related to the institutional arrangements for pay setting at the workplace. We considered types of pay determination method, the number of different pay determination methods present at the workplace, the presence of any collective bargaining, whether collective bargaining covered more than 50% of employees, the presence of a recognised union at the workplace and the union's level of involvement in the pay settlement.

This analysis, carried out across the whole economy, indicates that the NMW tends to be mentioned more frequently as an influence where worker representation or

involvement are absent. As shown in Figures 6.2.1 and 6.2.2, the NMW is mentioned more frequently where collective bargaining is not present and where there are no recognised unions or where unions are not heavily involved with management. This suggests the NMW may be 'stepping-in' where other institutions protecting workers are absent.

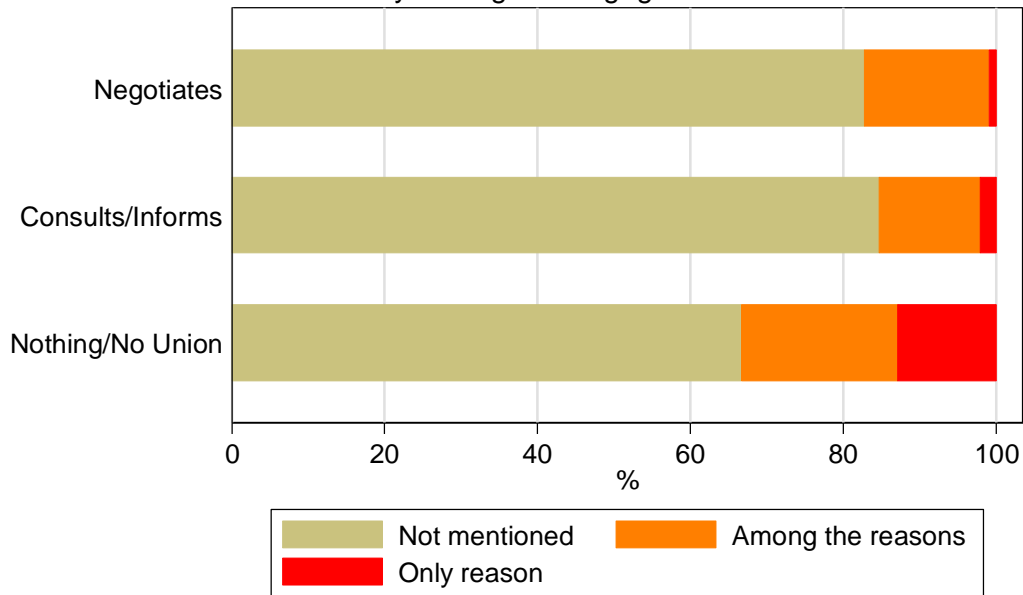
Figure 6.2.1: Is the NMW affecting pay settlements?  
By presence of any collective bargaining



Obs: 2606

Figure 6.2.2: Is the NMW affecting pay settlements?

By managerial engagement with union

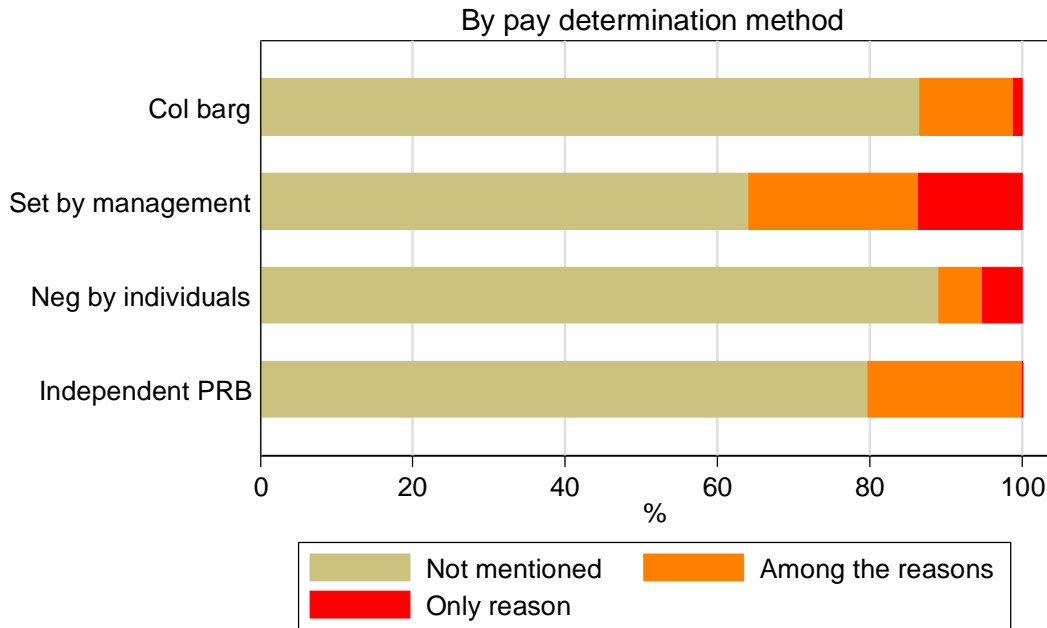


Obs: 2574

The above result is confirmed when looking at the incidence of the NMW as an influence by type of pay determination method for the LOG (Figure 6.2.3). Where pay is set directly by management, the NMW appears to have a greater bearing.

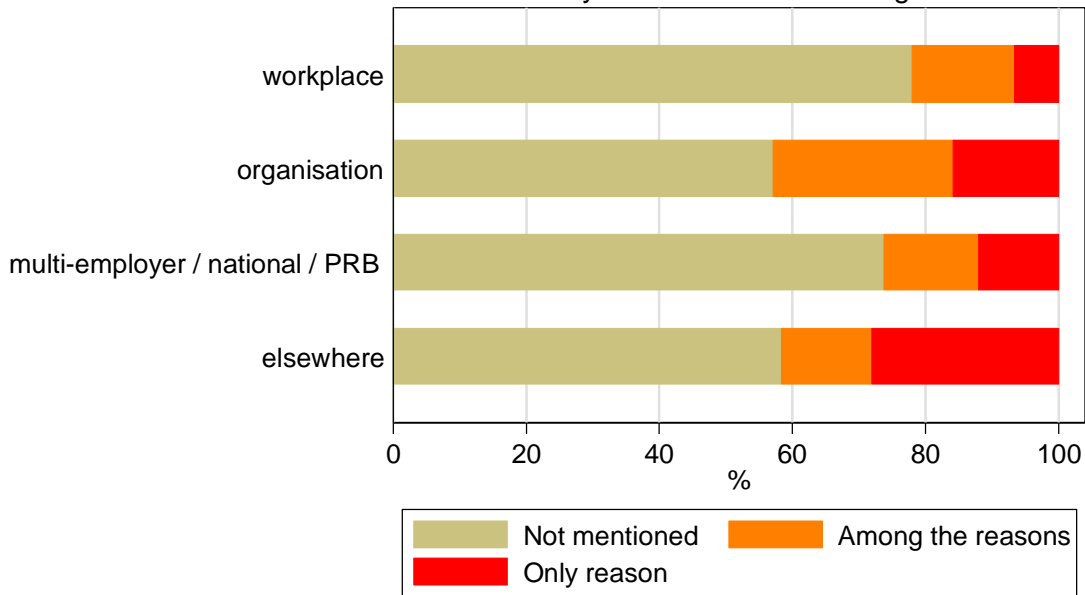


Figure 6.2.3: Is the NMW affecting pay settlements?



The institutional level at which pay is determined may influence the extent to which the NMW has a bearing on the settlement decision. For example, a larger and perhaps different set of factors may become relevant the higher the level of decision-making and therefore the larger the group of workers affected. The two-way tabulation shown in Figure 6.2.4 does not indicate any systematic relationship between the level of decision-making over pay and the influence of the NMW on pay settlements. However, as we discuss in Section 6.4, a positive and significant relationship emerges once other factors are controlled for.

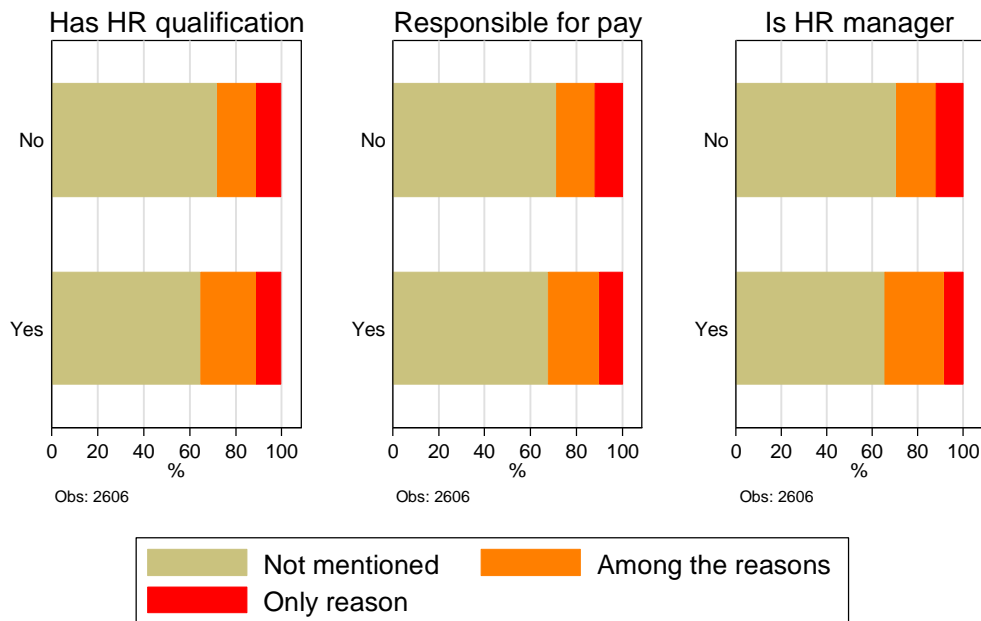
Figure 6.2.4: Is the NMW affecting pay settlements?  
By level of decision making



Obs: 2481

Finally, we explore the interaction between HR manager quality and the salience of the NMW. The hypothesis here is that HR managers that are less experienced or qualified may use the NMW to inform their own pay setting rather than relying on more careful studies on the input and output market conditions faced by their firm. However, as Figure 6.2.5 shows, the opposite appears to be the case. Managers with an HR qualification, those with responsibility for pay conditions and those whose title is explicitly 'HR manager' all tend to mention the NMW more frequently, and this difference is statistically significant in all cases. We return to this result in the multivariate analysis.

Figure 6.2.5: Is the NMW affecting pay settlements?  
By respondent characteristics

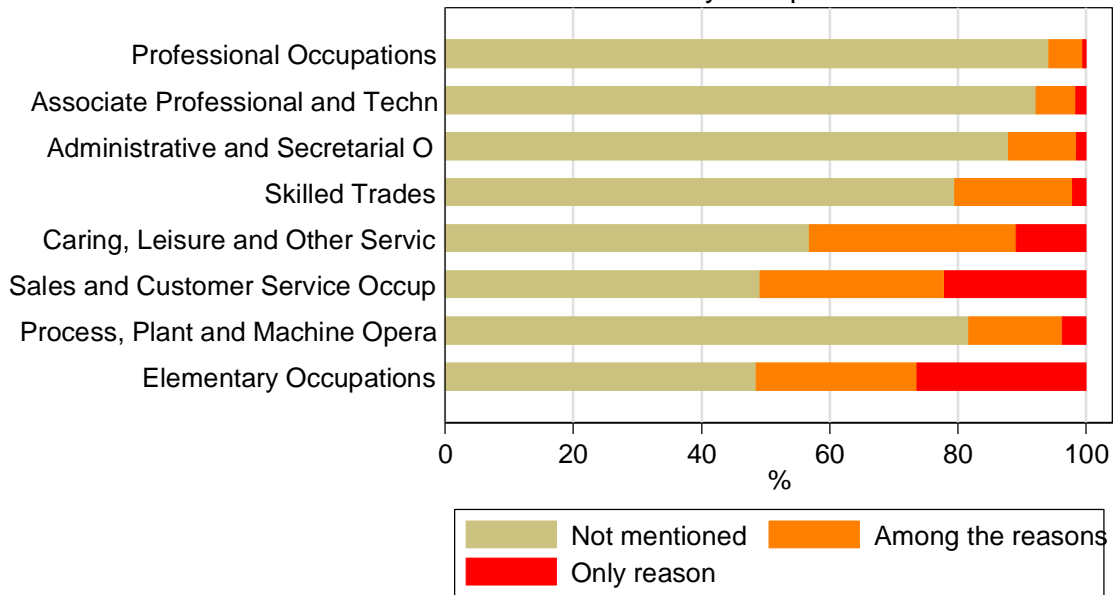


### 6.3 Employee characteristics

This section presents associations between the characteristics of employees at the workplace and whether the NMW was mentioned as an influence on pay settlement of the LOG across the whole economy.

The NMW is mentioned most frequently for settlements for Caring, Leisure and other Service occupations; Sales and Customer Service occupations; and Elementary Occupations (see Figure 6.3.1).

Figure 6.3.1: Is the NMW affecting pay settlements?  
By occupation



Obs: 2595

WERS holds further information on employee characteristics in the Employee Profile Questionnaire, where the HR manager reports the breakdown of employees by a number of characteristics, including pay.

An overview of these results is presented in Figures 6.3.2 and 6.3.3. As one would have expected, the results in relation to pay are clear-cut. There is a strong association between the share of employees paid at or below the NMW and the incidence of a NMW mention. The same holds for the share of employees paid between the NMW and £7.50 an hour, the share of part-time workers, female employees and non-UK employees. All are positively associated with mentioning the NMW as an influence on the LOG pay settlement. On the other hand, the percentage of ethnic minority, disabled and non-permanent employees do not appear to be systematically correlated with the NMW influencing settlements for the LOG.

Figure 6.3.2: Is the NMW affecting pay settlements?

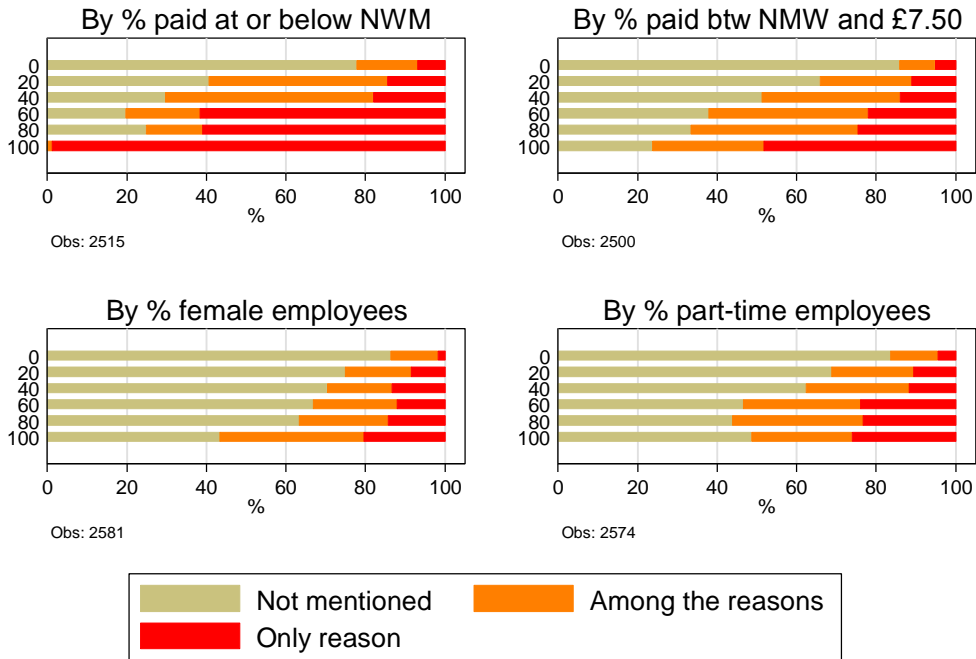
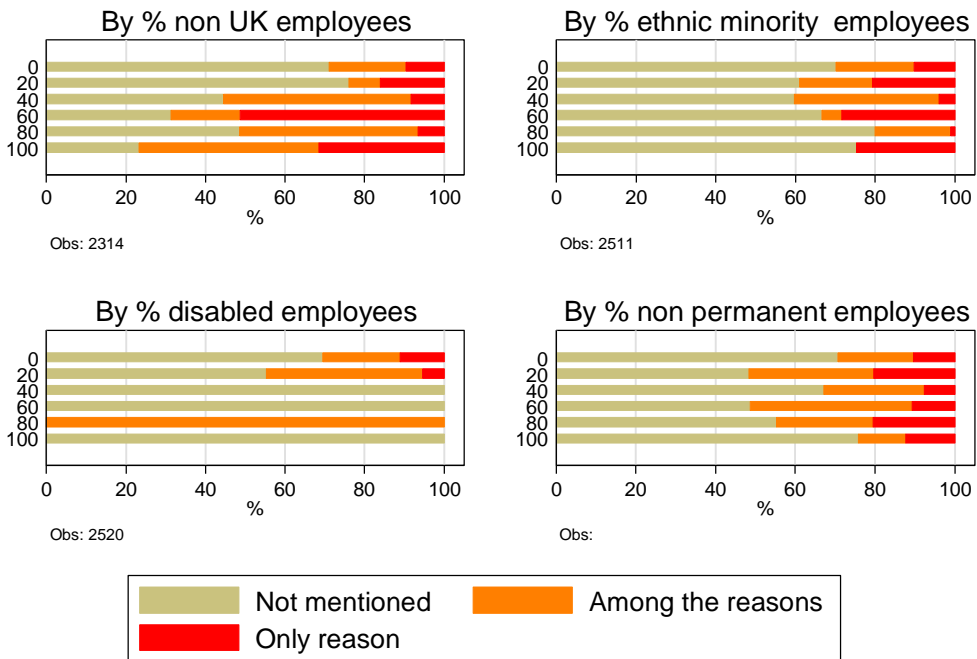


Figure 6.3.3: Is the NMW affecting pay settlements?



## *6.4 Multivariate analysis*

We bring all the above considerations together by running multivariate models in which the dependent variable is whether or not the NMW was mentioned as an influence on the LOG's pay settlement or review. This way we can identify the features of workplaces that are independently associated with mentioning the NMW.

For ease of presentation and interpretation, we use a linear probability (OLS) model. The model is run separately for private and public sector workplaces. This is because the pay determination mechanisms are very different across the two sectors, and running separate estimations allows one to tailor the specification to the specific features of each sector. Furthermore, one might anticipate the correlates of mentioning the NMW as an influence on pay setting to differ systematically across the two sectors in a way that would be obscured by a model incorporating workplaces from both sectors.

The following considerations were important in selecting the model specifications. Firstly, as we have already shown, levels of employee pay are necessarily a key factor determining whether the NMW affects the settlement. Our full specification therefore includes the share of workers paid at or below the NMW and the share of workers paid between the NMW and £7.50 per hour. The reference category is those paid above £7.50 per hour. What will be of most interest in this specification is whether other features of the workplace and its workforce have any bearing on whether the NMW is mentioned as an influence on the pay settlement.

In addition to the prevalence of low pay at the workplace, workplaces will be more likely to mention the NMW as an influence on pay determination the more they exhibit characteristics, or operate in contexts, indirectly associated with low levels of pay. We attempt to control for these using industry and occupational dummies. The industry dummies help capture the product market in which the workplace operates, while occupation dummies help capture the skill level of employees and other factors which determine their worth to the employer. The two sets of dummies may also capture aspects of the organisation of work that are specific to an occupation or industry, for example turnover, which may drive pay close to the NMW. Regional

dummy variables may pick up pay differentials arising from, among other things, different living costs across Britain. We experimented with several specifications, including a full set of regional dummies. However, after some sensitivity analysis, we opted for including only a dummy for Greater London, since this captured most of the regional variance in mentioning the NMW.

Levels of pay are also likely to be related to the levels of product market competition faced by workplaces and the extent to which they are successful at capturing rents. These are known to vary across sectors and so will be captured, in part, by the sector dummies. Beyond that, in the private sector estimation, we make use of a set of questions in WERS on the nature of the market in which the workplace operates. For example, WERS asks managers about the type of competition and the number of competitors they face.

Building on the above bivariate analysis, we incorporate aspects of the type of pay determination methods in place and the level of HR managers' qualifications in the estimation.

Finally, we control for firm size and the number of workplaces the employer has in Britain. There is ample evidence indicating that firm size is related to pay levels and market power. Larger firms may also have access to greater resources and information to devote to pay determination, which may affect the way in which they respond to changes to the NMW.

Our full regression model can be described as follows:

$$\Pr(NMW) = \alpha + \beta \times EST + \gamma \times PAYDET + \delta \times EMP + \theta \times PAY + \vartheta \times MKT + \varepsilon$$

where the vector *EST* contains workplace features, *PAYDET* describes pay determination methods, *EMP* includes workforce characteristics excluding pay, *PAY* contains information on the pay of workers at the workplace, and *MKT* refers to market competition variables (included in the private sector model only).

For each sector, we estimate the models incrementally, starting with workplace characteristics only and layering one additional vector of controls in each successive specification. Each set of additional controls carries new missing values and

therefore reduces the estimation sample. If the missing values are at random, a reduced sample may increase standard errors (causing some variables to lose their statistical significance) but it should not alter the broad pattern of estimated coefficients. Of more serious concern is if missing values are not random with respect to observables, such that selection effects come into play when using the reduced sample. This can alter both the nature and significance of the coefficients on the original variables in a way that is unrelated to the fact new variables have been introduced. To avoid this, every time there is a noticeable reduction in sample size between specifications, we re-estimate the more parsimonious specification on the smaller sample from the following, more extended specification. To the extent that the results from this re-estimation are not markedly different from those on the full sample, we can be reassured that sample selection on observables is minimised. The results from this exercise indicate that the results from the estimations below are comparable despite the falling sample size as more controls are introduced.

Full regression tables are presented in Annex A. Looking at the estimation table for the private sector, a few notable results emerge. Firstly, we see how a number of the industry and occupation dummies and the dummy for the Greater London region come up as significant in specifications 1 to 3. However, once the share of workers at or just above NMW is included in the estimation (specification 4), these variables lose a large part of their statistical significance - although the sets of industry and occupation dummies each remaining jointly significant. This a striking result, as it implies that, once pay levels are accounted for, the nature or organisation of work have at most a weak association with whether the NMW is mentioned as an influence on pay settlements. As an exception to this result, we note that settlements for 'Caring, Leisure and Other Service occupations' remain positively associated with mentions of the NMW as influence on pay, even when controlling for the level of pay. This suggests something about the nature of these jobs, perhaps high turnover, makes them track the NMW more closely.

It is informative to consider the covariates that remain significant when the share of workers at or just above NMW is included in the estimation. We see that, even conditioning for pay levels, the share of women,<sup>7</sup> part-time workers and non-British

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<sup>7</sup> Significant only at the 7% level.



workers are all positively correlated with pay settlements being influenced by the NMW. On the other hand, the share of workers on non-permanent contracts, disabled employees or of ethnic minority employees are not associated with mentions of the NMW.

The method of pay determination for the LOG is a relevant factor behind whether the NMW is mentioned as an influence, even when accounting for workforce characteristics and pay. Specifically, compared to unilateral pay-setting by management, the NMW is mentioned less frequently in the presence of collective bargaining. Setting 'collective bargaining' as the reference category in our models, settlements where pay is 'set by management' are a statistically significant 13 percentage points more likely to mention the NMW. This strengthens support for the hypothesis discussed in previous sections that the NMW becomes a less relevant consideration when other pay protection mechanisms are in place.

We find consistent results suggesting that the NMW is more likely to be mentioned as an influence on pay settlements the higher the level of decision-making and the larger the group of workers affected. Firm size is positively and significantly associated with the NMW being mentioned in Model 1 and only marginally insignificant in Model 2. At the same time (and contrary to the results from two-way tabulations), controlling for firm size and pay determination methods reveals a positive and monotonic relationship between the level of decision-making and the NMW being mentioned as an influence to settlements is found throughout our specifications. This is consistent with the hypothesis that a more formal and precise approach to the NMW is taken the more extended and complex is the scope of the decision taken. For example, research commissioned for this year's LPC report finds that larger firms are more likely to pay the exact value of the NMW than to resort to ad hoc rounding (Ritchie, Whittard, and Dawson, forthcoming). This may be explained by access to richer information sets and more sophisticated evidence to inform pay determination.

As hinted in two-way tabulations, the level of managerial quality, proxied by whether the HR manager holds a relevant qualification, emerges as strongly and positively correlated with the NMW being mentioned. This runs contrary to the hypothesis that the NMW may be used by low quality managers as an inexpensive shortcut to

setting a pay increase in line with the 'going rate'. Instead, it may be that more qualified managers are more aware of the NMW and/or more concerned with being compliant. It might also be another indicator of the degree of resource firms devote to HR issues and, as such, can be interpreted in a similar way to the findings on firm size noted above. The coefficient on the binary variable indicating whether the respondent has responsibility over pay setting is insignificant.

Model 5 adds market competition variables, and is only estimated for the private sector. The introduction of these variables is aimed at understanding how product market competition and the presence of rents may affect the salience of the NMW for pay settlements. Their inclusion does not, however, alter the results significantly. Comparing results with previous specifications, the inclusion of variables describing the product market does not alter the broad nature of previous results, except that the occupational dummies are no longer jointly significant. Coming to the market competition variables themselves, we find that the NMW is mentioned more among workplaces faced by very price sensitive demand, in line with the hypothesis that workplaces facing stronger competition will be more vulnerable to labour cost increases.

Results from estimations for the public sector may appear more challenging to interpret. Firstly, despite an  $r^2$  reaching 0.26 in Model 4, a quick glance at the tables in Annex A reveals how all coefficients are insignificant except for very few exceptions, and no blocks of variables are jointly significant. We cannot rule out that this is due to the lower sample size available for public sector compared to private sector estimations. For this reason, we sought to keep the model as parsimonious as possible, by limiting geographical identifiers to a dummy for Greater London; reducing the industry categories to public administration, education, health and 'other'; and dropping occupational dummies entirely (as these were also strongly collinear with the industry dummies, leading to unstable coefficients).

However, a closer look at the results suggests there is in fact some genuine signal in the pattern observed. The results indicate that the NMW is mentioned as an influence on the settlement of the LOG: the larger the share of employees paid the

NMW, at workplaces that are part of a multi-workplace organisation<sup>8</sup> and when the pay determination methods for the LOG are the same as those for other non-managerial employees. Each of these has a plausible explanation. The first is trivial. The fact that multi-workplace organisations mention the NMW more frequently may reflect the same motivations whereby larger private sector firms do so. Finally, where the same pay determination methods are in place for all non-managerial occupational groups, all considerations that are relevant to any of the other occupational groups (including the NMW) may also come to bear onto the settlement of the LOG, particularly if pay equity is highly valued in public sector organisations.

Therefore, the only potentially puzzling result is whether the insignificance of all the other factors is genuine or driven by limitations in the data and size of the sample. There are reasons to think the former. Pay setting mechanisms are known to be more complex and structured in the public compared to the private sector, and affect very large segments of the workforce. Specifically, pay determination in around 85% of public sector workplaces is either in the form of collective bargaining (which we have seen is associated with a reduced influence of the NMW) or Independent Pay Review Bodies (which is a more extended form of mandatory pay settlement).<sup>9</sup> In line with the evidence presented until now, which suggests the NMW is less influential where other forms of pay protection or pay setting are in place, it is not surprising that the NMW plays a more limited role in the public sector and that its mention is only associated with a very small set of characteristics.

### *6.5 Robustness checks and falsification tests*

We re-run the above estimations for the purpose of testing the robustness of the results and to check for falsification of the findings. Specifically, the associations uncovered and described in the previous section are robust to several slight

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<sup>8</sup> We are cautious on the coefficient on single-workplace organisations as its statistical significance may be driven by a sample selection effect when introducing workforce characteristics.

<sup>9</sup> Note however that, while statistically insignificant, the coefficient on the Independent Pay Review dummy is positive.

variations in model specification. Furthermore, we re-run the private sector models altering the dependent variable to whether the workplace mentions the NMW as the only influence on the pay settlement of the LOG.<sup>10</sup> The results from these estimations (not shown) broadly replicate those above. The only exception to this is that the share of employees at or near the NMW emerge as the only workforce characteristic which is statistically associated with a single mention of the NMW. In other words, contrary to what we saw in the model for any mention of the NMW, the share of female, part-time and non-British employees is insignificant once pay levels are accounted for.

We also re-run multivariate analysis to identify whether the correlates of the mention of the NMW as an influence on pay settlements are different among higher-paying workplaces, which may only be subject to possible knock-on effects of the NMW. To do so, we exclude workplaces where workers are paid at or near the NMW and therefore will 'obviously' be affected by the NMW. Specifically, we exclude workplaces where the average median wage merged from ASHE is below £7.50 per hour. The remaining sub-sample includes workplaces where workers are paid above the NMW but that do sometimes mention the NMW as an influence. Re-running the multivariate analysis on this sub-sample is intended to shed light on characteristics discriminating which workplaces are susceptible to 'knock-on' effects.

However, the multivariate analysis across both private and public sectors reveals broadly the same pattern of results as the main estimations, suggesting that many of the same characteristics associated with NMW mention in general are also associated with mentioning of the NMW at higher-paying workplaces.

Finally, we test whether the associations uncovered by our models are genuinely related to the NMW by re-running the model and altering the dependent variable to each of the other possible influences on pay settlements.<sup>11</sup> Discussing the results of each estimation and how these relate to results for the NMW as an influence is

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<sup>10</sup> It was not possible to re-run the models on public sector workplaces due to only very few of these mentioning the NMW as an influence on its own.

<sup>11</sup> We would like to thank Jonathan Wadsworth for this useful suggestion.

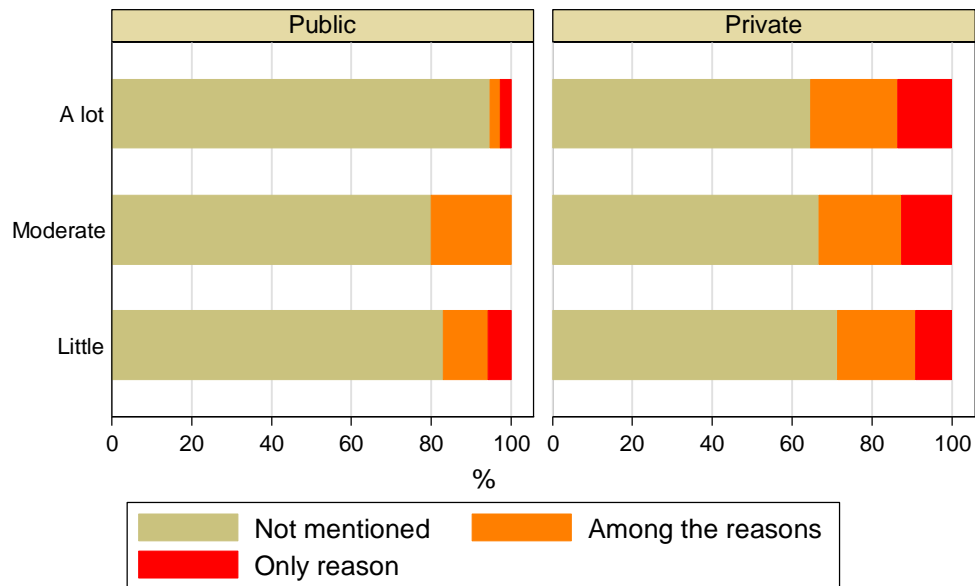
beyond the scope of this paper. However, the results clearly indicated that the pattern of associations identified in our main model were indeed distinctive and specific to the NMW.

## **7 THE RECESSION AND THE INFLUENCE OF THE NMW ON PAY SETTLEMENTS**

In this final section, we make use of new questions introduced in WERS 2011 where the manager is asked to identify the effect of the recession on the workplace and the actions managers have taken in response.

The recession will likely have squeezed margins or otherwise toughened economic conditions faced by firms. A priori, it is possible that firms that under normal conditions would not have given much regard to the NMW when deciding pay settlements could now start to feel the effect of the uprating. We test this by exploiting the WERS question which ask managers: “Looking at this card, can you tell me to what extent your workplace has been adversely affected by the recent recession?”

Figure 7.1.1: The influence of the NMW during recession  
By public-private sector and impact of recession



Obs: 2596

The charts in Figure 7.1.1 suggests the above hypothesis may be true for the private sector, but not in the public sector. However, additional multivariate analysis (discussed below) indicates this relationship is not robust to the conditioning on workplace characteristics.

Despite this lack of relationship, it is possible that workplaces mentioning the NMW as an influence on settlements differ in the actions taken as a result of the recession. Managers are asked in WERS: "Looking at this card, I would now like to focus on the impact on your workforce. Which, if any, of these actions were taken by your workplace in response to the recent recession?". While the number of reactions taken tends to be the same across workplaces where settlements were affected and not affected by the NMW, the types of reactions differ systematically between them.

Figure 7.1.2 plots the fraction of workplaces where each action was undertaken, separately for workplaces where the NMW was mentioned as an influence and those where it was not.

Figure 7.1.2: Reactions to the recession  
By NMW mention

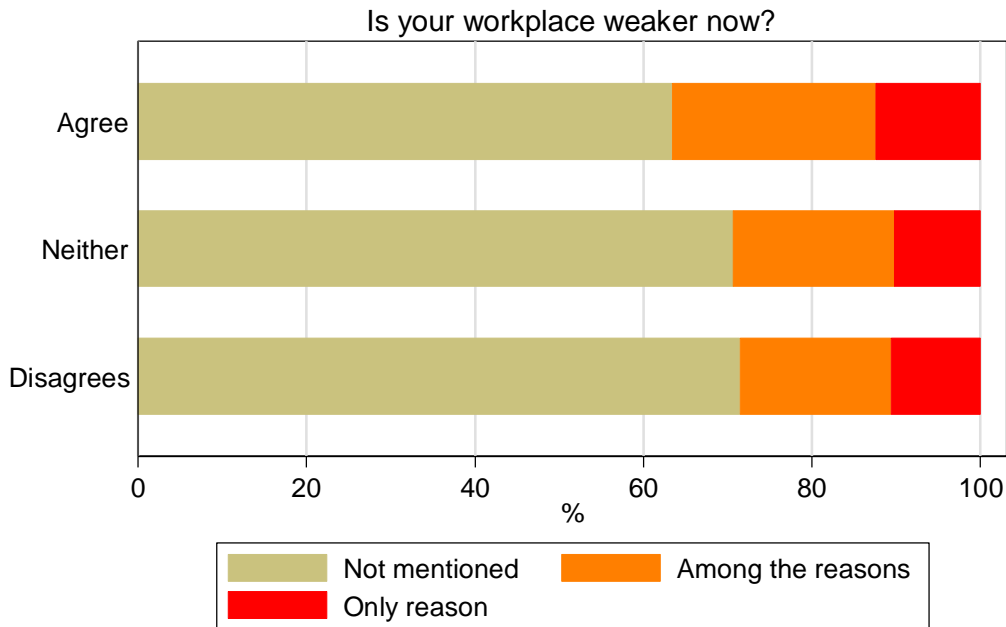


The chart reveals a few notable results. Firstly, workplaces where the NMW was mentioned as an influence on pay settlements are, naturally, much less likely to institute a wage freeze or cut. Interestingly, however, the increased pressure on wages does not seem to have pushed firms toward more redundancies. Quite the opposite, workplaces where the NMW was mentioned as an influence are systematically less likely to make reductions to their labour force. Instead, these workplaces appear to absorb the effects of the recession by reducing basic hours of work. This is consistent with Bryan et al. (2012). Workplaces mentioning the NMW are also less likely to reduce the use of agency workers and slightly increase their use of such workers.

However, managers at workplaces that declare the NMW was an influence on the most recent pay settlement are more likely to state their workplace is now weaker as a consequence of the recession. As indicated in the chart below, the share of workplaces reporting the NMW as an influence on pay settlements is around 8 percentage points higher where managers state they agree to 'This workplace is now

weaker as a result of its experience during the recent recession', compared to workplaces there the manager is neutral or disagrees.

Figure 7.1.3: The influence of the NMW during recession



Obs: 2595

We use a multivariate linear probability model to check whether this relationship holds once other factors are controlled for. Results are presented in Annex B, for public and private sector separately. The first column is a regression of whether an workplace mentions the NMW as an influence on pay settlements regressed on dummies for 'Agree' and 'Neither' to the above statement (essentially replicating the above chart). Note that the coefficient on 'Agree' is significant. The second column introduces dummies for workplaces where managers state the impact of the recession was 'Moderate' or 'A lot', compared to workplaces where managers state there was 'Little' impact. Importantly, the association between the NMW and the perception of increased vulnerability is confirmed despite conditioning on the severity of the impact of the recession. However, once workplace characteristics from our specification 2 above are included, the coefficients on managers' answers to the



above two questions, both in the public of private sector estimation, do not follow any discernible pattern and all are statistically insignificant.<sup>12</sup>

Overall, there is at most weak evidence that workplaces that stated the NMW was an influence on the pay settlement of the LOG were more severely affected by the recession and/or emerged as weaker from it. However, workplaces mentioning the NMW differ markedly from the rest in the mitigating actions implemented. They tend to absorb the shock by reducing hours rather than employment.

## **8. DISCUSSION AND IMPLICATIONS**

While workers paid the NMW account for around 4% of employees (LPC,2012: 38), the extent to which the NMW may affect the circumstances of a broader segment of the working population has been of continued interest among researchers and policy makers involved with the NMW.

Evidence to date has generally found that the consequences of the NMW and its upratings remain broadly confined to the very lowest paid workers. Stewart (2009) finds only small 'spill-over effects' on wages, while changes to pay setting methods in low-paying sectors (such as the move to an October settlement) are likely to affect workers paid very close to the NMW. Furthermore, while the NMW seems to have led to compression in wage differentials, these trends are not irreversible, as the experience during the recession has shown.

In the context of this evidence, our finding that as many as 30% of workplaces mention the NMW as an influence on pay settlements may appear as surprising. However, we believe it is possible to reconcile these findings.

Firstly, a large part of the discrepancy emerges because we are looking at the phenomenon through a different lens. While research such as Stewart (2009) has

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<sup>12</sup> Manager's agreement to the statement 'This workplace is now weaker as a result of its experience during the recent recession' is jointly significant in the public sector, but the pattern across coefficients is not monotonic.

the ambition of quantifying the causal impact of the NMW, the evidence presented here is closer to an *as is* mapping of the *interpretation* managers make of past events. The fact that a large share of managers quote the NMW as an influence on the latest pay settlement tells us first and foremost about how they perceived the events that led to that settlement. However, whether such perceptions actually shape the objective nature of the settlement outcome (and we have seen this is not always the case), or, importantly, whether the final outcome of the event would have been any different in a world without the NMW uprating (despite how managers are responding), are open questions. That is not to say that managers' perceptions are not rooted in an objective reality. However, they certainly capture a different dynamic from what we commonly understand as a causal effect. It is therefore not surprising that our estimate of its extent differs from previous estimates of a narrower but firmer causal effect.

The lens offered by the data at hand, however, opens the possibility to answer a different, and new, type of question. Precisely because it consists of managers' perceived influences on settlements, our data is particularly suitable for inferring possible *broader* interpretations managers assign to the NMW, beyond its literal role as a wage floor. The evidence presented on the associations between the NMW and other influences mentioned at higher-paying workplaces provides a suggestive but nevertheless compelling indication that the NMW uprating is being interpreted by some as a benchmark for adequacy (which, however, may or may not be met). This insight, which is only available through interviews with workplace managers, is lacking in previous studies. This may further explain the discrepancy with earlier work.

The main contribution of this paper is to understand the nature of workplaces where the NMW is acting as an influence on pay settlements, by exploiting the rich institutional detail contained in WERS. As discussed in Section 6, the levels of pay and factors indirectly affecting pay emerge as strongly associated with the extent to which the NMW affects pay settlements. Naturally, this is to be expected. Importantly, however, our multivariate analysis allows us to explore how the influence of the NMW interacts with the role of other pay determination methods and institutions protecting worker interests, conditioning on pay. The evidence in this

respect consistently points to the NMW having a stronger role where other forms of pay protection are absent. Indeed, the NMW is most frequently mentioned as an influence on pay determination where unions are absent or not involved in pay setting, and where management sets pay unilaterally. This result is particularly important as it implies the NMW is successful in achieving one of its key objectives, namely providing a minimum standard of pay protection in pockets of the labour market where such protection would otherwise be absent.

## 7. REFERENCES

Blanchflower, D. G., Bryson, A. and Forth, J. (2007) 'Workplace Industrial Relations In Britain, 1980-2004', *Industrial Relations Journal*, 38, 4: 285-302

Brown, W., Bryson, A. and Forth, J. (2009) 'Competition and the retreat from collective bargaining', Chapter 2 in W. Brown, A. Bryson, J. Forth and K. Whitfield (eds.) *The Evolution of the Modern Workplace*, pp. 22-47, Cambridge University Press

Brown, D., P. Ingram and J. Wadsworth (2004), 'Pay Settlements and Nominal Wage Rigidity in Britain', *British Journal of Industrial Relations*, 42, 3, 507–525

Bryan, M., Salvatori, A. and Taylor, M. (2012) 'The Impact of the National Minimum Wage on Earnings, Employment and Hours Through the Recession', Report to the Low Pay Commission, Institute for Social and Economic Research, University of Essex

Dickens, R., R. Riley and D. Wilkinson (2012) *Re-examining the Impact of the National Minimum Wage on Earnings, Employment and Hours: The Importance of Recession and Firm Size*. Research Report for the Low Pay Commission. January. (University of Sussex; and National Institute of Economic and Social Research.)

Dolton, P., Makepeace, G. and Tremayne, A. (2012) "Econometric Modelling of Pay Settlements and Earnings By Industry 1977-2010", *Low Pay Commission*

Forth, J. and N. Millward (2002), 'Pay Settlements in Britain', NIESR Discussion Paper no. 173 (London, National Institute of Economic and Social Research).

Gregg, P. and Machin, S. J. (2012) *What a Drag: The Chilling Impact of Unemployment on Real Wages*, The Resolution Foundation

Incomes Data Services (2011a) *The Impact of the National Minimum Wage on Pay Setting Since 1994*, Low Pay Commission

Incomes Data Services. (2011b) *Has a Blanket of Pay Freezes Suddenly Engulfed the UK?* <http://idseye.com/2011/08/03/has-a-blanket-of-pay-freezes-suddenly-engulfed-the-uk/#more-863>, accessed 18 June 2013

Incomes Data Services (2012) *Impact of Economic Recovery on Pay Settlements*, Low Pay Commission

Low Pay Commission (2012) *National Minimum Wage: Low Pay Commission Report*, Cm 8302

Ritchie, R., Whittard, D., and Dawson, C. (forthcoming), *Assessing the Reliability and Usefulness of Official Data Sources*. Research Report for the Low Pay Commission (University of the West of England)

Stewart, M., 2009. *Testing for Spill-over Effects of the National Minimum Wage*. Research Report for the Low Pay Commission. December. (University of Warwick)

van Wanrooy, B., Bewley, H., Bryson, A., Forth, J., Freeth, S., Stokes, L. and Wood, S. (2013a) *The 2011 Workplace Employment Relations Study First Findings*, ESRC/ACAS/NIESR/DBIS

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/210104/13-535-the-2011-workplace-employment-relations-study-first-findings1.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210104/13-535-the-2011-workplace-employment-relations-study-first-findings1.pdf)

van Wanrooy, B., Bewley, H., Bryson, A., Forth, J., Stokes, L. and Wood, S. (2013b) *Employment Relations in the Shadow of Recession: Findings from the 2011 Workplace Employment Relations Study*, Palgrave MacMillan

## ANNEX A – MULTIVARIATE RESULTS OF CORRELATES OF NMW MENTION (PRIVATE SECTOR)

	Model 1		Model 2		Model 3		Model 4		Model 5	
PRIVATE SECTOR - Pr(NMW mentioned as influence to settlement) - OLS	Workplace characteristics		Workplace characteristics + pay determination method		Workplace + pay determination method + workforce characteristics		Workplace + pay determination method + workforce characteristics + pay		Workplace + pay determination method + workforce characteristics + pay + market competition	
D: Manufacturing (Reference category)	0		0		0		0		0	
	(.)		(.)		(.)		(.)		(.)	
E: Electricity, gas and water	-0.206	**	-0.1926	*	-0.0732		-0.0489		-0.049	
	(0.0011)		(0.0123)		(0.3113)		(0.4292)		(0.4544)	
F: Construction	0.0293		0.001		0.05		0.0307		0.006	
	(0.6640)		(0.9871)		(0.3989)		(0.6251)		(0.9256)	
G: Wholesale and retail	0.2758	***	0.242	***	0.1231	*	0.0807		0.0882	
	(0.0000)		(0.0000)		(0.0321)		(0.1516)		(0.1205)	
H: Hotels and restaurants	0.5839	***	0.5361	***	0.2366	**	0.138		0.1624	
	(0.0000)		(0.0000)		(0.0091)		(0.1230)		(0.0731)	
I: Transport and communication	0.0632		0.0335		-0.0114		-0.0339		-0.039	
	(0.5601)		(0.7782)		(0.8908)		(0.6504)		(0.6097)	
J: Financial services	-0.1614	**	-0.1383	**	-0.2232	**	-0.1073		-0.1027	
	(0.0019)		(0.0041)		(0.0017)		(0.0947)		(0.1369)	
K: Other business services	0.0053		-0.0173		-0.0167		0.0213		0.0398	
	(0.8962)		(0.6886)		(0.7931)		(0.6995)		(0.4872)	
M: Education	0.2145	*	0.1675		-0.0786		-0.0842		-0.0643	
	(0.0482)		(0.1181)		(0.5513)		(0.5023)		(0.6142)	
N: Health	0.1856	**	0.1221		-0.1696	*	-0.1469	*	-0.1214	
	(0.0016)		(0.0634)		(0.0354)		(0.0389)		(0.0941)	
O: Other community services	0.3526	***	0.2865	***	-0.0024		-0.0238		0.0018	
	(0.0000)		(0.0002)		(0.9769)		(0.7614)		(0.9819)	
In Greater London area	-0.1445	***	-0.136	***	-0.0817	*	-0.0239		-0.0121	
	(0.0000)		(0.0002)		(0.0277)		(0.4916)		(0.7436)	

	Model 1	Model 2	Model 3	Model 4	Model 5
<b>PRIVATE SECTOR - Pr(NMW mentioned as influence to settlement) - OLS</b>	<b>Workplace characteristics</b>	<b>Workplace characteristics + pay determination method</b>	<b>Workplace + pay determination method + workforce characteristics</b>	<b>Workplace + pay determination method + workforce characteristics + pay</b>	<b>Workplace + pay determination method + workforce characteristics + pay + market competition</b>
Firm size (<50) (Reference category)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Firm size (50-249)	0.0607 (0.2092)	-0.0165 (0.7563)	0.004 (0.9320)	0.0023 (0.9600)	-0.0202 (0.6695)
Firm size (250+)	0.2107 *** (0.0000)	0.1225 (0.0524)	0.0568 (0.3153)	0.023 (0.6703)	0.0023 (0.9664)
Is single independent establishment	-0.0116 (0.7775)	0.0182 (0.7063)	0.031 (0.4842)	0.0122 (0.7748)	0.0208 (0.6466)
Is 50%+ Family owned	0.0733 * (0.0399)	0.0428 (0.2348)	0.0115 (0.7422)	0.0047 (0.8878)	0.0096 (0.7738)
Is 51%+ Foreign owned	-0.0334 (0.6222)	-0.0343 (0.6008)	-0.0019 (0.9749)	0.0447 (0.4047)	0.0383 (0.4877)
Collective Bargaining (Reference category)		0 (.)	0 (.)	0 (.)	0 (.)
Pay set by management		0.219 ** (0.0025)	0.1754 * (0.0108)	0.127 * (0.0449)	0.0933 (0.1655)
Pay negotiated on an individual basis		0.1232 (0.1300)	0.1127 (0.1491)	0.054 (0.4614)	0.0076 (0.9226)
Level of decision making: Workplace (Reference category)		0 (.)	0 (.)	0 (.)	0 (.)
Organisation		0.1435 ** (0.0043)	0.1266 ** (0.0062)	0.0826 (0.0546)	0.1011 * (0.0256)
Multi-employer / national / Pay Review Body		0.3223 ** (0.0018)	0.3299 *** (0.0000)	0.294 *** (0.0002)	0.2921 *** (0.0001)
Elsewhere		0.2538 ** (0.0068)	0.2108 * (0.0150)	0.1607 * (0.0373)	0.1685 * (0.0405)

	Model 1	Model 2	Model 3	Model 4	Model 5
<b>PRIVATE SECTOR - Pr(NMW mentioned as influence to settlement) - OLS</b>	<b>Workplace characteristics</b>	<b>Workplace characteristics + pay determination method</b>	<b>Workplace + pay determination method + workforce characteristics</b>	<b>Workplace + pay determination method + workforce characteristics + pay</b>	<b>Workplace + pay determination method + workforce characteristics + pay + market competition</b>
LOG pay method is same as pay method for other occupations		-0.0386 (0.3739)	-0.0312 (0.4903)	-0.0061 (0.8940)	-0.0022 (0.9622)
Respondent has HR qualification		0.0784 (0.0547)	0.0948 * (0.0112)	0.1038 ** (0.0033)	0.105 ** (0.0035)
Respondent is responsible for pay conditions		0.0219 (0.5063)	0.0125 (0.6788)	0.0111 (0.7011)	0.017 (0.5667)
Professional Occupations (Reference category)			0 (.)	0 (.)	0 (.)
Associate Professional and Technical Occupations			0.0153 (0.7521)	0.0198 (0.6491)	0.0096 (0.8392)
Administrative and Secretarial Occupations			-0.0524 (0.2597)	-0.0325 (0.4535)	-0.0529 (0.2471)
Skilled Trades			0.1012 (0.0817)	0.0814 (0.1469)	0.0846 (0.1593)
Caring, Leisure and Other Service Occupations			0.3067 *** (0.0000)	0.1528 * (0.0200)	0.1434 * (0.0331)
Sales and Customer Service Occupations			0.0912 (0.1222)	0.0329 (0.5326)	0.0326 (0.5450)
Process, Plant and Machine Operatives			0.1572 (0.0676)	0.0996 (0.1573)	0.0837 (0.2287)
Elementary Occupations			0.1059 (0.1420)	0.0094 (0.8930)	0.0032 (0.9633)
Proportion of employees aged 21 or under			0.0035 ** (0.0035)	0.0015 (0.1737)	0.0014 (0.2191)
Female employees as proportion of all employment			0.0022 ** (0.0082)	0.0015 (0.0541)	0.0018 * (0.0217)



	Model 1	Model 2	Model 3	Model 4	Model 5
<b>PRIVATE SECTOR - Pr(NMW mentioned as influence to settlement) - OLS</b>	<b>Workplace characteristics</b>	<b>Workplace characteristics + pay determination method</b>	<b>Workplace + pay determination method + workforce characteristics</b>	<b>Workplace + pay determination method + workforce characteristics + pay</b>	<b>Workplace + pay determination method + workforce characteristics + pay + market competition</b>
Percentage of workforce part-time			0.0033 *** (0.0000)	0.0019 ** (0.0069)	0.0019 ** (0.0095)
EEA and non-EEA nationals as proportion of all employment			0.0029 ** (0.0023)	0.0022 * (0.0152)	0.0023 * (0.0157)
Ethnic minority employees as proportion of all employment			-0.0007 (0.4636)	-0.0018 (0.0535)	-0.0021 * (0.0282)
Proportion of employees with long-term disability			-0.0028 (0.2098)	-0.0023 (0.2639)	-0.0025 (0.2265)
Percentage of employees on temporary/fixed-term contracts			-0.0014 (0.0794)	-0.0009 (0.1404)	-0.0008 (0.1947)
% earning the adult rate of the National Minimum Wage or less				0.0054 *** (0.0000)	0.0051 *** (0.0000)
% earning between just over the adult NMW rate and £7.50 per hour				0.0045 *** (0.0000)	0.0043 *** (0.0000)
Firm faces many competitors (Reference: few competitors)					0.0339 (0.2781)
Demand depends on price					0.0734 * (0.0160)
Demand depends on quality					-0.0138 (0.7275)
Constant	0.0509 (0.3439)	-0.1696 (0.0657)	-0.3325 ** (0.0015)	-0.2876 ** (0.0031)	-0.3092 ** (0.0032)
R-squared	0.24	0.28	0.41	0.47	0.48
N	1737	1578	1395	1369	1293
P-value in parentheses; * p<0.05, ** p<0.01, *** p<0.001					

## ANNEX A – MULTIVARIATE RESULTS OF CORRELATES OF NMW MENTION (PUBLIC SECTOR)

	Model 1	Model 2	Model 3	Model 4
<b>PUBLIC SECTOR - Pr(NMW mentioned as influence to settlement) - OLS</b>	<b>Workplace characteristics</b>	<b>Workplace characteristics + pay determination method</b>	<b>Workplace + pay determination method + workforce characteristics</b>	<b>Workplace + pay determination method + workforce characteristics + pay</b>
L: Public administration	0.1239 (0.1383)	0.1471 (0.0696)	0.1209 (0.1860)	0.1308 (0.1489)
M: Education	0.0115 (0.7778)	0.0463 (0.4916)	0.045 (0.5626)	0.0351 (0.6344)
N: Health	0.1441 (0.2322)	0.1271 (0.1398)	0.1311 (0.0881)	0.1539 (0.0397) *
X: Other (Reference category)	0 (.)	0 (.)	0 (.)	0 (.)
In Greater London area	-0.0815 (0.0990)	-0.068 (0.2284)	0.1122 (0.3277)	0.1312 (0.2754)
Workplace size (<50) (Reference category)	0 (.)	0 (.)	0 (.)	0 (.)
Workplace size (50-249)	-0.0376 (0.3943)	-0.0142 (0.7415)	0.0108 (0.7936)	0.0314 (0.4520)
Workplace size (250+)	-0.0732 (0.2365)	-0.0708 (0.2232)	-0.0188 (0.7778)	-0.0163 (0.8024)
Is single independent establishment	-0.0409 (0.5900)	-0.1038 (0.2041)	-0.182 (0.0069) **	-0.1961 (0.0031) **
Collective Bargaining (Reference category)		0 (.)	0 (.)	0 (.)
Pay set by management		-0.0001 (0.9992)	-0.0596 (0.3051)	-0.0458 (0.4222)
Independent PRB		0.1359 (0.2018)	0.0873 (0.3787)	0.1226 (0.2179)
Level of decision making: Workplace (Reference category)		0 (.)	0 (.)	0 (.)
Organisation		-0.2571 (0.0656)	-0.2178 (0.0428) *	-0.1974 (0.0625)

	Model 1	Model 2	Model 3	Model 4
<b>PUBLIC SECTOR - Pr(NMW mentioned as influence to settlement) - OLS</b>	<b>Workplace characteristics</b>	<b>Workplace characteristics + pay determination method</b>	<b>Workplace + pay determination method + workforce characteristics</b>	<b>Workplace + pay determination method + workforce characteristics + pay</b>
Multi-employer / national / Pay Review Body		-0.1585 (0.2630)	-0.1317 (0.1566)	-0.1093 (0.2095)
Elsewhere		-0.1603 (0.3068)	-0.0837 (0.5196)	-0.0209 (0.8695)
LOG pay method is same as pay method for other occupations		-0.11 (0.0702)	-0.146 (0.0282) *	-0.1606 (0.0156) *
Respondent has HR qualification		-0.1148 (0.0609)	-0.1027 (0.0935)	-0.119 (0.0609)
Respondent is responsible for pay conditions		0.0221 (0.7542)	0.0657 (0.3554)	0.0799 (0.2609)
Proportion of employees aged 21 or under			0.0059 (0.2140)	0.0063 (0.1662)
Female employees as proportion of all employment			0.0014 (0.1209)	0.0012 (0.1848)
Percentage of workforce part-time			0.0008 (0.5276)	0.0005 (0.7326)
EEA and non-EEA nationals as proportion of all employment			-0.0008 (0.3967)	-0.0012 (0.2559)
Ethnic minority employees as proportion of all employment			-0.0027 (0.1978)	-0.0031 (0.1618)
Proportion of employees with long-term disability			0.0017 (0.6190)	0.0017 (0.5936)
Percentage of employees on temporary/fixed-term contracts			0.0017 (0.3341)	0.0008 (0.6344)
% earning the adult rate of the National Minimum Wage or less				0.0074 (0.0001) ***
% earning between just over the adult NMW rate and £7.50 per hour				0.0014 (0.2423)
Constant	0.0929 **	0.3114 *	0.1405	0.1161

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
<b>PUBLIC SECTOR - Pr(NMW mentioned as influence to settlement) - OLS</b>	<b>Workplace characteristics</b>	<b>Workplace characteristics + pay determination method</b>	<b>Workplace + pay determination method + workforce characteristics</b>	<b>Workplace + pay determination method + workforce characteristics + pay</b>
	(0.0044)	(0.0282)	(0.1275)	(0.1780)
R-squared	0.05	0.15	0.21	0.26
N	779	706	550	526
P-value in parentheses; * p<0.05, ** p<0.01, *** p<0.001				

## ANNEX B – MULTIVARIATE RESULTS OF THE EXPERIENCE OF THE RECESSION

Pr(NMW mentioned as influence to settlement) - OLS	PRIVATE SECTOR			PUBLIC SECTOR		
	<i>Est 1</i>	<i>Est 2</i>	<i>Est 3</i>	<i>Est 1</i>	<i>Est 2</i>	<i>Est 3</i>
Workplace weaker (Agree)	0.0971 (0.0004)	*** 0.0803 (0.0079)	** 0.0733 (0.1073)	-0.0881 (0.0086)	** -0.0412 (0.2384)	-0.0385 (0.5092)
Workplace weaker (Neither)	0.046 (0.1242)	0.0365 (0.2316)	0.0476 (0.3218)	-0.1095 (0.0001)	*** -0.1038 (0.0002)	*** -0.0907 (0.0841)
Workplace weaker (Disagree) (Reference category)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)	0 (.)
Recession impact (A lot)		0.0351 (0.2275)	0.0126 (0.7571)		-0.1073 (0.0004)	*** -0.0864 (0.1416)
Recession impact (Moderate)		0.0318 (0.2904)	-0.0169 (0.7087)		0.0375 (0.2239)	0.0508 (0.5982)
Recession impact (Little) (Reference category)		0 (.)	0 (.)		0 (.)	0 (.)
Establishment characteristics (including pay determination method)				NO	NO	YES
R-squared	0.01	0.01	0.29	0.02	0.05	0.16
N	1822	1820	1571	773	771	735

P-value in parentheses; \* p<0.05, \*\* p<0.01, \*\*\* p<0.001