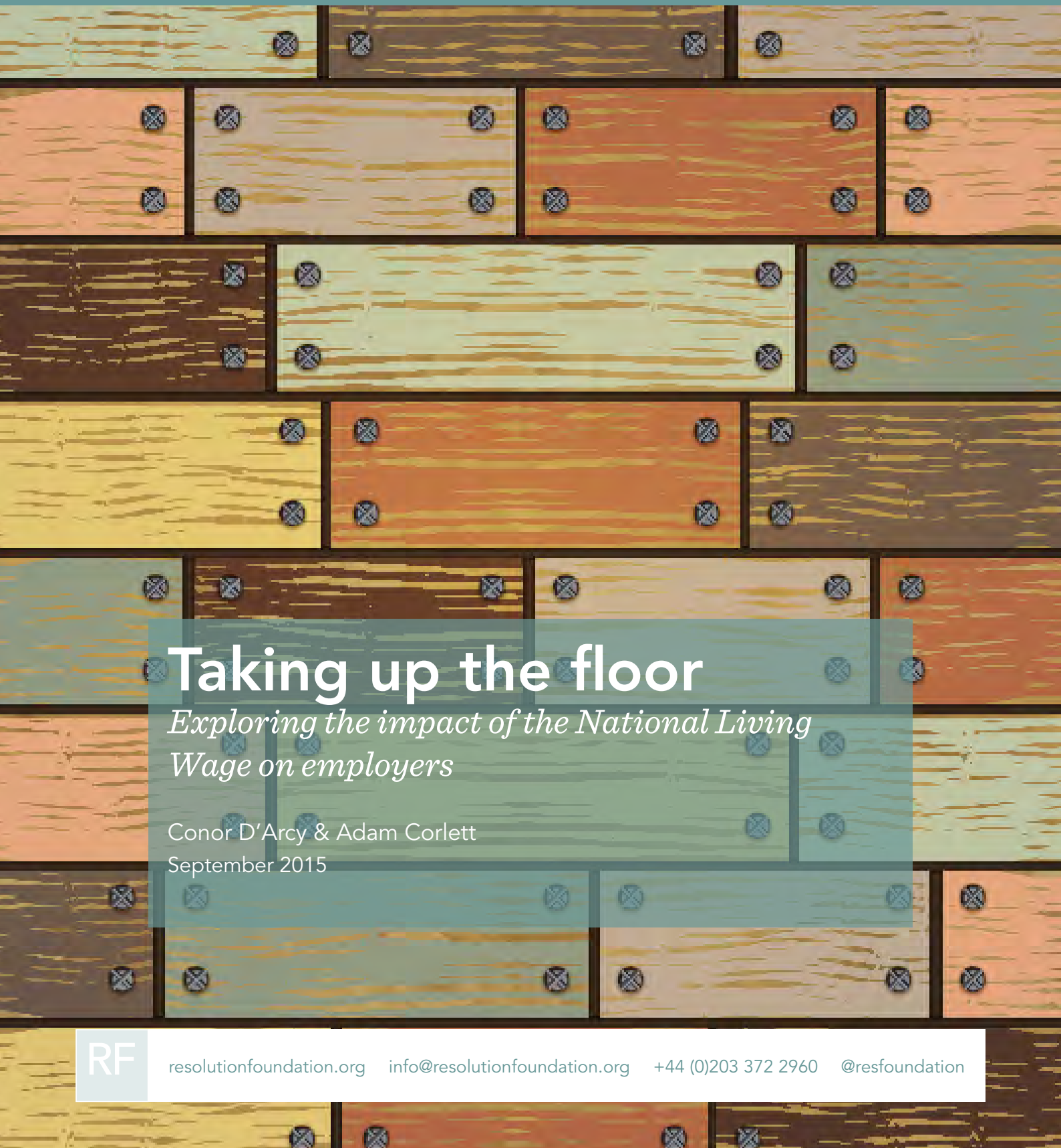
RF

Resolution Foundation
REPORT



Taking up the floor

Exploring the impact of the National Living Wage on employers

Conor D'Arcy & Adam Corlett

September 2015

Acknowledgements

This work contains statistical data from the ONS which is Crown Copyright. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

Contents

Executive Summary

Adjusting to a higher wage floor

In the run-up to the introduction of the National Minimum Wage (NMW) in 1999, economists and politicians alike were divided as to its potential impact. Some argued that a legal minimum wage was needed to boost the wages of the lowest earners and end exploitatively low pay. Others claimed it would lead to higher unemployment, and it would be exactly those workers the policy was trying to help – low earners – who would find their employment opportunities curtailed.

More than a decade and a half later, the verdict is in: overall employment has not been negatively affected. Combined with research from other wage floors around the world, it is now widely accepted that at moderate levels minimum wages do not appear to damage employment. Research into why those fears of job losses were not borne out suggests that employers adapt in a variety of ways, including raising prices, giving smaller pay rises to higher-paid workers, reducing profits and boosting the productivity of their staff.

The 'National Living Wage' (NLW) – from April 2016 the minimum wage for those aged 25 and over – represents a new departure for the UK's wage floor, taking it into uncharted territory. From its starting point of 50p above the NMW, it is expected to rise to more than £9 in 2020, roughly £1 higher than the projected value of the NMW. Rather than an arbitrary cash figure, this is intended to be equal to 60 per cent of the typical wage of workers aged 25 and over (known as the 'bite'). Based on its assessment of minimum wages internationally, the Resolution Foundation's review of the NMW argued that an all-worker 'bite' of 60 per cent would be a stretching ambition over the medium- to long-term. Because those aged under 25 typically earn less than older workers, the government's aim for 2020 therefore pushes beyond the Resolution Foundation's 60 per cent figure, and the current evidence base.

With this new approach to the wage floor comes the possibility of a more pronounced effect on employers. In analysis published alongside the Summer Budget in July, the Office for Budget Responsibility's (OBR) central estimate was that 60,000 jobs would be lost and 0.2 per cent fewer hours worked on

average across the economy because of the NLW. It acknowledged however the uncertainty around this figure. Clearly, then, while the move will mean a broader coverage than any previous wage floor seen before in the UK – a welcome boost for millions of low earners – it is also likely to prove more challenging for firms to implement.

Estimating the impact

Previous Resolution Foundation analysis has shown that 6 million workers – or 23 per cent of all employees – stand to benefit in 2020 as a result of the NLW. Of those gaining, 3.2 million earn less than the NLW and are brought up to at least that level; while another 2.8 million workers who already earn above the NLW are expected to gain as employers preserve pay gaps between different roles. Three-in-ten women and four-in-ten part-time workers should benefit, with the biggest effects felt outside London, with nearly three-in-ten employees in the East Midlands and Yorkshire and the Humber expected to see pay rises in 2020. On average across the 6 million affected, the NLW is expected to add £760 annually to pre-tax wages. In total, our analysis finds that £4.5 billion will be added to the wage bill of British firms in 2020.

The question we turn to in this report – the second in a series investigating the impact of the NLW – is how that added cost will be distributed across employers, taking into account industry, occupation, sector and size. A picture develops of a divide in the labour market, with the NLW appearing to represent only a relatively small additional cost for some employers while looking more considerable for others.

The analysis we present here does not take into account potential job losses or how employers may choose to adjust staffing arrangements within their firms. We focus on three measures that help identify the size of the added pressure: the change in the wage bill; the number and share of employees affected; and the 'bite' – the NLW measured as a proportion of the typical (median) wage. These measures only give some sense of how employers will be affected; for example we have not included the higher employer National Insurance or pension contributions that will arise as a result. We therefore understate the extra labour costs facing firms and draw this distinction by referring instead to a 'wage bill' effect.

But taken together, these indicators are signposts towards where the NLW's effect will be greatest and where some form of adaptation – be it lower employment, slower wage growth for higher paid staff, a productivity drive, higher prices, lower profits or some combination of all these – will be most likely. Ensuring successful implementation of the NLW will require remaining alive and sensitive to these challenges and pinch points, reinforcing the need for the independent LPC to play a key monitoring and advisory role.

The impact by industry – minor in many, larger for some

Across the whole economy, our analysis finds that in 2020:

» One-in-four (23 per cent) workers are set to gain

» The bite across all workers should rise from 55 per cent in 2014 to 65 per cent

» Britain's total wage bill is expected to increase by 0.6 per cent

Figure 1 shows how these impacts are set to be distributed across industries, identifying three broad groups:

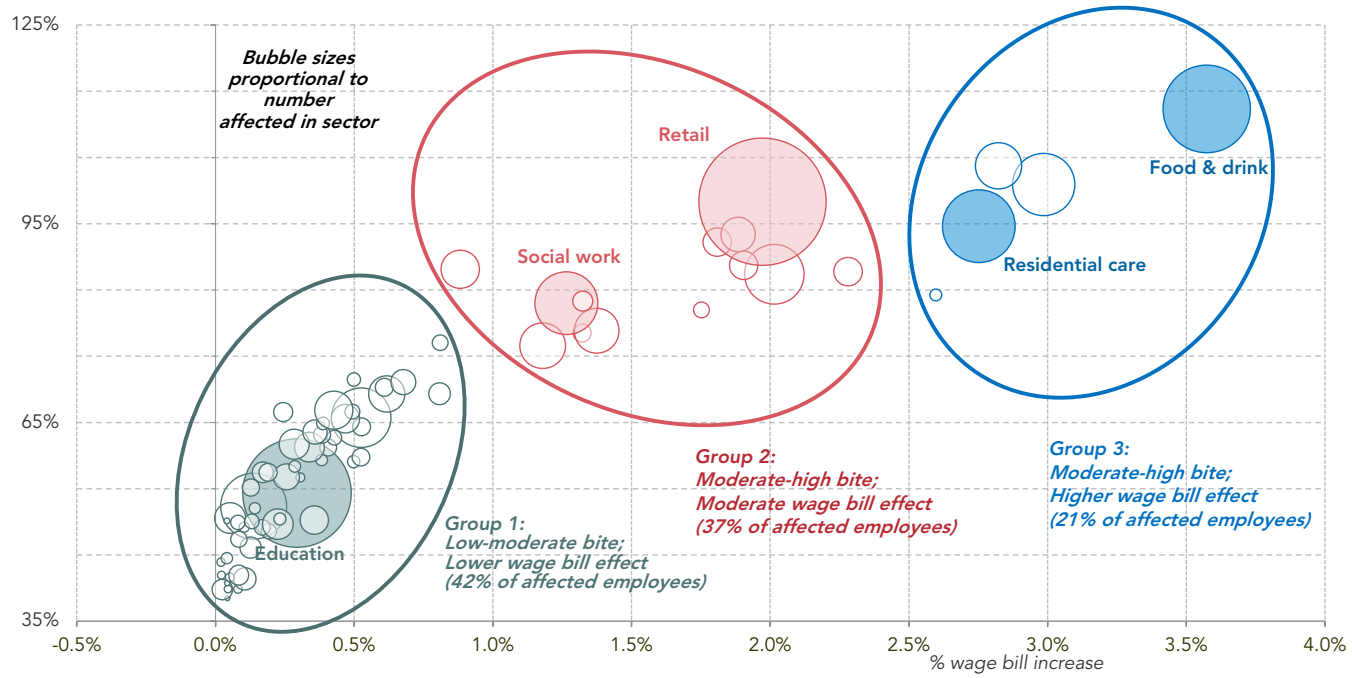
» Group 1 includes those sectors in which the bite remains low-to-moderate (around 75 per cent and lower) even after the full increase in the NLW and in which the wage bill effect is less than 1 per cent. This group covers more than two-fifths (42 per cent) of all those employees set to benefit from the NLW – highlighting the fact that employers in a significant number of industries are unlikely to face substantially raised costs. This group includes education and health.

» Group 2 covers those sectors in which the bite is set to rise to a moderate-to-high level (75 per cent to 100 per cent) and in which the wage bill effect might be considered moderate (from just under 1 per cent to just over 2 per cent). Pressures here are likely to be stronger on average than in Group 1, though they are not necessarily any more acute than have been overcome by firms in response to previous minimum wage rises. This group covers over one-third (37 per cent) of employees set to benefit and includes the large retail sector and social work.

» Industries in Group 3 are set to face moderate-to-high bites (95 per cent to 110 per cent) and wage bill effects in excess of 2.5 per cent. If any employers are going to face challenges as a result of the introduction of the NLW, we might therefore expect them to be located in this group. Just one-in-five of those employees set to benefit work in these sectors, with the group including the residential care and food and drink sectors.

Figure 1: The most acute cost and wage compression pressures will be concentrated in a handful sectors

National Living Wage as % 'bite' of industry median



Notes: Industries included in the chart are at a two-digit SIC codes.

Source: RF analysis based on ASHE, 2014

Focusing on the largest sectors, we find that 2.7 million of those employees set to benefit by 2020 – 46 per cent of all those affected – work in just three high-level industries: wholesale and retail; hospitality (*accommodation and food services*); and support services (*administrative and support services*).

In each of these industries, a large section of the workforce will be affected, approaching nearly every second employee in hospitality (48 per cent). While support services (38 per cent of those affected in this industry work in cleaning) and retail face larger wage bill increases than most sectors, by far the biggest increase is expected to be in hospitality at 3.4 per cent in 2020.

As low-paying sectors, the bite associated with the NMW in these industries is already much higher than in the rest of the economy. They will rise further in the coming years. For example, the NMW had a bite of 74 per cent in retail in 2014; that is expected to rise to 88 per cent by 2020. A similar increase is likely in support services (from 72 per cent in 2014 to 85 per cent). Yet even after these increases the bites in retail and support services fall short of the one prevailing in hospitality in 2014 (93 per cent). By 2020, the bite in hospitality is set to rise beyond 100 per cent, meaning that (at least) half the employees in the industry will be paid the NLW or less.

The particular case of social care

Striking though this high-level industrial view is, it of course conceals much of the variation within parts of the economy. Most notable is social care, which has been consistently flagged as a low-paying sector and one in which non-payment of the NMW is already problematic. While human health and social work activities appears to be one of the less affected industries in our analysis, the grouping together of higher-paid employees like doctors with low-earners such as care workers obscures the severe challenge that social care presents.

Unless the government commits to ensuring that this welcome move to boost the wages of the lowest earners is followed through in the form of higher funding where necessary, it may lead to fewer care staff being employed, other elements of service provision being squeezed further and the scandal of non-payment worsening.

The public/private split

The private sector will face a bigger shift than the generally higher-paying public sector with the majority of workers affected (79 per cent) employed by private firms in 2020.

That said, the wage increases implied by the NLW in the public sector need to be weighed against the 1 per cent annual pay cap placed upon the sector at the Summer Budget. With 0.8 million public sector workers expected to see some pay rise as a result of the NLW in 2020, representing a total wage bill increase of 0.2 per cent, the burden of meeting the NLW's costs may fall on other public sector workers in the shape of no or smaller pay increases.

Local authorities, in which 20 per cent of employees are likely to see some wage boost, will find this more challenging than central government (where 8 per cent are affected), especially given the cuts to local government budgets over recent years.

Smallest firms likely to feel the increase most

The effect will also vary greatly by the size of the firm. The smallest firms – those that employ fewer than 10 workers – are likely to feel the greatest impact on average. Across all such firms the NLW is expected to add 1.5 per cent to total wage bills in 2020. The average bite is in line to rise from 70 per cent in 2014 to 83 per cent in 2020.

In contrast, wage bill effects are expected to be more modest in firms with more than 250 employees – which account for more than half (52 per cent) of all employees affected. We estimate that firms employing 250-4,999 employees will face an average increase in their wage bill of 0.6 per cent in 2020, while firms with 5,000 or more employees record a slightly higher change at 0.7 per cent.

Crucial that the Low Pay Commission is at the heart of the NLW process

The UK's labour market is set to undergo considerable change as a result of the NLW, not just at the point of its introduction in April 2016 but also as its value scales new heights over the remainder of the decade. This report and previous Resolution Foundation analysis has set out how the NLW will significantly ramp up the UK's ambition on the wage floor, taking us beyond the borders of the current evidence base. Its impact and firms' responses are therefore highly uncertain. Nonetheless, over the 16 years since the NMW was introduced, firms have proved adaptable to rising wage floors: there is now widespread agreement that there has been little negative impact on employment and evidence that the NMW has boosted productivity is growing.

This report gives a sense of how the NLW's impact will vary across firms, but makes no claims to represent an exact prediction of how developments will play out across the different parts of the labour market. It is apparent that in some sectors and for certain employers, the new policy has the potential to prove much more challenging. The NLW is a bold step forward that will be

welcomed by millions of workers, but the size of the government's ambition means a clear plan for its implementation – with the LPC at its heart – is essential. Announcing this impressive increase without engaging with the challenge of putting it in place risks undermining the entire project.

Yet there remains uncertainty about the role the LPC will now play. This needs to be clarified, and the government should reinforce that the LPC has the freedom to recommend deviating from the path to 60 per cent if it has significant concerns about employment effects. The Resolution Foundation has called for the LPC to be given additional powers and resources to allow it to act as a look-out, identifying possible roadblocks ahead and developing solutions, to ensure this move into uncharted territory has the best possible navigation.

As well as confirming the LPC's centrality, there are other important steps government should take to pave the way for the NLW to succeed. Collaborating with firms who will have to pay the higher wages and exploring ways of boosting productivity will be vital within the private sector. But government's own role as an employer and funder of services means it has a responsibility to guarantee the NLW is effectively implemented without adverse consequences, particularly in social care. By taking these steps, the government will give the NLW the greatest chance of being a success for employees and manageable for employers.

Section 1

Introduction

The National Minimum Wage and the National Living Wage

For many years now, the National Minimum Wage (NMW) has been seen as a crucial, relatively uncontroversial pillar of the UK's labour market. There is, of course, some dispute each year over the precise size of the Low Pay Commission's (LPC) recommended increase or its effect on certain sections of the labour market, but there is broad political and economic agreement that the LPC has been effective in achieving its goal: to "help as many low-paid workers as possible without damaging their employment prospects."[1]

This consensus is a far cry from the controversy that surrounded the NMW's introduction in 1999, with contemporary fears of jobs being endangered and inflation set spiralling.[2] That this hasn't been the case owes much to the careful stewardship of the LPC but across a number of different countries, the evidence of wage floors over recent decades is that modest minimum wages have no adverse employment effect.

Following the announcement of the new 'National Living Wage' (NLW) in the Summer Budget however, the UK's wage floor is set to undergo a very significant increase. The NLW – which despite its title is not linked to the cost of living or the Living Wage campaign – will supplement the existing NMW for employees aged 25 and over. From April 2016, it will add 50p to the NMW for these workers, taking the floor to £7.20 per hour. This is intended to raise the minimum wage to 55 per cent of the median level of pay of those aged 25+.

Following the same logic of focusing on the 'bite' of the NLW rather than its cash level (one of the recommendations of the Resolution Foundation's Bain Review[3], and discussed in Box 1) the government wants to – depending on economic growth – raise it to 60 per cent by 2020.[4] The Office for Budget Responsibility (OBR) estimated at the Summer Budget that this would be equivalent to £9.35. This projection was based on the assumption that the median wage among those aged 25 and over grows at the same pace as average earnings across the entire economy over the next five years. There is, as the OBR acknowledges, much uncertainty involved in this calculation which could mean that 60 per cent of the 25+ median wage is higher or lower than £9.35.

Another unknown at this point is the role the LPC will play in the NLW's trajectory. Having set the ambition of reaching this 60 per cent bite figure by 2020, it is unclear whether the government

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/443328/BIS-15-409-NMW-Low-Pay-Commission-Remit-2016.pdf

[2] For more discussion see *The National Minimum Wage: The Evidence of its Impact on Jobs and Inequality*, Centre For Economic Performance, LSE, September 2008.

[3] Resolution Foundation, *More than a Minimum: The Resolution Foundation Review of the Future of the National Minimum Wage*, March 2014

[4] It remains to be seen exactly how the LPC will define the 25+ median. In this report we have used hourly pay excluding overtime, and excluding those with missing or distorted pay data, but not excluding apprentices or similar. Other options are possible. Also important is whether the median used is that at the start of the year (April), or in the middle of the year (October). To be conservative, we have used April.

would ignore or heed the LPC's advice should it recommend a slower pace of increases and in what circumstances that would occur.[5]

i Box 1: The Bain Review

Over 2013-14, the Resolution Foundation held a review of the NMW, chaired by Sir George Bain, the first chair of the Low Pay Commission. Led by a panel of labour market experts, the review concluded that the NMW had achieved its goals of boosting the wages of the UK's lowest earners without damaging their employment prospects. That said, while it had all but eliminated the most extreme low pay, one-in-five British employees are still low paid.* The review argued that the current architecture – a single legal wage floor for the UK and the LPC monitoring its impact – was still the correct framework to tackle low pay but that some changes were required to allow it to take on the challenge of low pay. The review put forward a package of reforms that would enable the government to achieve this. The recommendations included:

- The government should commit to reducing the share of employees who earn below two-thirds of the hourly median wage.
- The government should set out a practical cross-government plan to deliver on that commitment. This should include but not be limited to its judgement of what the NMW can and cannot contribute.
- The LPC's Terms of Reference should be revised to establish it as the government's watchdog on low pay, broadening its responsibilities and elevating its status to monitor the extent and persistence of low pay and to advise the government on how to tackle these entrenched problems.
- To increase certainty for employers, the LPC should also be asked to set out a preliminary intention for the subsequent year's NMW rate. This judgment would be open to revision.
- The government should, as a matter of routine, set out its ambitions for the future value of the minimum wage. This should be no more than an expression of intent, leaving the LPC free to pass judgment on the NMW that can be put in place from year to year. This ambition would best be expressed as a proportion of the median wage to be achieved over the medium-term. It would need to be arrived at by the government through an evidence-based assessment of what is possible but our early work suggests that an NMW of 60 per cent of the (all-worker) median wage is a reasonable lodestar, indicating the most that a minimum wage could contribute to the reduction of low pay over the medium- to long-term.
- The LPC's Terms of Reference should be amended to require that the LPC publish, alongside its recommendation for the NMW (a) an assessment of the extent to which its recommendation meets or falls short of the trajectory aspired to by the government; and (b) where its recommendation falls short, a commentary on the blockages to a higher rate and advice on policy changes that could make a higher rate possible in future.
- The Secretary of State should ask the LPC to publish analysis to inform debate around higher wage floors, showing how affordable it would be in different sectors to meet a higher minimum.

* Using the widely-used low pay threshold of two-thirds of median hourly pay

Who gains from the NLW?

Regardless of the exact figure it reaches, it is clear that the NLW will affect the wages of a significant proportion of employees in the UK. In the first report in this series on the impacts of the NLW, we estimated that 6 million employees in Britain[6] are likely to benefit by 2020, with an

[5] For a full discussion of the NLW and those affected see C D'Arcy, A Corlett and L Gardiner, *Higher ground: who gains from the National Living Wage*, Resolution Foundation, September 2015 and C D'Arcy and G Kelly, *Analysing the National Living Wage: Impact and implications for Britain's low pay challenge*, Resolution Foundation, July 2015.

[6] Data for Northern Ireland are not included in the ASHE micro-data on which this analysis is based. As such, the breakdowns in this report do not include employers in Northern Ireland.

average gain of over £750 a year.[7] This includes not only those currently earning below the NLW but also some of those above who stand to benefit from 'ripple effects' associated with employers' attempts to maintain pay gaps between employees in different roles. Given the focus on raising pay at the bottom, we noted that women and part-time workers are the most likely to gain and that the impact will be much more evident outside of London.

In total, we expect the move to boost wages by around £4.5 billion in 2020 – equivalent to a 0.6 per cent increase in the economy-wide wage bill (excluding the impact of employer NICs and pension contributions). However, interactions with the tax and benefit system mean that only 60 per cent of the gross wage gains – roughly £2.7 billion – are likely to find their way into net household income. Taken in the round with the other policies set out at the Summer Budget, we showed that – despite some of the framing at the time – the NLW will not offset the income losses associated with the £13 billion cut in working-age benefits for many families. Nevertheless, it remains a significant step forward in the battle against low pay.

Scope of this report

Our previous report discussed in depth how the gains of the NLW will be distributed across employees. In this paper, we turn to the other side of the equation and explore the impact on employers.

Despite the obvious benefits for workers, there has been something of a clamour from sections of industry suggesting that the NLW will create problems for British business.[8] In assessing how real such problems might be, it is worth noting that – given the variety of ways in which firms might react and adapt to the NLW – there is no single measure that definitively identifies the scale of the potential challenge. Instead, we present a suite of three different indicators, each of which provides a slightly different but complementary contribution to the debate. These are:

- the share of employees affected (i.e. how many workers a firm must give pay rises to) ;
- the minimum wage as a proportion of the median wage – or the bite (i.e. how does the NLW affect a firm's pay distribution); and
- the size of the wage bill increase (i.e. how much more money must a firm allocate to wage payments).

As recognised in Box 2, each of these approaches provides a window onto the impact of the NLW across the economy, though each has its shortcomings. In combination, this provides us with a valuable insight into the NLW's likely impact. We can then consider what the average impacts look like across different industries, firm sizes and sectors.

The report is divided into three additional sections:

- Section 2 focuses on impacts across industries, identifying those in which the NLW looks likely to have a relatively modest effect and those – lower-paying industries – where the challenge for firms is likely to be greater.
- Section 3 looks at other ways of grouping these impacts, including across different occupations, firm sizes and the public/private sector split.
- Section 4 reviews the evidence on how employers react to wage rises and emphasises the importance of thinking through the implementation of the NLW in order to ensure its success.

Although our approach is discussed throughout the main body of the report, detailed discussions of our methodology can be found in Annexes 1, 2 and 3.

[7] C D'Arcy, A Corlett and L Gardiner, op. cit.

[8] See for example: "George Osborne's national living wage a gamble, warns CBI boss", *The Guardian*, September 2015.

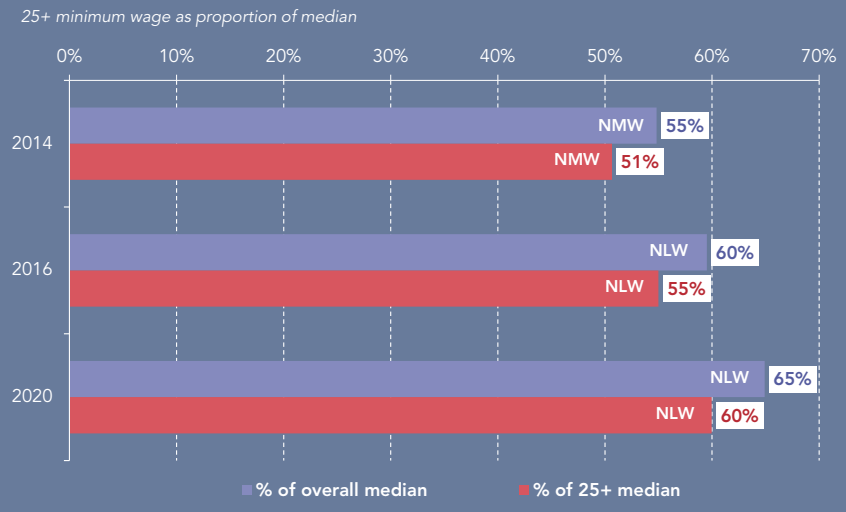
i Box 2: Indicators of the size of the impact

Identifying which parts of the economy are likely to find the NLW's introduction most demanding is challenging. Whatever 'cut' is taken of the available data, it necessarily requires grouping together employers in a variety of situations. As such, important differences may be obscured. For example, a consideration in estimating the size of the impact may be how large a share of the total operating costs or turnover in that industry are spent on wages. While it may represent a large increase in the wage bill, if the wage bill is a relatively small proportion of total operating costs, it may prove less of a concern.

The three measures we use in this report are:
The share of employees affected – Parts of the economy in which a relatively high proportion of employees are set to benefit from the NLW (relative to the overall figure of 23 per cent by 2020) would be expected in general to face more of a challenge in implementing the NLW. Where coverage rises particularly high there is an associated issue relating to the NLW becoming the 'going rate' and the limit this might place on opportunities for progression for lower paid workers.

The 'bite' – The bite is the hourly minimum wage as a proportion of the hourly median wage and provides an important indication of how the wage floor interacts with the wider pay distribution. The calculation of the NLW bite and comparison with minimum wage bites in different time periods and countries is complicated by the method through which the NLW is to be set. The initial £7.20 rate is intended to be equal to 55 per cent of the median wage not among all workers (as is usually the case when calculating a bite) but instead among earners aged 25 and over. It is then set to rise to 60 per cent on that measure by 2020. Because the median worker aged 25+ earns more than the median worker across all employees, this means that 60 per cent of the 25+ median will be higher than 60 per cent of the all-worker median. Figure B.1 shows the relationship between the two types of bite: in 2016 a 25+ bite of 55 per cent is expected to equal an all-worker bite of 60 per cent, with those figures rising to 60 per cent and 65 per cent respectively in 2020.

Figure B.1 The increasing bite of the minimum wage



Notes: Using hourly pay excluding overtime
Source: RF analysis based on Annual Survey of Hours and Earnings (ASHE), 2014

The proportionate wage bill increase – By considering how many employees are set to be affected and by how much their wages will rise, we can assess the additional gross wage costs facing employers. We express this as a proportion of their existing wage bill in order to better understand the relative size of the increase expected. For instance, though the cash increase in human health and social work activities is approximately the same as in administrative and support services, within the latter a greater share of employees are expected to be affected and the bite is higher.

Importantly, the figure we use focuses exclusively on the wage bill increase rather than the increase in total labour costs. A more complete estimation of the added costs for employers would include the additional National Insurance (NI) and pension contributions employers will pay as a result of the wages of some of their staff increasing. Because approximately half of those affected will be part-time employees, there will be limited additional costs for many employers (some staff will still be below the NI threshold (£8,060 in 2015-16) and the auto-enrolment earnings trigger (£10,000 in 2015-16)).

And, given that taxes and pension contributions are roughly proportional to wages, the percentage increase in wages alone is unlikely to underestimate the percentage increase in overall employee compensation costs, meaning the total percentage increase in labour costs is likely to be similar to the percentage increase in wage bills presented here.

Our analysis also excludes overtime, bonuses, benefits-in-kind as well as the tax and pension implications discussed above. Assuming that these don't rise in line with regular pay, the proportional impact on total labour costs may be smaller than our wage bill figures. With all this in mind, our figures should be considered most appropriate for comparing the relative impact between groups, and for the benefits for employees, rather than a perfect measure of costs.

Section 2

How will the NLW's impact vary by industry?

Arguably the most intuitive lens through which to view the NLW's impact is by industry. Are there some sectors of the economy in which the raising of the wage floor will create specific challenges that could have an impact on jobs, prices, profits or service availability?

We approach that question in this section by considering industries in relation to each of the three main indicators we listed in the previous section: the share of employees affected; the bite – the NLW as a proportion of the median or typical wage; and the wage bill increase. The range of potential adaptation strategies that firms might consider and the variation in impact within industries mean that we cannot make definitive judgements about the exact effects of the policy or how employers are likely to respond in one industry compared with another. Nonetheless, taken together the three measures give a good sense of the distribution of impacts across different sectors of the economy.

We consider impacts in both 2016 (when the policy is introduced) and 2020 (by which point the relative value of the NLW is intended to have reached its goal of a bite of 60 per cent of the typical wage of workers aged 25+). We can also split out those who benefit directly (currently earning below the NLW) and those who are indirectly affected (currently earning above the NLW but who may nevertheless receive a pay boost thanks to so-called 'spillover effects' as employers seek to maintain a gap between those on the lowest rung and those slightly higher up). As we set out in our previous report, 12 per cent of employees (3.2 million) are expected to benefit directly by 2020, while another 11 per cent (2.8 million) will receive indirect gains. Box 3 sets out our approach to estimating impacts in 2016 and 2020.

i Box 3: Projecting to 2016 and 2020

Our analysis uses data from the *Annual Survey of Hours and Earnings* (ASHE), with the most recent microdata available being for April 2014. We estimate the value of the NLW in 2016 and 2020 in relation to median pay for those aged 25 and over. This means we assume that the NLW has in fact reached 60 per cent of the median for those aged 25 and over in 2020 – in line with the government's ambition – though the government may set a different rate beyond 2016.

Our estimates of changes in wages and the number of people affected by the policy are uprated using OBR projections of earnings and employment growth to 2016 and 2020. We assume for simplicity that there are no changes in the composition of the labour market or the relative pay of different sectors and regions, beyond the impacts of the NLW. And we do not account for the NLW itself having an impact on median pay (which in turn would affect the level of the NLW) over the course of the parliament.

It should be noted that we estimate a slightly higher number of people directly affected by the NLW in 2020 than the OBR's modelling. This will be a result of methodological differences. We estimate 2016 and 2020 NLW equivalents (based on the bite) and apply these to historic data (2014 ASHE), whereas the OBR first projects forward its economic model and then calculates the level of the NLW. In addition, we maintain observed levels of non-compliance with legal minimum wage floors which the OBR does not do. See Annex 2 for further details on our approach to estimating the impacts of the NLW in the future.

In determining which industries to focus on, we are led by the groupings provided in the available data. We use the ONS's *Annual Survey of Hours and Earnings* (ASHE) and present industries for the most part at the broadest level available (one-digit SIC code) although we also explore some of the most exposed sectors at a more 'zoomed-in' level (two-digit SIC code). Table 1 shows the key findings within each of the broad industries and in five of the most affected sub-industries (indented rows in the table). We consider the findings across the three main metrics in turn below.

Table 1: The impact of the National Living Wage by industry

	2014	2016 *NLW at 55% of 25+ median*			2020 *NLW at 60% of 25+ median*		
	NMW Bite	Bite	Share of group affected	% wage bill increase	Bite	Share of group affected	% wage bill increase
All industries	55%	60%	18%	0.2%	65%	23%	0.6%
Accommodation & food services	93%	101%	43%	1.3%	110%	48%	3.4%
Food services	*95%*	*103%*	*43%*	*1.4%*	*112%*	*48%*	*3.6%*
Hotels / accommodation	*88%*	*95%*	*41%*	*1.1%*	*104%*	*46%*	*2.8%*
Agriculture, forestry & fishing	74%	80%	31%	0.6%	88%	40%	1.7%
Wholesale, retail & repair	74%	80%	32%	0.5%	88%	38%	1.3%
Retail	*83%*	*90%*	*41%*	*0.7%*	*98%*	*46%*	*2.0%*
Arts, entertainment & recreation	72%	78%	24%	0.3%	85%	32%	0.9%
Admin. & support services	72%	78%	33%	0.6%	85%	40%	1.7%
Cleaning	*85%*	*93%*	*53%*	*1.2%*	*101%*	*59%*	*3.0%*
Households as employers	70%	76%	23%	0.4%	83%	42%	1.3%
Other service activities	63%	68%	22%	0.4%	75%	27%	0.9%
Human health & social work	54%	59%	17%	0.2%	64%	23%	0.6%
Residential care	*80%*	*87%*	*43%*	*1.0%*	*95%*	*51%*	*2.8%*
Transport & storage	53%	58%	10%	0.1%	63%	16%	0.3%
Real estate	52%	56%	11%	0.1%	61%	17%	0.3%
Water supply & waste	51%	55%	11%	0.1%	60%	17%	0.4%
Manufacturing	51%	55%	12%	0.2%	60%	18%	0.5%
Construction	50%	55%	7%	0.1%	60%	12%	0.2%
Education	46%	50%	13%	0.1%	54%	20%	0.3%
Public admin. & defence	43%	46%	2%	0.0%	51%	5%	0.1%
Prof., scientific & technical	41%	45%	9%	0.1%	49%	12%	0.2%
Information & communication	37%	41%	5%	0.0%	44%	8%	0.1%
Finance & insurance	35%	38%	3%	0.0%	41%	6%	0.0%

Notes: The share affected covers both those earning below the NLW and brought up to (or beyond) the NLW as well as those already earning more than the NLW but who are likely to benefit from spillover effects. The bite is calculated based on the median wage across all employees.

Source: RF analysis of ASHE, 2014

In some industries, the proportion of employees receiving a pay rise will be between one-third and one-half

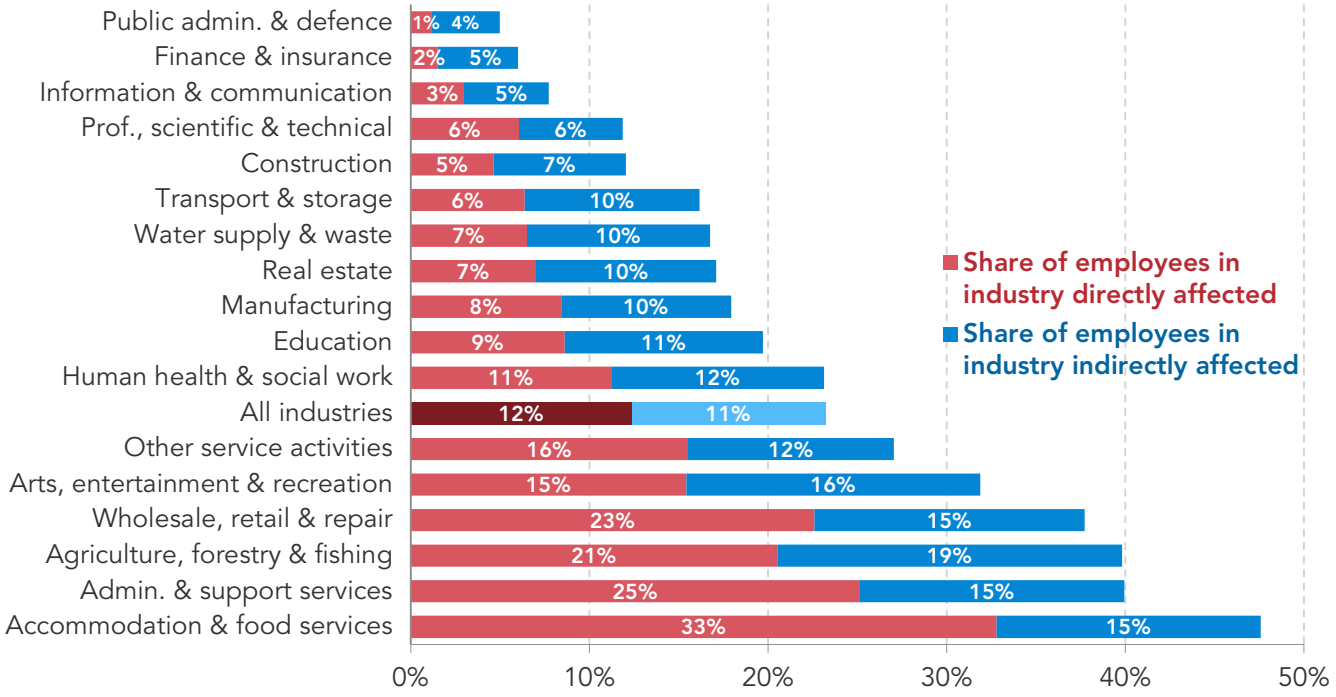
The first indicator we examine in order to gauge the NLW's impact on industries is the share of employees affected. In isolation, this only tells us what proportion of employees are likely to receive a pay rise, with no information on the size of those increases or the importance of wages relative to other costs facing employers in that industry. Nonetheless, it offers a sense of how

broad the NLW's impact will be across different parts of the economy.

Figure 2 shows the proportion of workers in each industry who are set to benefit from the NLW in 2020, broken down into those 'directly' and 'indirectly' affected. Those directly affected are employees who are expected to be earning below the NLW but will get brought up to (or beyond) the new wage floor. The indirectly affected are workers who are already earning slightly above the NLW. As such, employers will not be legally obliged to increase the wages of these workers but evidence suggests that many firms choose to keep pay gaps between different employees to recognise the differences in their roles. There is no firm academic agreement on the size of spillover effects but the approach we have taken here is similar to that used by HM Treasury and the OBR. A full discussion of our treatment of spillover effects is provided in Annex 3.

Figure 2: Close to half of the hospitality workforce stands to get a pay rise

Percentage of workers in each industry benefiting directly and indirectly from the NLW, 2020



Proportion of workers in each industry benefiting directly and indirectly from the NLW, 2020

Source: RF analysis of ASHE, 2014

Immediately clear from Figure 2 is the NLW's uneven impact across sectors. The policy will boost the wages of only a minority of workers in some of the highest-paying parts of the economy – financial and insurance activities, information and communication and professional, scientific and technical activities for example. This is of course, unsurprising given that relatively few employees in these industries will be on low wages. Although not included in Figure 2, the share of employees gaining in each of these industries is even smaller in 2016, approximately 3 percentage points lower in each case.

At the other end of the spectrum, 43 per cent of those in the accommodation and food services industry (hotels, bars, restaurants) are expected to get a pay rise as a result of the NLW in 2016, rising to just short of half (48 per cent) in 2020. As Figure 2 shows, one-third of this workforce

will gain directly by 2020. This is despite the fact that a very large proportion of employees in hospitality are under 25 and so are not legally required to receive any increase.[9] With such a large proportion of the sector affected, the NLW will clearly require a great deal of change.

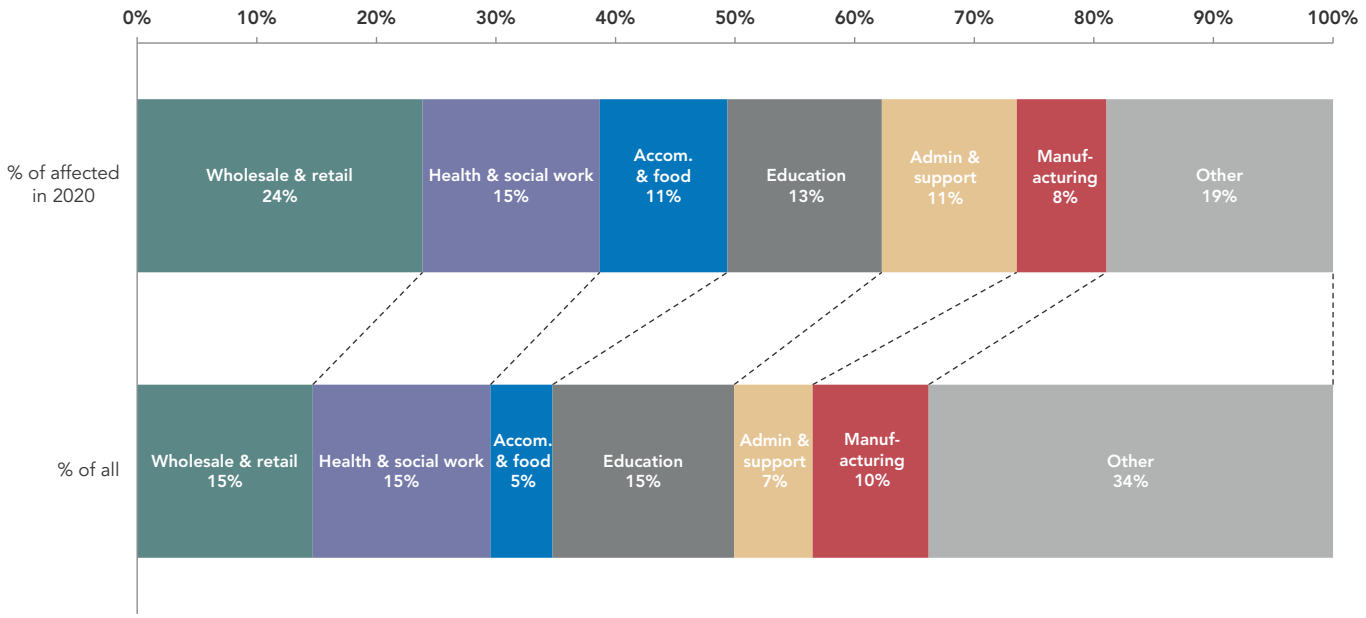
The differing role played by direct and indirect effects is also of note. In the least affected sectors, the majority of those expected to see pay rises are indirectly affected (for example, just 17 per cent of those benefiting in the public administration sector are expected to do so as a direct result of having their pay level raised to the NLW). At the other extreme, more than two-thirds (69 per cent) of those benefiting in the accommodation and food sector gain directly.

The implication of this is that the sectors with the lowest levels of pay not only have more workers affected but, as we will discuss below, also record bigger wage bill increases. This is because directly affected workers experience bigger annual gross pay increases on average (those benefiting from spillover effects may in our model receive pay increases as small as 1p per hour).

Another important consideration is the relative contribution each of these industries makes to overall employment. A comparison of Figure 2 and Figure 3 highlights that some of the industries that have the largest share of employees in line to gain from the NLW are not necessarily those that contain a large portion of all affected workers. For example, more than one-in-three employees in agriculture and the arts are set to be affected – generating potential challenges within the industries – but they comprise a fraction of overall employment. Three sectors – wholesale and retail, human health and social work and accommodation and food services – make up 50 per cent of those affected, while accounting for only 35 per cent of all jobs in the economy.

Figure 3: Half of all beneficiaries work in retail, health and hospitality

Industry breakdown of NLW beneficiaries and total workforce



Source: RF analysis of ASHE, 2014

[9] It is quite possible that younger workers will still benefit from the NLW however. Our analysis finds that for every three 18-20 year olds on the 18-20 year old minimum wage in accommodation and food services, two are on the adult NMW.

As we will return to later in this report, the dominance of certain sectors over the economy-wide employment picture might suggest that monitoring of the impacts of the NLW should be most focused on these areas. Clearly though, this should not detract from the emphasis on avoiding possible job losses as a result of the NLW, wherever they may occur.

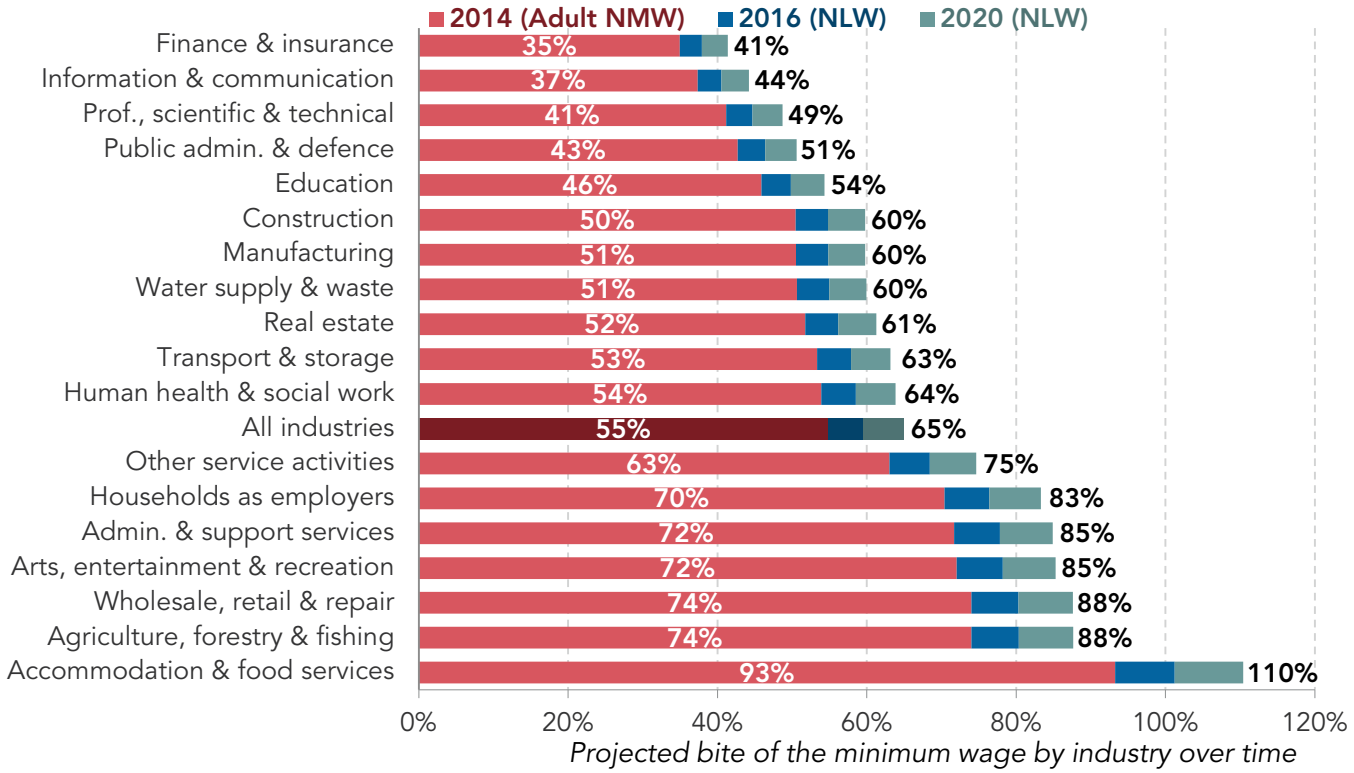
The NLW might become a 'going rate' in some industries

Having established the proportion of employees affected across industries, we next turn to the 'bite' figures set out in Table 1. The government's intention is that the NLW will in 2020 be equal to 60 per cent of the median wage among all workers aged 25 and over, rising from around 55 per cent upon its introduction in 2016. If we look at all ages, and therefore include the under 25s who typically earn less, the bite increases. The 60 per cent goal would on past experience be more like 65 per cent of the median hourly pay overall.

The bite is a good measure of how large an impact a wage floor will have – and it is for this reason that it will be used to determine the value of the NLW. Given uncertainty over future wage trends, it is a much more sensible approach than setting an arbitrary cash target. By focusing on a bite at the national level, however, this approach will inevitably lead to wide variations in bites across industries. Indeed – as Figure 4 illustrates – the bites associated with the existing wage floor already differs significantly. With the introduction of the NLW, differences across industries are set to grow.

Figure 4: The NLW's bite will vary greatly by industry

Projected bite of the minimum wage by industry over time



Notes: Bites are relative to all-worker median rather than 25+ median. Assumes even industrial growth from 2014, except for the impact of the NLW. Percentages shown in data labels in the chart are for 2014 and 2020.

Source: RF analysis of ASHE, 2014

Understandably, the NLW bite increases over time across all sectors – in line with the government's ambition to raise the bite between 2016 and 2020. However, in the industries towards the top of Figure 3 the bite remains well below the economy-wide bite of the NMW in 2014 even by 2020 – an important measuring stick by which to judge the affordability of a higher wage floor.

In contrast, the bite reaches above 80 per cent among a number of industries towards the bottom of Figure 4. It is the accommodation and food services sector that really stands out though. Here the bite is set to rise from 93 per cent in 2014 (under the NMW) to 110 per cent in 2020 (under the NLW). In theory, this suggests that the NLW will be worth 10 per cent more than the median. But in practice however, it is more likely that not only will the median earner within the industry be paid the NLW in 2020 but also employees some way above the middle.

This is of course an unusual situation. One of the shortcomings raised by the Bain Review was precisely that the NMW had, against the original intentions of the government at the time and the LPC, become a going rate in many parts of the economy. Accommodation and food is clearly one of these. It is far from desirable that such a large proportion of staff in one industry should be at or within a few pence of the legal minimum. While a higher wage floor is welcome, without efforts to increase opportunities to train and develop skills, upward pay progression becomes extremely challenging. Prior to the NLW's announcement, Resolution Foundation research found that many low-paid workers already viewed the returns to promotions into positions of more responsibility as "not worth it", given the relatively small pay differentials between such roles.[10]

Most industry wage bills will rise by less than 1 per cent

Whereas a focus on the numbers affected within an industry gives a sense of coverage and the bite points to the impact on pay distributions, perhaps the most direct assessment of the cost of the NLW to an industry is provided by looking at the column in Table 1 showing how the overall wage bill will rise.

Our modelling assumes no dynamic effects (such as reductions in employment or hours) and should therefore not be taken as a direct estimate of changing wage costs in each industry.[11] But the scale of the cash increase required for each grouping of employers demonstrates the ease or difficulty they are likely to face in accommodating these changes. To account for the differing size of sectors, our analysis centres on the proportionate wage bill increase faced in each industry.

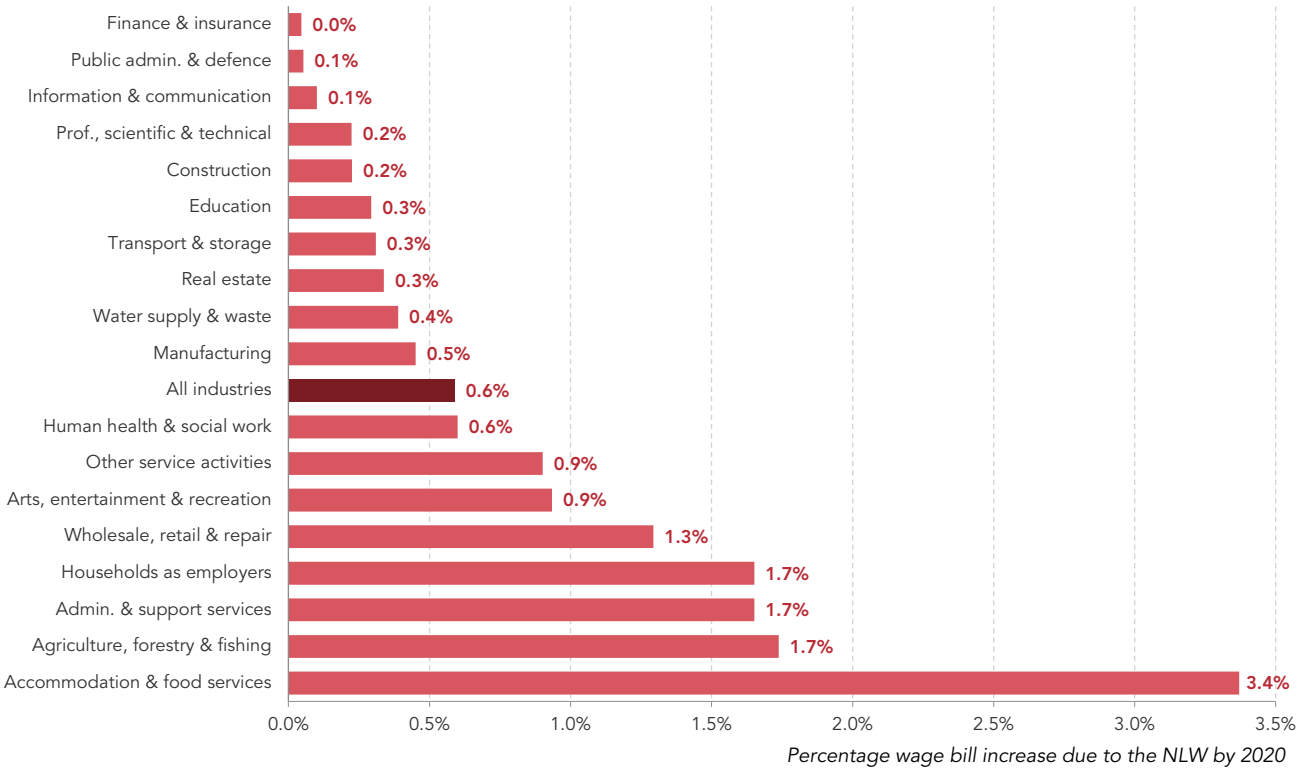
Another consideration – which we don't cover here – is the relative importance of wages in an industry to total operating costs. In some labour-intensive sectors, wage costs will account for a majority of total operating costs. An increase in the wage floor in these industries is likely to present more of a challenge than in industries in which pay forms a smaller proportion of total operating costs. This is not just because of the direct effect on total expenditure, but also because labour-intensive sectors might be expected to have fewer opportunities for making savings from other elements of their overall operating costs.

In total, our figures suggest that the whole economy regular pay bill would need to rise by an extra 0.2 per cent by 2016 and 0.6 per cent by 2020 to accommodate the direct and indirect wage effects of the NLW (though this is not a prediction of the actual impact). As Figure 5 shows however, that increase is not spread evenly across industries.

[10] C D'Arcy and A Hurrell, *Escape plan: Understanding who progresses from low pay and who gets stuck*, Resolution Foundation, November 2014.

[11] As detailed in Box 2, we have not taken account of the additional cost that may be due from employers in the form of increased employer National Insurance contributions or pension contributions.

Figure 5: The NLW will swell the wage bills of industries very differently



Source: RF analysis of ASHE, 2014

Once again, it is the accommodation and food services sector that stands out, with a 3.4 percentage point increase in its wage bill in 2020, twice that of any other industry. As with the example of the bite, it is worth noting that the wage bill increase faced each year by the hospitality sector under the existing NMW is already likely to be large, with one-in-five workers in the industry paid within 1 per cent of the NMW. Any faster increases in the value of the wage floor, whether through the NLW or had the NMW been retained as the wage floor but risen more quickly in coming years, would have required larger wage bill increases.

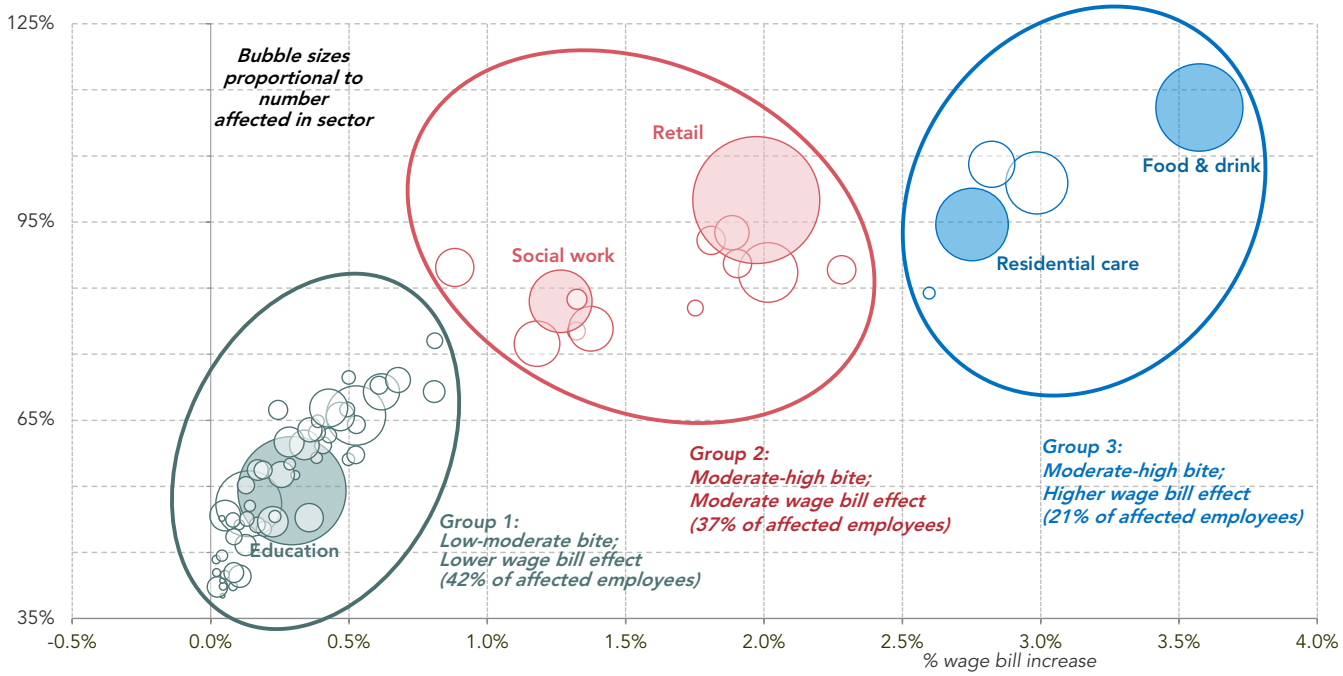
Which industries face the most pressures?

Bringing those findings together, what does this suggest for an industrial view of the NLW's impact?

Figure 6 attempts to present all three of the metrics we have considered at once. The vertical axis shows the proportionate wage bill increase, while the horizontal axis sets out the bite, noting the caveats laid out above. Instead of the *share of employees affected within each industry*, the size of the bubbles relate to the *number* of employees affected. This reflects a shift in emphasis here from a specific concern with industries to the question of total employment effects.

Figure 6: The most acute cost and wage compression pressures will be concentrated in a handful sectors

National Living Wage as % 'bite' of industry median



Notes: Industries included in the chart are at a two-digit SIC code level.

Source: RF analysis based on ASHE, 2014

The chart suggests that three groups can be identified:

- industries in which the NLW has a relatively small impact;
- those in which the impact is non-trivial but as an overall employment risk are less concerning; and
- industries in which the effect is sizeable and in which a large proportion of those affected work.

These categories represent one way of grouping industries but are only intended to be indicative. Further sub-divisions of the industries may reveal a very different picture and suggest other parts of the economy as meriting more concern. We consider each group in turn.

Group 1: limited impact

The green bubbles in the bottom left of the chart show the sectors in which the NLW is likely to have a smaller impact, whether judged by the proportionate size of the wage bill increase or its bite. The majority of industries sit within this group, accounting for 42 per cent of all employees set to benefit from the NLW.

It is quite possible that individual firms within these sectors will face more sizeable challenges (as will be discussed in Section 3, smaller firms are more likely to face pressure than larger ones for instance), but we would expect employers in this group to typically face modest cost increases as a result of the NLW.

But that's not to say that jobs will not be lost in any of these industries. Overall shifts in the industrial composition will continue, and the types of roles that have been vulnerable to technological change will continue to be so. To take one example within wholesale, Amazon has greatly increased the mechanisation it uses within its warehouses. Separating out the impacts of the NLW from these longer-term trends will not always be straightforward, but judgements of the NLW's effects should bear these wider shifts in mind.[12]

Group 2: more moderate impact

In contrast to the first group, the red bubbles identify industries in which the NLW is set to both create a bite some way above the national target and generate above-average increases in wage costs. It suggests that firms in these sectors might be expected to face greater challenges in relation to implementing the NLW. Excluding retail though, these industries are typically quite small and cover just 18 per cent of all employees expected to benefit from a pay rise. Retail is more significant however, accounting for 19 per cent of all those affected by the NLW in 2020. Given its size and relative importance to the UK economy, careful attention should be paid to the NLW's impact here.

Group 3: largest impact and a significant proportion of affected employees

In this final category, as well as having bites above 90 per cent, the wage bill increases in these sectors are set to top 2 per cent. Although there are fewer industries in this group, they comprise a comparatively large share of those affected, employing 21 per cent of those likely to see a pay rise in 2020. The scope of potential employer responses is thus large. In ensuring that the new policy is successfully implemented, it is on these sectors that the government and the LPC are likely to need to focus most attention.

[12] For more on polarisation, see L Gardiner and A Corlett, *Looking through the hourglass: Hollowing out of the UK jobs market pre- and post-crisis*, Resolution Foundation, March 2015.

Section 3

The NLW's impact by occupation, firm size and sector

While exploring the NLW's impact across industries is perhaps the most intuitive approach to identifying where pressures will be felt, there are other perspectives which give important insights into how the higher wage floor will affect the economy. In this section we discuss the NLW's varying impact by occupation, firm size and sector (whether public, private or third).

Occupational differences matter in some industries more than in others

Occupations relate, of course, to individuals rather than to firms. And it is unsurprising that we find that employees in those occupations requiring the lowest levels of qualifications – where low pay is most concentrated – are most likely to receive a pay rise as a result of the NLW.[13]

But such distinctions are potentially important when considering how employers might react to the NLW, because choices made may well be influenced by the predominance of certain kinds of role within an industry. And to the extent that employees can move across industries in response to changes in job opportunities in the economy, it is illuminating to consider how similar roles are affected by the NLW across industries.

In Table 2 we therefore take the approach of considering what proportion of employees will be affected by the NLW by sector and occupation. The data here additionally includes five of the sub-industries (two-digit SIC code) that are most affected by the NLW.

[13] As with industries, occupations are presented at the broadest level available in the data (one-digit SOC codes). More specific roles may be more or less affected by the NLW.

Table 2: The proportion of employees set to get a pay rise by 2020 split by industry and occupation

	Elementary	Process, plant & machine operatives	Sales & customer service	Caring, leisure & other service	Skilled trades	Admin. & secretarial	Associate profess. & technical	Profess.	Managers, directors & senior
Education	74%	26%	21%	46%	29%	22%	7%	1%	3%
Admin. & support services	69%	46%	51%	46%	25%	33%	8%	4%	8%
Cleaning	*79%*	*42%*	*42%*	*47%*	*36%*	*30%*	*7%*	-	-
Human health & social work	59%	45%	29%	48%	44%	27%	8%	2%	9%
Residential care	*73%*	*55%*	-	*65%*	*53%*	*33%*	*12%*	-	*9%*
Other service activities	57%	55%	36%	46%	25%	24%	8%	6%	10%
Real estate	55%	24%	28%	39%	10%	25%	8%	-	8%
Prof., scientific & technical	53%	31%	40%	38%	15%	20%	5%	4%	6%
Arts, entertainment & recreation	53%	35%	45%	45%	35%	38%	12%	5%	22%
Agriculture, forestry & fishing	52%	36%	62%	49%	46%	26%	-	-	15%
Wholesale, retail & repair	51%	53%	54%	42%	25%	36%	11%	3%	15%
Retail	*51%*	*54%*	*56%*	*47%*	*47%*	*44%*	*18%*	*4%*	*19%*
Accommodation & food services	48%	62%	57%	61%	55%	46%	18%	-	29%
Accommodation	*53%*	*60%*	*56%*	*58%*	*45%*	*51%*	*21%*	-	*18%*
Food services	*47%*	*63%*	*57%*	*67%*	*58%*	*43%*	*17%*	-	*33%*
Water supply & waste	47%	22%	-	-	-	20%	-	-	-
Manufacturing	44%	35%	29%	31%	14%	19%	4%	1%	4%
Public admin. & defence	38%	19%	6%	29%	10%	8%	1%	-	-
Finance & insurance	36%	-	23%	40%	-	12%	2%	-	-
Information & communication	36%	31%	31%	-	-	19%	4%	3%	5%
Construction	35%	13%	35%	37%	6%	28%	3%	-	8%
Transport & storage	18%	22%	24%	18%	5%	21%	3%	-	4%
Households as employers	-	-	-	42%	-	47%	-	-	-

Notes: Insufficient sample sizes are represented by dashes.

Source: RF analysis of ASHE, 2014

What's apparent is that both elementary and process, plant and machine operative workers have high chances of receiving pay rises across the majority of industrial sectors. At one extreme, around three-quarters of elementary workers in cleaning (79 per cent), education (74 per cent) and residential care (73 per cent) are set to be affected. At the other, just 18 per cent of elementary workers in the transport sector will receive a pay rise, along with just 19 per cent of process workers in the public administration sector.

Similarly, there are some industries in which employees in most types of occupational roles are in line for a pay rise. In the accommodation (hotels) sector for instance, one-in-five managers (18 per cent) and associate professionals (21 per cent) are due to be affected. One-in-three managers in the food services sector will also gain.

Smallest firms face bigger challenges

In discussions of the impacts of higher minimum wages, particularly the negative aspects, it is often small businesses that are held up as being most likely to struggle to meet the new wage floor. Larger firms with their greater economies of scale (and often greater profits) are sometimes deemed to be better able to pay their employees more. And in fact, evidence suggests that there is already a 'large firm premium', with those employed by larger firms paid more than those in similar roles in smaller companies.[14]

Some minimum wage legislation has gone so far as to make exemptions for smaller firms. In Seattle for example, the largest employers (those with more than 500 employees) must pay all their staff at least $15 by 2018 while for some smaller employers, that landmark does not have to be reached until 2021.[15] The effects of varying minimum wage laws by firm size are less well understood.

[14] See for example: T Lallemand and F Rycx *Establishment Size and the Dispersion of Wages: Evidence from European Countries (Discussion Paper No. 1778)*, IZA, 2008 or B Cardiff-Hicks, F Lafontaine and K Shaw, *Do Large Modern Retailers Pay Premium Wages? (Working Paper No. 20313)*, NBER, 2014.

[15] For more detail on the legislation see: http://murray.seattle.gov/minimumwage/#sthash.cSLZJp4T.dpbs

In the UK, the NLW will apply to all firms, regardless of size. Our analysis confirms that it is the smallest firms – those that employ fewer than 10 workers – that are likely to feel the greatest impact. On average, the NLW is expected to add 1.5 per cent to the total wage bill among such firms, but the impact will of course vary significantly across individual cases.

The average bite is expected to rise from 70 per cent in 2014 to 76 per cent in 2016 and finally to 83 per cent in 2020. The offsetting impact of the higher Employment Allowance – an effective employer National Insurance (NI) cut – may also be smallest for these firms. While the announcement in the Summer Budget raised it from £2,000 to £3,000, many of the smallest employers, especially those with employees on low wages and working short hours, will already pay less than £2,000 in employer NI contributions and therefore not benefit from the higher allowance.

In contrast, the wage bill effects for larger firms – which account for more than half (52 per cent) of those affected by the NLW[16] – are significantly smaller. The wage bill increases for firms employing 250-4,999 employees are in line with the national average of 0.6 per cent, while for those with 5,000+ employees the average is slightly higher at 0.7 per cent. Again, as we have discussed the impact will vary by industry and the pay profile of the workforce.

It is worth remembering that the tactics available to small employers may be different to those of larger employers. Owners who are already working in their firm may choose to work a greater number of hours and cut back on staff, an approach that would be less useful in larger firms.

We have had some hints as to how larger employers might react, with employers such as Whitbread, Tesco and Sainsbury's[17] stating that the NLW will reduce profits and that they plan to raise prices or improve efficiency. There has been little indication so far that it is expected to result in dis-employment or have a serious adverse effect on their businesses.

The public sector faces different pressures to the private sector

Another important lens through which to view the NLW's impact is by sector. The effects of the policy will differ greatly across individual employers but the broader environments in which the private, public and third sectors operate inform both the challenges they face and the responses available to them.

Despite making up 24 per cent of all jobs, the public sector will make up only 11 per cent of those affected by 2016 and 14 per cent of those affected by 2020. Instead, of the total 6 million affected, 4.7 million will be in the private sector. The average wage bill increase in 2020 is 0.2 per cent in the public sector and 0.4 per cent in the third sector, both below the national figure of 0.6 per cent. At 0.8 per cent, the private sector's wage bill is set to increase slightly more than the total average.

The above discussion has already set out the parts of the economy which are likely to face the greatest challenges from the higher wage floor. However, the wage bill increases need to be set against the expectation of strong average earnings growth – 4.4 per cent in 2020 – projected by the OBR. In the context of faster earnings growth across more of their workforce, the rapid pace of the NLW's expected trajectory to 2020 may not seem as daunting.

That context appears very different within the public sector however. The Chancellor announced at the Summer Budget that there would be a 1 per cent annual cap on wage bill increases across the public sector. The funding to meet the added cost of the NLW will also be drawn from this 1 per

[16] The numbers affected by firm size in the table in Annex 1 total 5.15 million rather than the expected 6 million. This is because for some respondents, the firm size is not listed. ASHE is completed by employers themselves. It may be that a certain size of firm is less likely than others to entirely complete the form which may understate the size of the effect. Nonetheless, we report the share of those affected with respect to the number of workers for whom we have firm size data.

[17] See for example: "Whitbread plans to raise prices to pay for Living Wage", *BBC News*, September 2015 or "Next beats profit forecasts as it counts cost of living wage increases", *The Telegraph*, September 2015.

cent cap. Given this pay restraint, it may mean that spillover effects are less common or smaller in the public sector than elsewhere, as well as those earning above the NLW being generally likely to see lower pay growth in coming years. Of the 0.8 million public sector workers expected to see some pay rise as a result of the NLW in our analysis, 0.5 million gain thanks to spillover effects.

The NLW therefore has the potential to exacerbate existing problems around low pay in the sector: social care has been consistently flagged as a barrier to faster minimum wage increases and one in which non-payment of the NMW is already occurring

The consequences of the Chancellor's pay cap for services and recruitment within the public sector were set to be a challenge in any case over this parliament, but the introduction of the NLW makes it all the more pressing. Local authorities, in which 20 per cent of employees are likely to see some wage boost, will find this more challenging than central government (where 8 per cent are set to affected), especially given the added squeeze under which local government funding has been placed under recent years.

Another public sector consideration is the expectation that the size of the public sector workforce will decrease over the next five years. Again, we do not factor in changes to the composition of employment over the period in question. That may mean an overstatement of the policy's impact in the public sector, in terms of the numbers affected, and an understatement of its effect on the private sector.

In essence then, the private sector looks like being more affected by the NLW than the public sector. But with private sector pay expected to rise more rapidly in the coming years, amid strict restraint on pay in the public sector, how those effects are managed may not feel greatly easier in the public sector.

Serious concerns in social care

The industrial breakdown we looked at in Section 2 showed that human health and social work activities was one of the lesser affected parts of the economy (with a 0.6 per cent wage bill increase and a bite of 64 per cent in 2020). However, the grouping together of higher-paid employees like doctors with low earners such as care workers obscures the severe challenge facing the care sector. A clearer sense of this challenge is presented by the residential care bubble in Figure 4 (though it should be noted that this sub-industry does not capture everyone who works within social care[18]). More than half (51 per cent) of the employees in this sub-industry are likely to see their pay rise as a result of the NLW in 2020 with a wage bill increase of 2.8 per cent. The bite is expected to rise from 80 per cent in 2014 to 95 in 2020.

The social care sector spans both the public and private sectors. In practice however, the impact of the NLW on the industry is likely to be strongly influenced by the funding allocated by government to local authorities. The NLW therefore has the potential to exacerbate existing problems around low pay in the sector: social care has been consistently flagged as a barrier to faster minimum wage increases and one in which non-payment of the NMW is already occurring.

[18] Only around 40 per cent of the adult social care workforce is based in residential care homes. The remainder provides services in people's own homes or in the community. See: Skills for Care, *The size and structure of the adult social care sector and workforce in England, 2014*, September 2014.

Previous Resolution Foundation analysis calculated that £1.3 billion of additional annual funding would be required by 2020 to pay the living wage in the sector, although some of the costs to the public purse would ultimately be cancelled out through higher income tax and National Insurance contributions.[19] Unless the government commits to ensuring that this welcome move to boost the wages of the lowest earners is followed through in the form of higher funding where necessary, the policy could have adverse effects on the conditions of low-paid care staff, the scale of the non-payment problem or the quality of service provision.

[19] This figure was calculated using a rich, sector-specific dataset that captures the social care workforce more accurately than can be done using the sectoral coding in ASHE. In addition, it incorporates assumptions about the impact that constrained care funding will be likely to have on wage distributions within the sector over the course of this parliament, and above-average growth in the size of the workforce due to rising demand for services. These modelling assumptions entail a higher additional funding requirement, and for these reasons of different data and sector-specific assumptions, the £1.3 billion figure presented here cannot be viewed as a subset of the £4.5 billion total cost across all sectors that we refer to elsewhere in this report. See L Gardiner, "Budgeting for the National Living Wage in the social care sector", Resolution Foundation blog, July 2015.

Section 4

Adjusting to the NLW

In designing a minimum wage, policymakers face a trade-off between simplicity and setting the rate at an appropriate level i.e. one that is high enough to make a meaningful difference to low earners but that is also low enough to prevent overall labour demand from being harmed. Prior to the announcement of the NLW, the UK has attempted to balance these competing aims by combining the single wage floor with the oversight of the LPC. The evidence-based approach it has taken has ensured that no damage has been done to employment. But the Chancellor's introduction of the NLW reflects a sense shared to some degree by the Bain Review that the minimum wage process had lost the radicalism of its early years during which it transformed the bottom end of the UK's labour market.

The NLW represents an attempt to restore that boldness. The key question for the government however is whether its preferred path – £7.20 in 2016 rising to more than £9 in 2020 – risks tilting the scales too far in the other direction, putting jobs at risk. The OBR projected that 60,000 jobs will be lost and 0.2 per cent fewer hours worked across the economy, although this is their central estimate, with upper and lower bounds of 120,000 and 20,000 jobs respectively. There is however, as the OBR acknowledges, huge uncertainty regarding the response of employers.

We can look back to previous minimum wage rises to consider how employers have adapted to change in the past (see Box 4 for discussion). But because the NLW is set to push further than the experience of minimum wages in the UK and most other advanced economies, past behaviour may not be a reliable guide for the coming years. For example, because the NLW only applies to those aged 25 and over, there is a larger pool of younger, cheaper workers available to employers than under the NMW (which applied to everyone aged 21 and over).

i Box 4: How have employers coped with previous minimum wage increases?

The Resolution Foundation's Bain Review presented a detailed literature review of the evidence around employer adaptations. A brief summary is presented below but full references can be found on p.24 of the Bain Review:

- Some employers reduced their profits in order to absorb the higher wage bills. Crucially, this did not cause an increased rate of business failure among low-paying firms.

- Some firms compressed their wage distributions, giving smaller pay rises to those just above the NMW.

- Some employers raised productivity, with the effect more marked in larger firms. Evidence suggests that this increased productivity was the result of capital-deepening in low wage sectors.

- There is some evidence that the NMW resulted in higher prices for specific goods in sectors particularly dependent upon low-paid workers.

- The NMW reduced staff turnover for some employers, leading to lower expenditure on recruitment and induction training.

While we cannot second guess how employers will respond to the introduction of the NLW, we intend to undertake a survey of employers of different sizes in order to build a better understanding of potential approaches to adaptation. We will report on the results in a future paper.

What our analysis has revealed is how the NLW's effect will vary widely across different types of employers. It is clear that for many firms, the NLW will have little impact. Some will feel a bigger effect, but not substantially beyond that which has faced many firms during the lifetime of the NMW. But we have also demonstrated that in some industries – particularly accommodation and food services – the added costs entailed by the higher wage floor will be more significant. It is also likely that smaller firms will find the pressures resulting from the NLW more noticeable. And in social care, where non-payment of the NMW is already a serious blight on the effectiveness of the current enforcement regime, the NLW will exacerbate existing concerns around its funding and operation.

While we do not know how employers will react (a third Resolution Foundation paper in this series will explore this question in more detail) to the developments of the coming years, there is reason to believe that any effects are most likely to occur in those parts of the economy that appear most affected on the measures we have used.

Welcome though the government's significant boost to the wage floor is, it is essential that it recognises the potential challenges it poses for some firms by setting out a detailed plan for implementation. In particular, it must clarify the role that the LPC will play in helping to set an appropriate NLW level. The recommendation made in the Bain Review that the LPC should be given enhanced powers is even more relevant in the world of the NLW. With much uncertainty existing in relation to the NLW's impact, the LPC's expertise becomes even more valuable as this new territory is explored.

But while flagging concerns and possible dis-employment effects in specific sectors should remain central to the LPC's remit, it could also play a new and forward-looking role in exploring the scope to boost productivity and overcome blockages to higher wage floors in these sectors. While fulfilling a different purpose within its labour market, New Zealand's Productivity Commission is one potential model for the LPC, continuing its research and expanding it to explore how productivity could be raised in the lowest-paying sectors.[20]

The government has set out its vision of the UK becoming a "high wage, low welfare, low tax" economy. But to achieve the first of those aims, productivity growth will have to be much stronger in coming years. While the question of boosting productivity needs to be approached from all angles – physical infrastructure as well as human capital – any initiative which could help to kick-start UK productivity growth once more should be considered.

[20] The LPC has already commissioned much research on the links between productivity and wage floors. For the most recent example see: R Riley and C R Bondibene, "The impact of the National Minimum Wage on UK Businesses" NIESR, February 2015.

Annex 1: Summary table of findings

	2014	2016 (NLW at 55% of 25+ median)					2020 (NLW at 60% of 25+ median)				
	NMW Bite	Bite	000s affected	Share of group affected	Share of all affected	% wage bill increase	Bite	000s affected	Share of group affected	Share of all affected	% wage bill increase
Total	55%	60%	4,510	18%	100%	0.2%	65%	6,000	23%	100%	0.6%
Occupations											
Managers, directors & senior	33%	35%	140	6%	3%	0.0%	39%	210	9%	3%	0.1%
Professional	33%	35%	60	1%	1%	0.0%	39%	110	2%	2%	0.0%
Associate prof. & technical	43%	46%	120	3%	3%	0.0%	50%	220	6%	4%	0.1%
Admin. & secretarial	62%	68%	430	14%	10%	0.2%	74%	730	24%	12%	0.5%
Skilled trades	58%	63%	290	15%	6%	0.2%	68%	430	21%	7%	0.5%
Caring, leisure & other service	76%	82%	830	33%	18%	0.7%	90%	1,150	46%	19%	1.9%
Sales & customer service	86%	93%	890	43%	20%	0.9%	101%	1,000	48%	17%	2.6%
Process, plant & machine operatives	66%	72%	350	24%	8%	0.4%	78%	510	34%	9%	1.3%
Elementary	88%	95%	1,400	46%	31%	1.3%	104%	1,640	53%	27%	3.3%
Industry											
Agriculture, forestry & fishing	74%	80%	40	31%	1%	0.6%	88%	60	40%	1%	1.7%
Manufacturing	51%	55%	300	12%	7%	0.2%	60%	450	18%	8%	0.5%
Water supply & waste	51%	55%	20	11%	0%	0.1%	60%	20	17%	0%	0.4%
Construction	50%	55%	70	7%	1%	0.1%	60%	110	12%	2%	0.2%
Wholesale, retail & repair	74%	80%	1,190	32%	26%	0.5%	88%	1,430	38%	24%	1.3%
Transport & storage	53%	58%	100	10%	2%	0.1%	63%	170	16%	3%	0.3%
Accommodation & food services	93%	101%	570	43%	13%	1.3%	110%	640	48%	11%	3.4%
Information & communication	37%	41%	50	5%	1%	0.0%	44%	80	8%	1%	0.1%
Finance & insurance	35%	38%	30	3%	1%	0.0%	41%	60	6%	1%	0.0%
Real estate	52%	56%	40	11%	1%	0.1%	61%	60	17%	1%	0.3%
Prof., scientific & technical	41%	45%	140	9%	3%	0.1%	49%	190	12%	3%	0.2%
Admin. & support services	72%	78%	550	33%	12%	0.6%	85%	680	40%	11%	1.7%
Public admin. & defence	43%	46%	30	2%	1%	0.0%	51%	60	5%	1%	0.1%
Education	46%	50%	520	13%	11%	0.1%	54%	770	20%	13%	0.3%
Human health & social work	54%	59%	640	17%	14%	0.2%	64%	890	23%	15%	0.6%
Arts, entertainment & recreation	72%	78%	120	24%	3%	0.3%	85%	170	32%	3%	0.9%
Other service activities	63%	68%	90	22%	2%	0.4%	75%	120	27%	2%	0.9%
Households as employers	70%	76%	10	23%	0%	0.4%	83%	30	42%	0%	1.3%
Company status											
Private companies	59%	64%	3,350,000	21%	74%	0.3%	70%	4,280,000	26%	71%	0.7%
Sole proprietor	81%	88%	190,000	40%	4%	1.0%	96%	240,000	49%	4%	2.7%
Partnership	73%	79%	170,000	28%	4%	0.5%	86%	230,000	37%	4%	1.3%
Central government	43%	47%	130,000	4%	3%	0.0%	51%	260,000	8%	4%	0.1%
Local authority	47%	51%	370,000	13%	8%	0.1%	56%	570,000	20%	9%	0.3%
Non-profit body	49%	53%	310,000	14%	7%	0.1%	58%	430,000	20%	7%	0.4%
Overall sector											
Private	60%	65%	3,700,000	20%	82%	0.3%	71%	4,740,000	26%	79%	0.8%
Public	44%	48%	500,000	8%	11%	0.0%	52%	830,000	13%	14%	0.2%
Third	49%	53%	310,000	14%	7%	0.1%	58%	430,000	19%	7%	0.4%
Firm size (private sector)											
XS (0-9 employees)	70%	76%	540,000	29%	13%	0.6%	83%	690,000	36%	13%	1.5%
S (10-49)	63%	69%	720,000	21%	18%	0.3%	75%	960,000	28%	19%	0.8%
M (50-259)	57%	62%	620,000	19%	16%	0.3%	68%	830,000	25%	16%	0.7%
L (250-4999)	52%	56%	1,000,000	17%	25%	0.2%	62%	1,300,000	21%	25%	0.6%
XL (5000+)	62%	67%	1,130,000	24%	28%	0.3%	73%	1,370,000	28%	27%	0.7%

Notes: Numbers affected are rounded to the nearest 10,000. The total affected covers both those earning below the NLW and brought up to (or beyond) the NLW as well as those already earning more than the NLW but who are likely to benefit from spillover effects.

Source: RF analysis based on ASHE, 2014

Annex 2: Methodology

This annex provides details on the data, methods and assumptions used in this report.

Data

Our analysis uses data from the ONS's Annual Survey of Hours and Earnings (ASHE). ASHE is a survey of employers based on a 1 per cent sample of employee jobs, and is regarded as the most comprehensive and accurate source of information on the structure and distribution of earnings in the UK. The most recent ASHE microdata (which covers Great Britain rather than the UK as a whole) relates to April 2014.

Projecting to 2016 and 2020

In order to estimate the impacts of the NLW when it is first introduced (2016) and by the end of the parliament (2020), we identify the values that are 55 and 60 per cent of median earnings for those aged 25 and over in ASHE. This is in line with the stated intention that the NLW be equivalent to 55 per cent of median earnings for those aged 25 and over in 2016, rising to 60 per cent by 2020. Note that the Low Pay Commission (LPC) may for whatever reason recommend a different rate beyond 2016.

We apply these estimates of the NLW to the wage distribution, accounting for both direct and indirect effects (see below). The resulting pay figures and estimates of the number of people affected are uprated to 2016 and 2020 using Office for Budget Responsibility (OBR) projections for earnings and employment growth (and 2020 pay figures are deflated to 2016 terms using CPI).

Our approach – deriving NLW levels within historical earnings distributions – means that we assume no changes to the composition of the labour market or the relative pay of different sectors and regions, beyond the impacts of the NLW. Given that our estimate of the value of the NLW is based on median pay, crucially we also assume that median pay simply grows in line with the OBR's average earnings forecast. In the past, it has in fact tended to grow more slowly than mean earnings. In addition, we do not account for the NLW itself having an impact on median pay (which in turn would affect the level of the NLW, and might be positive or negative) over the course of the parliament.

Estimating the direct and indirect impacts of the NLW

Having derived the levels of the 2016 and 2020 NLW rates within the datasets we use, estimating direct effects is a relatively straightforward exercise: we adjust the hourly earnings of those to whom the policy applies (adults aged 25 and over and not classed as apprentices) to the NLW if they are at or below that rate.[21]

In addition to direct effects, it is possible that raising the wage floor for a large majority of workers may have some indirect or 'spillover' effects. Typically, such indirect effects are thought of as rippling higher up the wage distribution, for example in order to preserve the earnings differentials that existed prior to the new wage floor.[22] There may also be indirect effects on groups of

[21] In our main ASHE analysis we do, however, maintain observed levels of non-compliance with the legal minimum.

[22] For a discussion of other reasons for which a wage floor might cause spillover effects, see: M Stewart, 'Wage Inequality, Minimum Wage Effects and Spillovers', *University of Warwick Economic Research Papers*, May 2011

workers outside the remit of the policy, in this case those aged under 25 or on apprentice rates.

While such indirect effects were anticipated when the National Minimum Wage was first introduced in 1999, initial studies suggested virtually no evidence for spillovers upon introduction, and certainly not at the level that was expected.[23] This was in contrast to the evidence from the US, which has documented significant spillover effects.[24] However, more in line with findings from the US, recent analysis of UK earnings distributions has found evidence of spillover effects extending up to 40 per cent above the minimum (around the 25th percentile of the wage distribution). The authors note that these effects are more evident in later years, which may be because the value of the minimum wage was higher or because these effects took time to feed through.[25] In its analysis of the NLW at the July 2015 Budget, the OBR assumed spillover effects extending up to the 25th percentile of the wage distribution, in line with this more recent study.

Evidence for the existence of spillover effects – including their size and their differential incidence across groups – is therefore relatively nascent in the UK context. In line with the OBR, we choose to model spillover effects extending up to around the 25th percentile of the wage distribution. Given the level of uncertainty around the incidence of spillovers – in particular when moving towards a wage floor that is likely to be higher than almost any seen internationally – we also consider the impact that a higher or lower magnitude of spillover effect would have. Understanding the size and incidence of these indirect effects is likely to be a key area for further research and analysis by the LPC and others as the NLW rolls out.

To estimate indirect effects we use a model articulated by David Lee, which describes the size of the spillover according to the gap between the minimum wage and the 'latent' wage (the wage an employee might earn in the absence of any wage floor), and a parameter that determines the magnitude of the spillover effect.[26] We use the Lee model to estimate the latent distribution from the actual distribution observed in our data, and then use this to estimate the indirect effects of the NLW in 2016 and 2020.

Our central assumption is a 'spilllover parameter' equal to .03. What this means is that workers who were originally paid at the level that becomes the NLW (for whom the spillover is greatest) will have their pay raised by 3 per cent on average. This level of spillover is consistent with indirect effects extending up to around the 25th percentile of the wage distribution in 2020, as in the OBR's modelling.

We also test low (.02), high (.04) and very high (.05) parameters, reflecting a broader range of the effects within that bounds previously observed in the UK and US. The differential impacts of these parameters are presented in Annex 3.

We assume no effects on those paid apprentice rates. For workers aged under 25, we assume spillover effects for those paid at or above the NLW rate only. There are likely to be other indirect effects on this group, for example, some who are on the current adult NMW may see their pay raised to the NLW along with their older counterparts if firms make across the board changes to pay structures. It is not possible to quantify the size of these impacts in the main body of our analysis, however we speculate on evidence for such indirect effects in Annex 3.

[23] R Dickens & A Manning, 'Has the national minimum wage reduced UK wage inequality?', *Journal of the Royal Statistical Society A* 167, November 2004; R Dickens & A Manning, 'Spikes and spillovers: The impact of the national minimum wage on the wage distribution in a low wage sector', *Economic Journal* 114, March 2004

[24] M Stewart, 'Wage Inequality, Minimum Wage Effects and Spillovers', *University of Warwick Economic Research Papers*, May 2011

[25] T Butcher, R Dickens & A Manning, 'Minimum Wages and Wage Inequality: Some Theory and an Application to the UK', *Centre for Economic Performance Discussion Paper*, November 2012

[26] D Lee, 'Wage inequality in the United States during the 1980s: rising dispersion or falling minimum wage?' *Quarterly Journal of Economics* 114, August 1999

Our modelling of spillovers assumes no dis-employment effects or cuts in pay further up the distribution, nor is it constrained by overall pay growth forecasts.

It should be noted that – unavoidably given the model used – our approach averages the impact of spillovers across all workers in the affected part of the wage distribution, whereas in fact some of those workers might receive quite large pay rises (if they work for employers who act to maintain differentials, for example), while others might experience no change. For this reason, our estimates of the numbers indirectly affected might be an overstatement of the incidence of pay rises, however they at least give a reflection of the size of the workforce 'in scope'.

Finally, our analysis presents indirect effects as occurring concurrently with direct effects in 2016 and 2020. However it is important to note that in reality, spillovers may take time to feed though and work their way up the earnings distribution, for example if employers take time to adjust their pay structures to reinstate pay differentials following a minimum wage increase.

Annex 3: Upper and lower bound estimates of indirect effects

Our approach to estimating the indirect effects of the NLW (described in Annex 2) considers spillover effects in line with those recently described in analysis of the UK NMW. However there may be reasons to think that the indirect effects of the NLW will be larger than this, for example if spillovers increase in magnitude as the bite of the wage floor rises. Equally, given that earlier analysis in the UK and some from the US has failed to find any evidence of spillover effects (again see Annex 2 for details), our approach may overstate indirect effects (particularly in the initial years if spillovers take time to feed through).

For these reasons, this annex presents estimates of the impact of the NLW based on higher and lower spillover effects than that used in the main body of our analysis. A spillover parameter determines the scale of those spillover effects, and Table 3 shows the impact of varying this either side of our main scenario (which uses a spillover parameter of .03).

Table 3: Impact of the NLW in 2016 and 2020, by size of indirect effects

Magnitude of spillover	2016		2020	
	Total affected	% affected	Total affected	% affected
None (direct effects only)	1,900,000	7%	3,200,000	12%
Low (spillover parameter = .02)	3,200,000	13%	4,900,000	19%
Central (spillover parameter = .03)	4,500,000	*18%*	6,000,000	*23%*
High (spillover parameter = .04)	5,800,000	23%	7,300,000	28%
Very high (spillover parameter = .05)	7,100,000	28%	8,500,000	33%

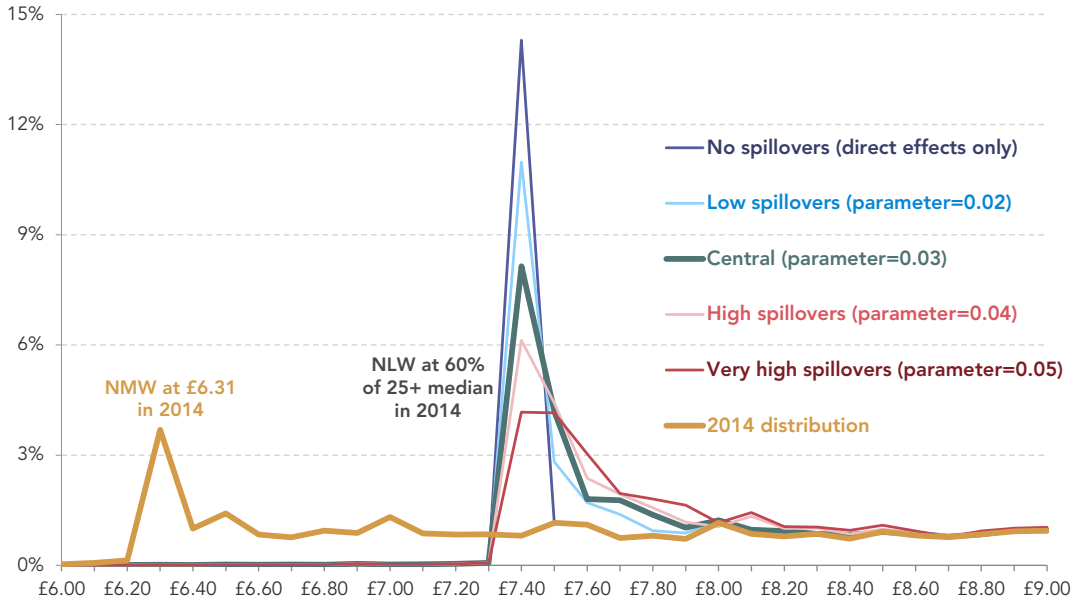
Notes: The total affected covers both those earning below the NLW and brought up to (or beyond) the NLW as well as those already earning more than the NLW but who are likely to benefit from spillover effects.

Source: RF analysis of ASHE

Figure A1 shows the detailed impact on the wage distribution for each of this range of parameters. In all cases the existing spike around the NMW (£6.31 in 2014) disappears. But without spillovers, a large proportion of the population ends up precisely on the NLW (£7.47 here – as we estimate the impact as if the end-goal of the NLW (60 per cent of the 25+ median) had been in place in 2014). Increasing the size of the spillover effect reduces the number who are precisely on or very close to the NLW, and increases the numbers above it (because those who were previously on or somewhere below the NLW are pushed further up the distribution by a higher spillover).

Figure A1: Impact of the NLW on the earnings distribution, by size of indirect effects

% of 25+ year old employees in each 10p 'bucket', before and after modelling NLW



Notes: We model the impact of the NLW as if it had been in place in April 2014, set at 60 per cent of the 25+ median hourly pay, in line with its goal for 2020 and beyond. Actual pay figures will grow with inflation and real earnings growth.

Source: RF analysis of ASHE

Resolution Foundation

Resolution Foundation is an independent research and policy organisation. Our goal is to improve the lives of people with low to middle incomes by delivering change in areas where they are currently disadvantaged. We do this by:

- *undertaking research and economic analysis to understand the challenges facing people on a low to middle income;*
- *developing practical and effective policy proposals; and*
- *engaging with policy makers and stakeholders to influence decision-making and bring about change.*

For more information on this report, contact:

Conor D'Arcy
Policy Analyst
conor.darcy@resolutionfoundation.org
020 3372 2981