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Resolution Foundation

REPORT

Higher ground

Who gains from the National Living Wage?

Conor D'Arcy, Adam Corlett, Laura Gardiner

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resolutionfoundation.org

info@resolutionfoundation.org

+44 (0)203 372 2960

[@resfoundation](https://www.facebook.com/resfoundation)

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Executive Summary

Raising the pay floor – the introduction of the NLW

Despite provoking significant controversy and opposition prior to its introduction, **the National Minimum Wage (NMW) has since proven to be one of the most successful and broadly-supported policies in recent UK history.** The approach of cautious introduction and subsequent evidence-based development helped to all but eliminate the worst extremes of low pay. And, as an extensive body of research has illustrated, it did all this without damaging employment.

While doing what was asked of it however, the NMW has had relatively little impact on the broader problem of low pay in the UK. The proportion earning below the low pay threshold has remained stuck at one-in-five throughout the NMW's lifetime. Last year, a Resolution Foundation review led by Sir George Bain took the opportunity provided by the NMW's 15 year anniversary to explore ways in which the NMW might play more of a role in tackling low pay. Alongside calling for a broader remit for the Low Pay Commission (LPC), the review argued for new aspiration to be injected into the rate-setting process. It recommended a gradual move towards a higher 'bite' – the minimum wage measured as a proportion of the typical wage – with international evidence suggesting that a level of 60 per cent would be a reasonable medium- to long-term ambition.

In July's Budget, the Chancellor took the radical decision of introducing a new minimum wage supplement – or 'National Living Wage' (NLW) – for employees aged 25 and over. From April 2016, such workers will find their wage floor increased from the NMW rate of £6.70 to the new NLW of £7.20, which is designed to be equivalent to 55 per cent of the typical wage of those aged 25+. It is the government's ambition that the NLW's 'bite' will then rise to 60 per cent on the same measure by 2020, expected to be equivalent to more than £9.

As with the original NMW legislation, the move has been met with both celebration and consternation. Proponents have welcomed the attempt to make serious strides in relation to low pay, while critics have pointed out the

challenge it represents both for individual firms and for lower-paying parts of the economy more generally.

In this note, the first in a series looking at the opportunities and challenges associated with the NLW, we focus specifically on who stands to gain. Which groups of workers will benefit, and by how much? And how does this wage legislation interact with the tax and benefits system, and therefore household incomes? **In future papers, we will consider the industries and occupations where the NLW will bite hardest and explore how firms might react to the introduction and development of the NLW.**

Who gains from the NLW?

Alongside the government's announcement, the Office for Budget Responsibility (OBR) estimated that the NLW would reduce employment by 60,000, although it emphasised significant uncertainty around how employers will react. It projected that some 2¾ million workers would gain directly from the NLW by 2020 (that is, they currently earn below the NLW and therefore stand to receive a direct pay rise), with a further 3¼ million benefitting from so-called 'spillover effects' (where employers increase the wages of those already earning above the NLW in order to maintain pay gaps between workers).

These figures broadly chime with our new analysis (we have focused on Britain rather than the UK as the OBR did), but we have taken a more detailed look at the characteristics of beneficiaries in both 2016 and 2020 and at the size of their gains. We find that:

- » **4.5 million employees will see their hourly wage rise as a result of introduction of the NLW in 2016.** Of those, 1.9 million earning less than the NLW are set to be brought up to at least that level, with a further 2.6 million gaining from spillovers.
- » **By 2020, a total of 6 million employees – 23 per cent of all employees in Britain – are likely to have received some increase in their pay** as a result, with 3.2 million being brought up to at least the NLW and another 2.8 million moved onto higher wages through spillovers.

» By 2020, the **average gross gain to employees directly benefiting is expected to be £1,210 while for those who only benefit from spillovers, it is estimated to be £240** (in 2016 prices). Clearly however, the precise size of the pay rises experienced by individuals will vary depending on their previous pay levels and the hours they work.

With around one-in-four employees benefitting in some form, the NLW is a policy that will touch almost all groups in society. But some types of workers are more likely to be affected than others. While future Resolution Foundation work will analyse the impact across occupations, industries and firm size, this report explores how those effects vary by sex, age and region.

We find that women – who are more heavily concentrated among the low paid – are more likely to benefit than men:

- » The NLW is expected to **boost the wages of three-in-ten (29 per cent) female employees by 2020**, compared with 18 per cent of men.
- » We estimate that this will have a **modest impact on the mean gender pay gap**, speeding up the pace at which it narrows by up to one-fifth.
- » Yet, **despite more women being affected, on average they will receive smaller cash gains in 2020 (£690 annually) than men (£860 annually)**. This is because more women than men work part time, leaving them with smaller annual gains.

Again reflecting the distribution of low pay, we find that the NLW's introduction is also set to be more significant for some age groups than others:

- » **25-30 year olds are expected to make up nearly one-in-five (18 per cent) of those affected in 2020.**
- » While accounting for a smaller proportion of the overall gainers (because they account for a relatively small part of the overall workforce), **42 per cent of all those aged 66 and over are set to receive a pay boost by 2020.**

Taking a regional view, the NLW's effect is set to be much larger – and potentially more challenging – in some parts of the country than others. This is because the NLW is calculated based on its 'bite' relative to the wage of a typical employee aged 25 and over across the whole of the UK:

- » As a proportion of the typical (median) wage across all workers **the wage floor 'bite' is projected to rise from 61 per cent in 2014 (NMW) to 72 per cent in 2020 (NLW) in the East Midlands.**
- » **As well as the East Midlands, more than one-in-four workers will be affected in Wales, the West Midlands and Yorkshire and the Humber by 2020.**
- » In contrast, **London's 'bite' only increases gently, from 40 per cent in 2014 (NMW) to 47 per cent in 2020 (NLW) meaning just 14 per cent of employees stand to be affected.**

What impact will the NLW have on living standards?

Pay is obviously a vital component in determining living standards. But establishing just how much the NLW will feed through to household incomes means looking both at how employees are distributed across households and at the interaction of pay with taxes and benefits:

- » The distribution of lower-paid workers across households means **that just over half (52 per cent) of the gross wage gains flow to families in the bottom half of the distribution**, with the biggest cash gains recorded in the middle part of the distribution.
- » After accounting for tax and benefits – **under half (45 per cent) of the net income gains are set to flow to households in the bottom half of the income distribution in 2020.**
- » Looking solely at **working-age households** (where the NLW has most relevance), the **share of the net income gains flowing to the bottom half increases to 54 per cent.**

The disparity between gross and net gains is of course a product, in part, of income tax and National Insurance contributions. However, the biggest differences in gross and net gains come in the lower and middle part of the income distribution, reflecting the impact of the removal of in-work support that is associated with higher pay. That is, a smaller part of the gross gains filter through to those families in receipt of Universal Credit who lose 65p in benefits for every extra £1 of earnings.

Taken in combination with tax, this can significantly dampen the impact of the NLW for some families. For example, single parents who gain from the NLW will keep just 25 per cent of their additional gross earnings on average.

Despite these effects, the NLW is still expected to have the greatest proportional impact on income in the lower-middle part of the income distribution, though it is relatively modest (0.5 per cent).

The challenges and opportunities of the NLW

The NLW is a bold move and – as with the initial introduction of the NMW – its full effect will only be known once it has been implemented and the labour market has adapted. It will undoubtedly raise challenges for some firms, especially in low-paying sectors, with employers needing to find ways to cover the associated costs. Forthcoming Resolution Foundation analysis will explore the pressures that employers across industries, sectors and firm size will face. But what is clear from our initial analysis is that **the NLW will have a large, positive impact on the wages of up to one-in-four workers.**

Equally apparent is the variation in its impact across different parts of the UK and how its ultimate role in boosting households' living standards will depend on its interaction with the tax and benefit system. **It is clear that, while many households will gain from the introduction of the policy, the NLW cannot solve the living standards challenge alone.** This does not mean that the policy is unhelpful, but rather that **it should be seen as part of a package of measures designed to boost working opportunities, incentives and rewards.** That means looking again at ways of boosting employment (the subject of forthcoming Resolution Foundation research) and at how the design of Universal Credit balances work incentives with adequacy of support.

And – as the Bain Review concluded – it is crucial that the radical steps set out by the Chancellor in relation to the new minimum wage supplement are supported by the continued evidence-based involvement of the LPC, in order to ensure that its full benefits can be felt while limiting potentially negative consequences.

Section 1

Introduction

The UK has a long-standing low pay problem. One-in-five employees – some 5.2 million in 2013 – are paid less than the low pay threshold.^[1] The risk of being low paid varies significantly, with some groups including women and younger workers much more likely to be paid low wages. While the proportion has remained stubbornly high by international standards for two decades, the UK has made impressive progress in tackling the issue of extreme low pay, thanks primarily to the National Minimum Wage (NMW).

The National Minimum Wage – its introduction, development and the Bain Review

The NMW was introduced in 1999, creating for the first time in the UK a single legal wage floor below which no adult could be paid.^[2] The stated goal of the NMW has been to “help as many low-paid workers as possible without damaging their employment prospects”.^[3] The latter element of that remit was inevitably the most controversial in the lead up to the NMW’s introduction, with some fearing that up to 1 million jobs could be lost as a result.^[4]

In order to minimise the risk that a minimum wage could hurt the very people it was intended to benefit by limiting their employment opportunities, the Low Pay Commission (LPC) was established. The LPC was tasked with collecting and assessing evidence on the state of the labour market in order to recommend the level at which the NMW should be set, though the decision on the rate ultimately rests with the government.

In addition to this evidence-based approach, the NMW was set at a deliberately low level in its fledgling years in recognition of the uncertainty surrounding its impact. Following a ‘bedding-in’ period, the NMW rose rapidly in the early- and mid-2000s, reflecting the apparent absence of any significant employment effect. Because these increases were faster than wage growth for typical workers, the gap between the pay floor and the middle of the wage distribution narrowed somewhat. The bite of the NMW – the rate measured as a proportion of the median wage – rose from its starting level of 48 per cent in April 1999 to 53 per cent in April 2007.

The late-2000s recession ushered in a new era for the NMW, with its real-terms value falling for five years in a row between 2009 and 2013. Above-inflation increases returned in 2014 and the planned increase to £6.70 in October 2015 will mean the NMW approaches its peak real value once more. The LPC described this as a new phase for the NMW during which it regains some of the ground lost. Its bite has already exceeded its previous peak (55 per cent in 2014), thanks primarily to disappointing wage growth at the median. As well as recommending the NMW rates, the LPC has over the years

[1] Defined as two-thirds of the gross median hourly wage. For a full discussion of low pay and how the NLW is likely to affect it, see A Corlett, *Low Pay Britain 2015*, Resolution Foundation, forthcoming.

[2] Initially defined as those aged 22 and over before being extended to those aged 21 from October 2010.

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

[4] For more discussion see *The National Minimum Wage: The Evidence of its Impact on Jobs and Inequality*, Centre For Economic Performance, LSE. <http://cep.lse.ac.uk/pubs/download/pa006.pdf>

commissioned a detailed body of research into the impact of the NMW. Although some studies have highlighted difficulties in particular regions, industries or groups, the majority of the analyses carried out have found little or no negative effect on overall employment as a result of the NMW.

Such is the success of the LPC and its management of the policy that the NMW has become accepted across all parties. It was the sense that the policy had lapsed into a comfort zone, with little indication that the NMW was pushing into new territory that sparked the Resolution Foundation's review of the minimum wage, led by Sir George Bain, the first chair of the LPC.^[5] The review agreed that the NMW had achieved the task set for it – to boost the wages of the lowest paid without damaging employment – but argued that it could do more to tackle the UK's overall low pay problem. The review was clear that a single legal wage floor (aside from youth rates) was the correct policy for the

UK and acknowledged the limits of a minimum wage in reducing low pay. In recognition of this, it called for a package of reforms to enable the NMW to do more but also to position the LPC firmly at the heart of the fight against low pay, with new 'watchdog'-like powers.

Despite its title, the National Living Wage will not replicate the approach used by the living wage campaign, which bases its separate wage recommendations on the cost of living

The most important component of the Bain Review for the NMW's rate was its recommendation that the government should routinely set out its ambitions for its future value. This was envisaged as no more than an 'expression of

intent', keeping the LPC's role in recommending what level of NMW would be affordable from year to year. Examining international evidence, the review identified a bite of 60 per cent as an appropriate upper limit for future ambitions for the NMW. As such, it argued, progress towards that point should be made carefully, and the ambition should only be set following close consultation with the LPC.

The National Living Wage – supplementing the minimum wage

In the Summer Budget of July 2015, the Chancellor stated his intention to "tackle low pay and ensure that lower wage workers can take a greater share of the gains from growth". His approach was to introduce a higher minimum wage for those aged 25 and over from April 2016, with an additional payment on top of the NMW. Drawing on the Bain Review, rather than picking an arbitrary cash figure, this new 'National Living Wage' (NLW) is due to be set with reference to the prevailing median level of pay in the economy. Initially the bite will represent 55 per cent of the median wage *among those aged 25 and over*. In 2016, this is expected to be £7.20, 50p higher than the NMW which will be £6.70 from October 2015. Longer-term (by 2020), the government wants to achieve a bite of 60 per cent of the 25+ median wage.

Despite its title, the National Living Wage will not replicate the approach used by the living wage campaign, which bases its separate wage recommendations on the cost of living. Box 1 on the following page distinguishes between the NLW and the living wage.

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

i Box 1: The differences between the NLW and the living wage

Although the Budget document also refers to a Living Wage Premium, the term which has mostly been used for the Chancellor's higher minimum wage for those aged 25 and over is the National Living Wage (NLW). This has led to some confusion regarding the NLW and the living wage.

The crucial difference between the two is their purpose and the logic underlying them. From April 2016, the NLW will be the legal minimum any worker aged 25 or over can be paid per hour. Employers who do not comply will be fined, with the government announcing stricter enforcement of this new higher rate.* Its aim is to guarantee workers a minimum wage per hour while remaining affordable for employers and minimising any damage to employment. The living wage on the other hand is entirely voluntary, with employers encouraged to pay a rate that allows their employees to have a decent standard of living. Since it is not intended to be compulsory, it does not take account of the impact that its adoption would have on employment.

The concept of a living wage has deep historical roots but the current campaign began in East London in the early-2000s as a combination of faith groups, community

organisations and unions pushed for employers to pay at least a living wage. To help determine exactly what a living wage would mean, in 2005 the Greater London Authority established the Living Wage Unit to calculate the London Living Wage. The methodology used takes account of the cost of living as well as the role which in-work benefits play in supporting household incomes. The London Living Wage currently stands at £9.15.

Since 2011, the Centre for Research in Social Policy (CRSP) at Loughborough University has calculated an out-of-London living wage. Using a similar but different methodology, CRSP conducts a series of focus groups with members of the public in order to determine what is required for a household to have a minimum acceptable standard of living. The cost of this is then calculated for different family types before being weighted and averaged to account for the respective numbers of each family type across the UK. The out-of-London Living Wage is currently £7.85.

* See <https://www.gov.uk/government/news/measures-to-ensure-people-receive-fair-pay-announced>

While the setting of an ambition for the wage floor over time is certainly a concept at the heart of the Bain Review, it is worth noting the differences between its approach and that of the NLW.^[6] The Bain Review discussed the bite as a proportion of the median wage across *all workers*. The NLW on the other hand relies on a bite as a proportion of the median wage across *workers aged 25 and over*. As those aged between 21 (the current minimum age at which the NMW applies) and 24 tend to be lower paid than older workers, this means that the NLW's 60 per cent bite target in 2020 would mean a higher cash figure than the 60 per cent bite outlined in the Bain Review.

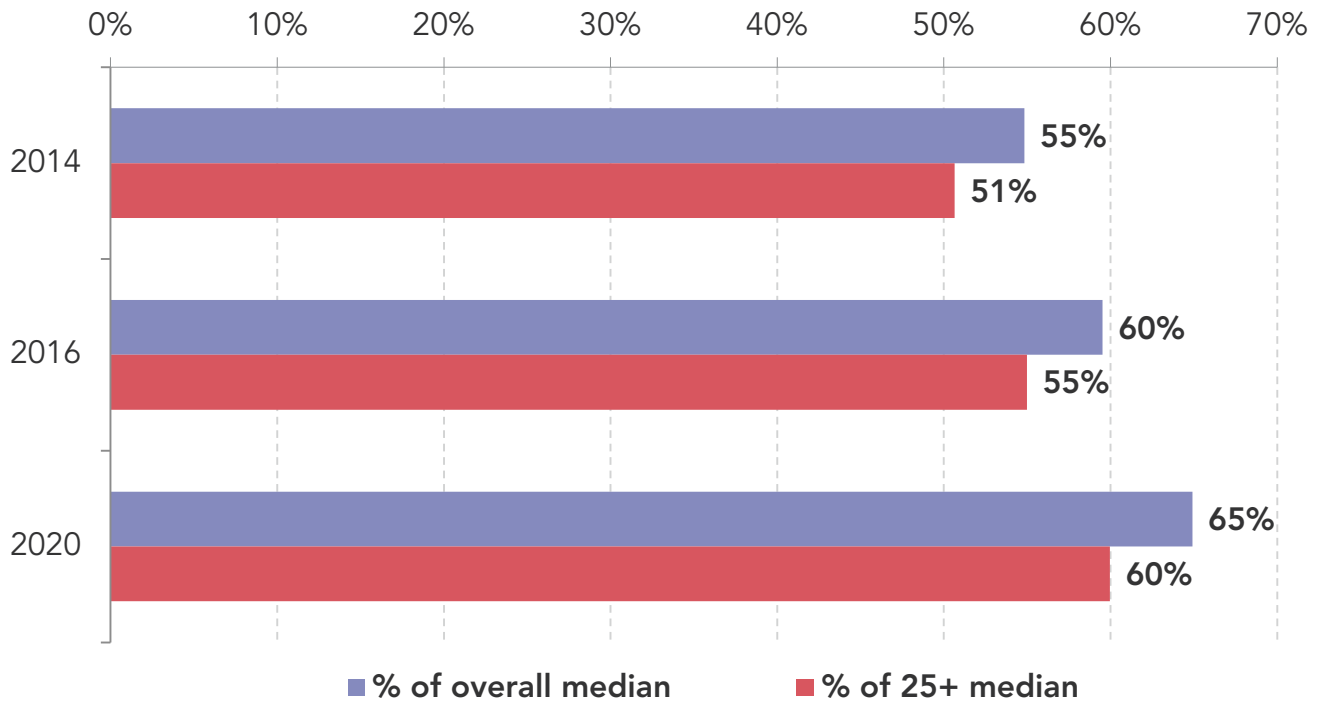
The fact that the NLW applies only to those aged 25 and over makes interpretations and comparisons with the impact of the NMW and minimum wages in other countries less straightforward. Figure 1 shows the difference between the all-worker bite (blue bars) and the bite relative to the 25+ median wage (red bars). In 2014, the bite of the NMW relative to the all-worker median wage was 55 per cent. Using the 25+ median, the bite is 51 per cent. In 2016, the NLW is intended to equal 55 per cent of the median wage of over-25s, which, as Figure 1 shows, is equal to an all-worker bite of 60 per cent. The NLW's 25+ bite is planned to rise to 60 per cent in 2020, which is expected to be equivalent to a 65 per cent all-worker bite.

High though this bite is, it is important to acknowledge that the exclusion of 21-24 year olds is likely to alter the labour market reaction. Because the NLW only applies to those aged 25 and over, it is possible that a higher bite is more tolerable than under the NMW, with a larger pool of younger, cheaper workers to allow employers to cope with a growing wage bill. In the remainder of this analysis, except where otherwise specified, references to the bite relate to the all-worker median rather than that of those aged 25 and over.

[6] C D'Arcy and G Kelly, *Analysing the National Living Wage: impact and implications for Britain's low pay challenge*, Resolution Foundation, July 2015 <http://www.resolutionfoundation.org/wp-content/uploads/2015/07/RF-National-Living-Wage-briefing.pdf>

Figure 1: The increasing bite of the minimum wage

25+ minimum wage as proportion of median



Source: RF analysis based on Annual Survey of Hours and Earnings (ASHE), 2014, plus stated policy

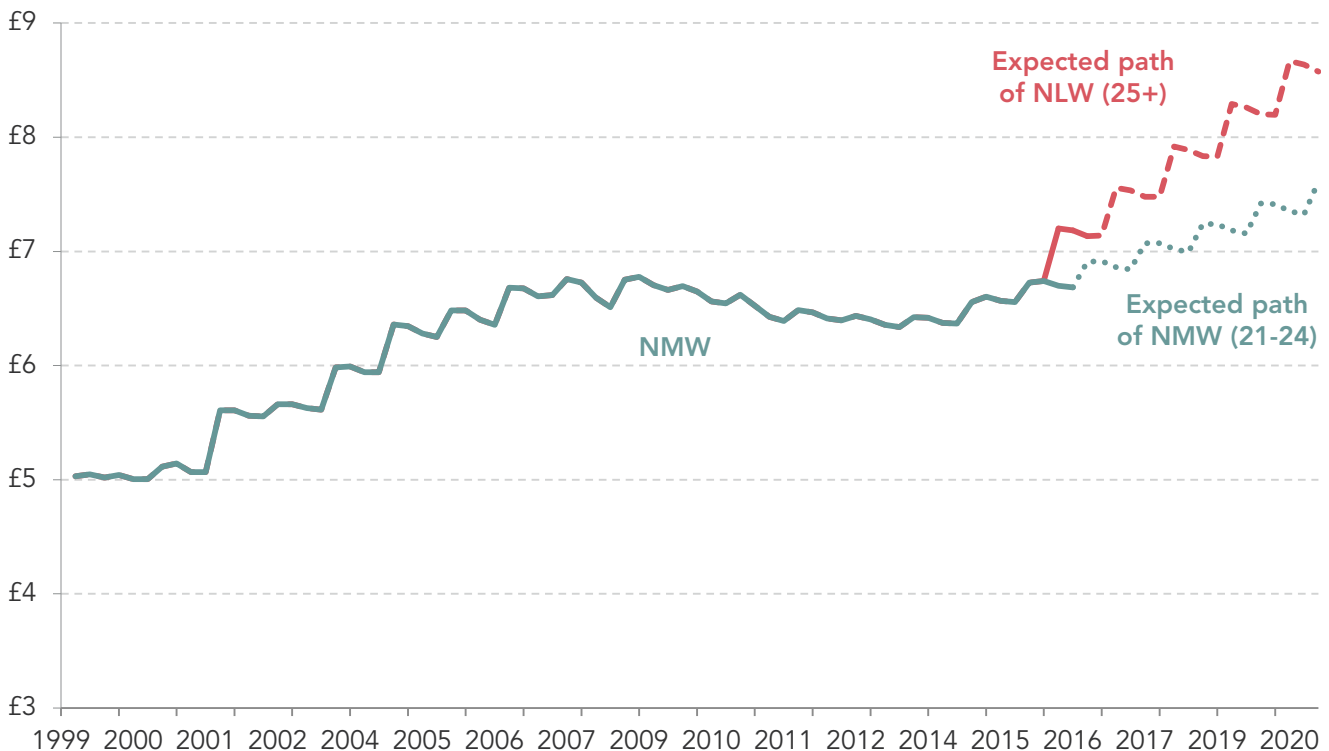
While the 2016 increase in the value of the UK’s wage floor is the largest in its history, the initial 50p gap between the NMW and NLW should not be overstated. The LPC’s responsible stewardship of the NMW during the recession rightly saw only small nominal increases in its value. With wage growth now stronger – in the latest figures, average wage growth reached a post-crisis high – quicker increases in the value of the NMW, restoring some of the ground lost since the recession, would have seemed both appropriate and affordable even without the NLW’s introduction.

But that is not to diminish the pace of the increases that will be seen in the next five years. Over the course of this parliament, the government’s ambition is to increase the NLW each year until its bite reaches 60 per cent. While the trajectory of this path and the figure it reaches in 2020 and beyond will depend on how strong wage growth is at the median (and potentially on the judgement of the LPC)^[7], the likelihood is that this will mean an NLW of more than £9 in 2020, with the Office for Budget Responsibility’s (OBR) central estimate being £9.35. The indicative dotted lines in Figure 2 overleaf highlight that in 2020, the NLW is estimated by the OBR to be approximately £1 more than the NMW. This is a significant increase in the wage floor applying to the UK’s lowest earners (over the age of 24).

[7] The role of the LPC in the future of the NLW remains unclear. For further discussion, see C D’Arcy and G Kelly, *Analysing the National Living Wage: impact and implications for Britain’s low pay challenge*, Resolution Foundation, July 2015. <http://www.resolutionfoundation.org/wp-content/uploads/2015/07/RF-National-Living-Wage-briefing.pdf>.

Figure 2: A new wage floor: expected divergence between the NMW and NLW

Growth of the National Minimum Wage and projected growth in the NMW and National Living Wage up to 2020, CPI-adjusted (Q2 2016 terms)



Notes: Future growth in the NLW and NMW is estimated using average hourly earnings growth as forecast by the OBR, with the bite of the NLW rising to reach 60 per cent of the 25+ median in 2020. The figure assumes that the NLW continues to rise in April and the NMW in October, although the LPC will be consulting on whether these schedules should be harmonised

Source: RF analysis of OBR, Economic and Fiscal Outlook, July 2015

Scope of this report

Much uncertainty surrounds the NLW's effect on the labour market as it takes the wage floor into uncharted territory in the UK. Proponents have praised it as a welcome intervention on low pay, while critics have argued it will not be affordable for employers, thereby potentially injuring most those it intends to help. Over the coming months, we will consider both the opportunities and challenges of the NLW.

This report assesses the impact of the NLW on employees, both in 2016 (to gauge its immediate effect) and in 2020 (to better understand the full scale of the policy). The purpose of this report is to understand how many people are set to benefit and how that benefit varies across different groups. We make no attempt at this stage to assess how the NLW will affect employers. Clearly it will have a meaningful impact on wage bills however, particularly in those regions and industries in which a significant portion of the workforce is low paid. Forthcoming Resolution Foundation analysis will engage in depth with the question of how employers will respond to the additional costs and the challenge of implementation.

- » **Section 2** estimates the numbers of people affected and their characteristics. It considers both those below the NLW as well as those above who may see their wages rise as a result of the policy, despite being above the new wage floor, breaking down the size of the average gains in these groups. How the NLW's impact varies by gender, age and area, among other characteristics, is also explored.

- » **Section 3** addresses what the NLW will mean for living standards, discussing how wage gains from the NLW will be converted into household income gains and how that will vary across different kinds of households, given interaction with the tax and benefit system.
- » **Section 4** summarises the findings and discusses the challenge that the NLW's implementation will present over the next five years, as well as setting out future Resolution Foundation work on this topic.
- » 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**.

Section 2

Who will be affected?

With the NMW rising by an average of 17p each year over the course of its existence, the introduction of a 50p supplement for those aged 25 and over in 2016 will inevitably have significant implications. The following years, as the NLW's bite rises towards 60 per cent of the median wage of those aged 25+ by 2020, will be just as important. The opening up of a gap of approximately £1 between the NMW and NLW will generate higher gains for a growing number of employees.

In its initial review, the OBR estimated that 2¾ million workers would gain directly from the NLW with a further 3¼ million benefitting from so-called 'spillover effects', as employers choose to maintain pay gaps between workers.

In this section, we present our analysis of the distribution of gains, looking in more detail at who wins and by how much. We assess the numbers of people affected – both directly and indirectly – and their characteristics, in particular their sex, age and location. The analysis considers the immediate effect of the NLW upon its introduction in 2016 as well in 2020.

Box 2 explains the approach we take in casting forward to 2016 and 2020. As recent years have shown, correctly forecasting wage growth over the short to medium term is extremely difficult. The task is made all the more challenging by the uncertainties that the NLW introduces in terms of how employers and the labour market as a whole will adapt. For example, our analysis does not attempt to account for the choices employers may make around employment (by replacing older workers

i Box 2: Projecting to 2016 and 2020

Section 2 of our analysis uses data from the Annual Survey of Hours and Earnings (ASHE), with the most recent microdata available being for April 2014. Section 3 relies on data from 2012-13 from the Family Resources Survey (FRS) and Labour Force Survey (LFS). 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 updated 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 our methodological differences. We estimate 2016 and 2020 NLW equivalents (based on the bite) and apply these to historic data (2014 ASHE and 2012-13 FRS and LFS) whereas the OBR first projects forward its economic model and then calculates the level of the NLW. 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.

with those aged 24 and under for instance). Such reactions may be relatively limited initially, but with a potential gap of more than £1 opening between the NMW and NLW by 2020, staffing choices may alter more fundamentally over time.

As such, the findings we present here will inevitably prove to be inaccurate and should be treated as indications of the size and variation of the effects of the NLW rather than an exact prediction. For further detail on our methodology, see the Boxes throughout and the Annexes at the end of this report.

Around one-in-four employees are set to benefit

Our analysis finds that in **2016 a total of 4.5 million people, or 18 per cent of all employees, can expect to see their wages rise as a result of the NLW**, as shown in Table 1. We distinguish between those who are *directly* affected – who earn below the NLW and therefore find themselves raised to or beyond this level – and those who are *indirectly affected* – who earn above the NLW but can expect a pay rise as their employer acts to maintain pay differentials within their workforce. We estimate that some 1.9 million employees will be directly affected in 2016, while a further 2.6 million workers will be indirectly affected.

These indirect effects, as the direct impact from the NLW ‘spills over’ up to higher rungs of the pay ladder, may be due to pressure from employees to maintain some pay gap between workers in different roles or a desire to recognise the higher skills or productivity of these workers relative to their previously-lower-paid colleagues in order to retain or attract higher quality employees. There is no firm academic consensus on how large spillovers tend to be or how they vary. As such, the approach we have taken here should be regarded as only a rough approximation of how the NLW may ripple up the pay ladder. It should be noted that many of those who do benefit from spillovers will receive a very small gross pay increase – for some as little as an extra 1p per hour, or around an additional £20 a year for someone working full time. Box 2 and Annexes 2 and 3 discuss spillover effects in more detail.

Table 1: Beneficiaries of the NLW

	2016 (NLW at 55% of 25+ median)				2020 (NLW at 60% of 25+ median)			
	000s affected	Share of employees affected	Share of all affected	Average gain	000s affected	Share of employees affected	Share of all affected	Average gain
Total	4,510	18%	100%	£330	6,000	23%	100%	£760
Sex								
Male	1,700	13%	38%	£380	2,330	18%	39%	£860
Female	2,810	22%	62%	£300	3,680	29%	61%	£690
Age group								
25-30	780	22%	17%	£400	1,080	30%	18%	£890
31-35	490	16%	11%	£380	670	22%	11%	£850
36-40	420	15%	9%	£370	580	21%	10%	£820
41-45	510	16%	11%	£350	710	22%	12%	£780
46-50	540	16%	12%	£360	760	22%	13%	£800
51-55	480	17%	11%	£350	680	23%	11%	£790
56-60	380	18%	8%	£330	530	25%	9%	£760
61-65	220	21%	5%	£330	310	29%	5%	£750
66+	160	32%	3%	£250	210	42%	3%	£580
Hours								
Full-time	2,080	11%	46%	£440	3,030	16%	50%	£940
Part-time	2,430	33%	54%	£240	2,980	40%	50%	£570

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.

Including both those directly and indirectly affected, **by 2020 an estimated 6 million workers, or nearly one-in-four (23 per cent) employees, are expected receive a pay rise** as a result of the NLW. Of those 6 million, 3.2 million are projected to gain as a result of being brought up to or above the new legal minimum while the remaining 2.8 million are set to benefit from spillovers.

i Box 3: Estimating the indirect effects of the NLW

It is straightforward to say that those currently below the new NLW will get a pay rise. But it would be too simplistic to assume that they will all end up on the same wage. Then there are those just above the new NLW – currently some distance above the wage floor: they too could be expected to receive a pay rise as the impacts ripple up the wage distribution, for example if some employers seek to maintain earnings differentials.

We estimate these indirect or ‘spillover’ effects using a model set out by David Lee and replicated in much of the recent research into the indirect effects of wage floors. Our central estimates are consistent with spillovers extending up to around the 25th percentile of the wage distribution by 2020, in line with evidence from recent research and the approach taken by the OBR in its assessment of the impact of the NLW. Our estimate for the number of people indirectly affected by the NLW in 2020 is in line with the OBR’s. Note that our modelling assumes no downsides in terms of job losses or reductions in hours, and nor does it assume any cuts in anyone else’s pay, or any constraint to the average pay growth forecast. See Annex 2 for full details of our approach to estimating the indirect effects of the NLW.

How spillovers from minimum wage increases flow through the earnings distribution is still imperfectly understood.

Studies in the UK in the years following the introduction of the NMW generally found little or no evidence of indirect effects, but more recent research has noted stronger effects, in line with US evidence (see Annex 2 for further details of this literature). Because of the uncertainty surrounding the scale of indirect effects – especially as the bite of the wage floor increases beyond that observed almost anywhere around the world – we consider the impact that a higher or lower spillover effect would have in Annex 3.* Understanding the size and incidence of indirect effects is likely to be a key area for further research and analysis by the LPC and others as the NLW rolls out.

As well as the magnitude of the indirect effects of the NLW, there is uncertainty around their timing. For example, if the effects take a longer time to ripple up, it may be that our central estimates overstate the spillover effect (and therefore the total impact of the NLW) in each year.

* In addition and by implication, our figures for ‘direct’ effects discussed in the text and presented in full in Annex 1 would constitute the total effect if there turns out to be no spillover at all.

The new wage floor will significantly reshape the earnings distribution

One consequence of stronger growth in the NMW since the early-2000s was a growing ‘spike’ of workers paid exactly at its level. To some extent this highlights the success of the NMW in raising pay for significant numbers. But it also points to a greater bunching together of employees at the bottom of the wage distribution, which may make climbing onto higher wages more challenging.

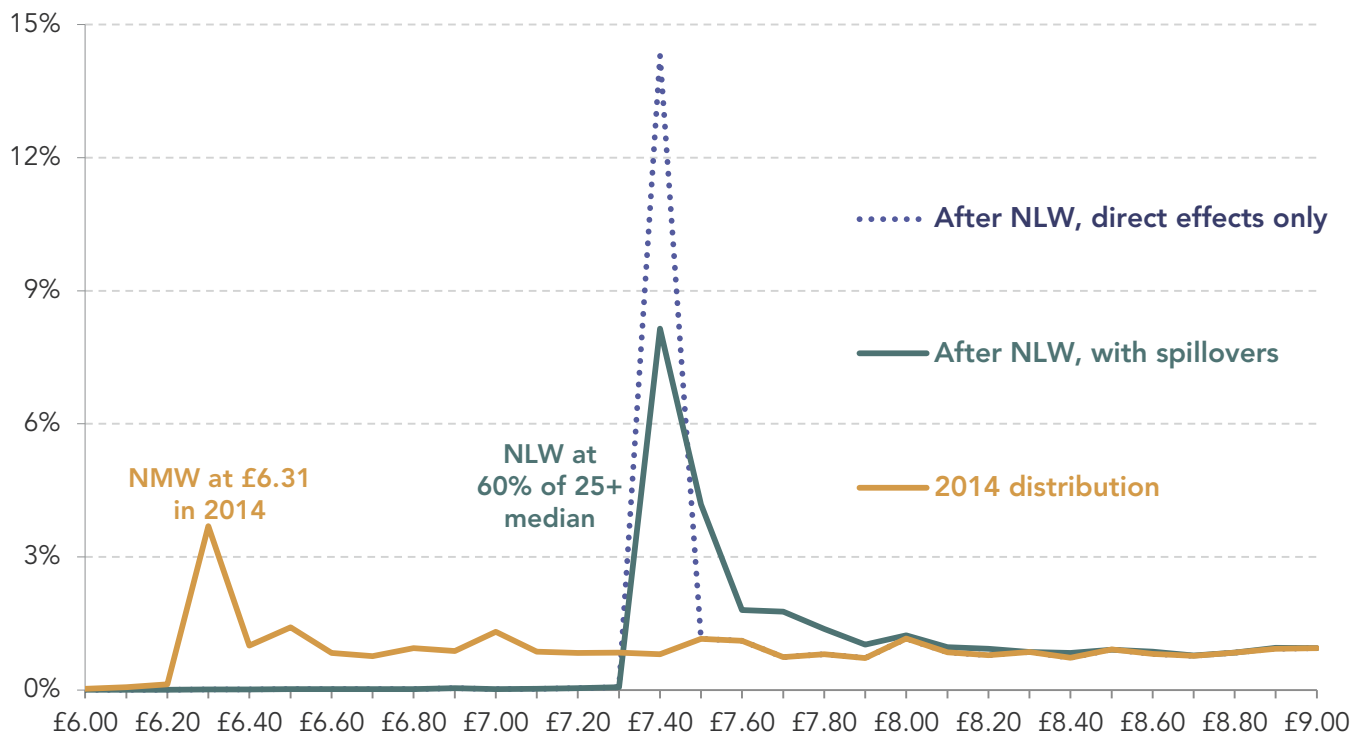
By reaching higher up the earnings distribution, the NLW is likely to accentuate this trend. The horizontal axis of Figure 3 shows hourly wages in 10p bands while the vertical axis tells us the proportion of workers paid at that wage. We estimate the impact as if the end-goal of the NLW – a bite of 60 per cent relative to the 25+ median wage – had been in place in 2014. This may overstate the size of the ‘spike’ at the NLW – or the share of workers just above it – as we do not attempt to model how employment levels and the number of hours worked by employees will vary in reaction to the introduction of the NLW. Figure 3 compares the 2014 wage distribution of workers aged 25 and over with two possible scenarios:^[8] one excluding spillovers for those already earning above the NLW; and one including them.

[8] Annex 3 discusses our approach to spillovers in more detail and shows the impact of other spillover assumptions on the wage distribution.

Immediately apparent is the much larger spike at the NLW recorded in the scenario without spillovers. Once we introduce them, their rippling effect serves to move some employees onto slightly higher wages and thus reduces the proportion of employees paid exactly the NLW. As discussed in Box 2, estimating these spillovers is a highly uncertain process and the proportion of workers in each 10p 'bucket' is likely to be inaccurate. Nonetheless, it gives a sense of how seriously the NLW will reshape the UK's wage distribution. While the pay boost will undoubtedly be good news for those affected, it is likely to heighten concerns about large sections of the workforce being on the same wage and the consequent difficulty in achieving pay progression.^[9]

Figure 3: Before and after: how the NLW is likely to change the wage distribution

% 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

The magnitude of wage gains will vary significantly

Having explored how many people are set to benefit from the NLW, we now turn to how much the above-described shifts in pay will affect the UK's total wage bill. Accounting for the current wages and hours worked of affected employees, as well as expected growth in earnings, hours and employment, **the total gross wage gain is projected to be £1.5 billion in 2016, rising to**

[9] For further analysis of pay progression in the UK, see C D'Arcy and A Hurrell, *Escape Plan: Understanding who progresses from low pay and who gets stuck*, November 2014.

£4.5 billion in 2020.^[10] (For comparability, all total and average gains for 2020 are deflated to 2016 terms using the OBR's projection for CPI.) That implies average wage gains of £330 in 2016 and £760 in 2020, as shown in Table 1.

But of course, there will be much variety around these averages as people on a variety of wages and hours patterns will receive a pay rise. To take account of this, we present the average annual wage gains for two groups of workers:

- » Directly affected workers, who can be subdivided into:
 - » NMW workers – those at the NMW and receiving the full uplift to the NLW i.e. the biggest wage gains.
 - » 'Inbetweeners' – those earning more than the NMW but less than the NLW. Those closer to the NMW are brought up to the NLW while workers nearer to the NLW may find themselves above the NLW, thanks to spillover effects.
 - » Spillover workers – those already earning at or above the NLW prior to its introduction. They only benefit indirectly i.e. from spillovers. Of this group, those just above the NLW receive the largest pay increase, with the wage gain fading as the effect moves up the earnings distribution.

There are 1.9 million people earning below the NLW who will be affected directly in 2016 (rising to 3.2 million in 2020). Of these, we estimate that around 800,000 are NMW workers, with the remainder being 'inbetweeners'. **Taken together, we estimate the average wage gain among those directly affected will be £570 in 2016, rising to £1,210 in 2020.** However, NMW workers will receive substantially more than this. For example, a full-time NMW worker would receive a pay rise of around £1,000 in 2016. **The 2.6 million spillover workers will receive much smaller average pay increases than those directly affected, of £160 in 2016 and £240 in 2020.**

There will naturally be much variation around these averages even within these groups. For example, despite getting the same hourly raise, a full-time NMW worker will receive a much bigger annual pay increase than a part-time NMW worker. And as Section 3 will discuss, how much of that gross wage increase finds its way through to household incomes is a different matter entirely.

More women are set to be affected by the NLW than men

Often overlooked in discussions of the NMW is the welcome impact it had on gender equality in pay. Perhaps more than any other measure since the Equal Pay Act, the NMW narrowed the gap between the sexes, with the pay gap among the lowest earners falling substantially in the decade after the NMW's introduction.^[11] Will the NLW have a similarly positive effect?

As Table 1 illustrates, women make up the majority of those gaining from the NLW. In 2016, **women are set to account for three-in-five (62 per cent) of all those affected** with 2.8 million expected to gain, compared with 1.7 million men. This disparity is due to women being more likely to hold low-paid roles. **By 2020, 3.7 million women – 29 per cent of all female employees – are expected to have experienced some increase in their wages as a result of the policy.** This compares with 2.3 million men, or 18 per cent of all male employees in the same year.

[10] This includes only the gross wage gain to employees and does not account for employer's National Insurance or higher pension contributions they may receive as a result of their pay rise. In its analysis, the OBR estimated that the total wage bill increase would be £4 billion in 2020. As Box 1 describes, there are some important methodological differences between our two approaches.

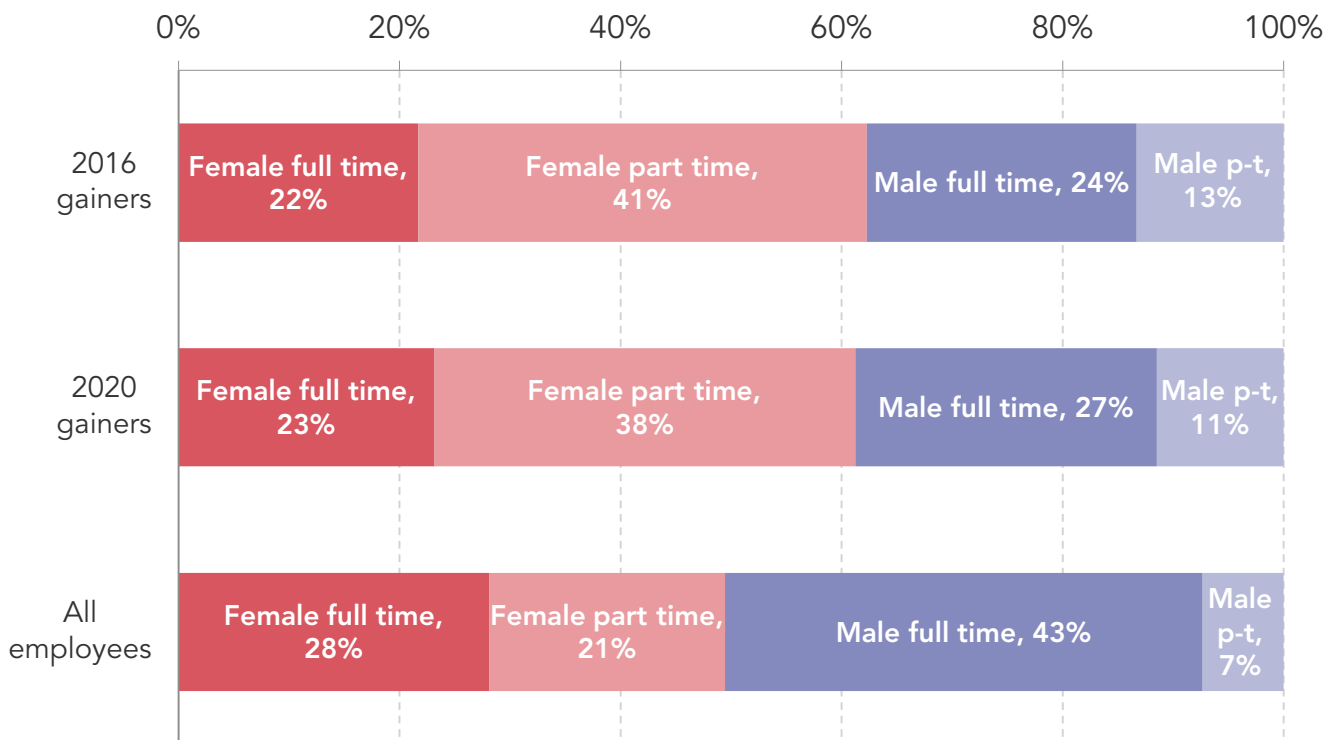
[11] Other factors may of course also have played a role in this narrowing of the pay gap. Department for Business Innovation and Skills, *The National Minimum Wage Regulations 2009 – Final Impact Assessment*, 2009. <http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file51722.pdf>.

But as well as calculating the gender divide in terms of the number of people affected, it is also important to consider how the total cash gains are split, to understand who benefits most. The mean annual cash gain accruing to women as a result of the NLW is estimated to be £300 in 2016, rising to £690 in 2020. Considering only those directly affected, the average figure is higher (£500 in 2016, rising to £1,070 in 2020), while for those gaining only from spillovers, it is lower (£150 in 2016 and £220 in 2020). For men however, the mean annual cash gain for those who benefit is expected to be larger than for women: £380 in 2016 and £860 in 2020. Again, those brought up to the NLW gain more on average (£700 in 2016; £1,450 in 2020) than those at or already above the NLW (£180 in 2016; £270 in 2020).

This disparity is explained by the differing likelihood of working part time. While a part-time worker previously on the NMW would receive the same gross hourly uplift in pay as a result of the NLW as a full-time NMW worker, the gross annual gains would be larger for a full-time employee, because they work more hours. As shown in Figure 4, as a share of the total affected by the NLW in 2020, 38 per cent are women working part time while 11 per cent are men who work part time. And, although they make up only 21 per cent of the total workforce, women working part time are expected to account for 41 per cent of those who are set to gain from the NLW when it is introduced in 2016.

Figure 4: Before and after: how the NLW is likely to change the wage distribution

% of NLW beneficiaries and all employees by gender and hours worked



Notes: The numbers affected cover 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. 2016 figures are based on a NLW 25+ bite of 55 per cent, rising to 60 per cent in 2020.

Source: RF analysis of ASHE

Given the greater number of women affected, and the history of minimum wages improving gender equality, what impact – if any – will the NLW have on the gender pay gap? In part of course, the answer depends on how we measure the gap. Often the focus falls on differences in *median* hourly pay, but the NLW is unlikely to have any impact so high up the earnings distribution. An alternative involves looking at *mean* hourly pay among *full-time* employees.^[12] But this continues to understate the impact of the NLW by ignoring its effect on part-time workers. We therefore choose instead to focus on differences in *mean* hourly pay among *all* employees.

On this basis, we estimate that the distribution of gains from the NLW will lead to a **modest narrowing of the gender pay gap over the coming years**. The gap has narrowed from 25 per cent in 1997 to just under 18 per cent in 2014 – a trend reduction of around 2 per cent a year (or 0.4 percentage points). Our analysis suggests that the NLW alone will reduce the mean hourly pay gap to 17.3 per cent by 2020. This would represent a reduction of around 0.4 per cent a year in the period 2014-2020, implying that the policy will boost the trend pace of narrowing in the gender pay gap by up to one-fifth.^[13] So, while significant gender inequality will persist, the NLW should have a positive if mild impact over this parliament.

Part-timers will be disproportionately affected

As discussed above, part-timers are disproportionately located in the lower part of the hourly earnings distribution and are therefore disproportionately likely to be affected by the NLW. Despite making up 29 per cent of the total employee workforce, part-timers will comprise 54 per cent of the total who gain from the NLW in 2016 (2.4 million part-time staff, compared with 2.1 million full-time workers).

As the NLW reaches higher up the pay ladder over time, part-timers' share of the gains will recede slightly. By 2020, the 6 million gainers will be split roughly evenly part-time and full-time employees (3 million each). This is still a disproportionately large proportion of part-time employees; by 2020, 40 per cent of the part-time workforce will have received some pay uplift thanks to the NLW, compared with 16 per cent of those working full time.

25-30 year olds stand to benefit most from the NLW

As discussed, the NLW only applies to those aged 25 and over. This does not mean that no one under the age of 25 will see their wages increase, however. Some employers are likely to keep all staff in the same role on the same pay, regardless of age.^[14] Our approach therefore allows for some pay rises for under-25s, though is likely to understate the impact; see Box 3 for more detail on our approach to those below the age threshold.

Those aged under 25 may also benefit from greater employment opportunities as employers choose to hire younger, cheaper workers. Our analysis does not however attempt to model any potential substitution between workers in response to the NLW.

The NLW will have a larger effect for some age groups than others, as illustrated in Table 1. Our analysis suggests that 25-30 year olds are set to be the age group that benefits the most from the NLW. As well as comprising the largest group of beneficiaries, making up 18 per cent of those who gain from the NLW in 2020, 25-30 year olds are set to receive 22 per cent of the cash gains.

[12] See, for example, S Harkness, "Second earners or main breadwinners?", *Securing a Pay Rise: The Path Back to Shared Wage Growth* eds. G. Kelly and C. D'Arcy, Resolution Foundation, March 2015.

[13] In practice, some of the trend rate of narrowing in the gender pay gap already includes the effect of NMW increases. The NLW effect will replace the NMW effect (for those aged 25+), rather than add to it, meaning that the 0.4 per cent a year reduction we identify may represent an upper bound for the impact, rather than a central estimate.

[14] For example, Sainsbury's has confirmed that, excluding staff in their first six months, it will not differentiate between permanent employees aged over or under 25s in its workforce, meaning 40,000 younger store staff will receive the new wage. <http://www.theguardian.com/business/2015/aug/27/sainsburys-shopfloor-staff-pay-rise>

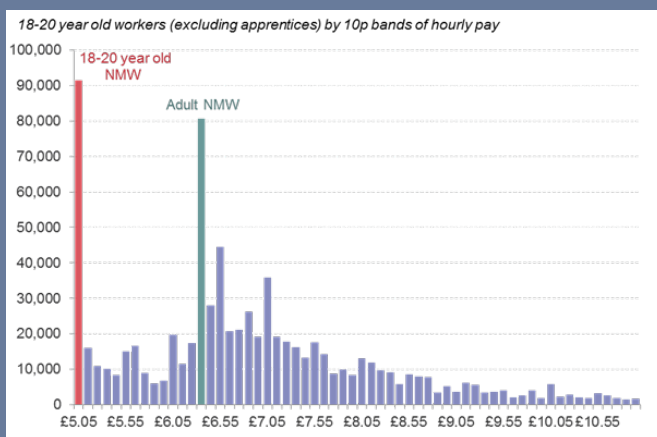
They also have the largest average annual cash gain in 2020 of any group, for both those directly (£1,320 in 2020) and indirectly (£290 in 2020) affected. This is likely to be explained by the greater proportion of people in this age bracket working full time: 81 per cent of all workers on all pay levels in this age bracket do so, compared with 72-77 per cent in most other age bands.

i Box 4: The impact of the NLW on those aged under 25

Our analysis of the indirect effects of the NLW allows for some spillovers to those aged under 25 and paid at or above NLW rates (see Annex 2 for details). We estimate that 530,000 workers aged under 25 will be indirectly affected on this basis in 2016, gaining £110 per year on average. However, these are unlikely to constitute all of the indirect effects on the younger workforce of a higher wage floor for those aged 25 and over. For example, some workers aged under 25 who are on the current adult NMW may see their pay raised to the NLW if firms make across the board changes to pay structures, to maintain parity between employees performing similar roles, or if the new NLW comes to be regarded as the 'going rate' in some sectors.

It is very hard to judge the extent to which such effects will occur, but there are some clues as to their potential scale in the current experience of those aged under 21, who already have a lower minimum rate. Figure B1 shows the pay distribution for 18-20 year olds, and highlights that almost as many were clustered at the adult NMW of £6.31 in 2014 as at the 18-20 rate (£5.03). This is suggestive of 18-20 year olds being 'bumped up' to adult rates for reasons such as those described above.

Figure B1: 18-20 year old hourly pay distribution, April 2014



Source: RF analysis of ASHE

There are reasons to believe that the NLW might result in less 'bumping up' of younger workers than is the case with the NMW. For example, there are many more workers aged 21-24 than aged 18-20, meaning employers may be less likely to regard the NLW for those aged 25 and over as the 'going rate' than in the case of the existing adult NMW. The cost implications of the NLW in some sectors may mean far too little slack remains to also raise the wages of younger workers. That is, the larger the excluded group is, the more likely it is that we will see differential pay.

Nonetheless, some 'bumping up' might be expected for younger workers earning the adult NMW and above. We estimate that in 2016 there will be 330,000 workers aged under 25 paid at the adult NMW, and a further 340,000 earning between the NMW and the NLW. As a rough illustration, if 20 per cent of these workers experienced some form of pay rise as a result of the policy, that would imply an additional 130,000 younger workers indirectly affected in 2016 (on top of the 530,000 indirectly affected because they earn at or above the NLW, as set out above). To repeat, we do not include such effects in our analysis

The age group among whom the NLW's effects are most widespread are those aged 66 and over. One-in-three (32 per cent) are expected to see some pay rise in 2016, rising to 42 per cent in

2020. As a share of the entire group that will benefit from the policy however, workers aged 66+ account for just 3 per cent. And given the higher share of older employees that work part time, it is unsurprising that their average annual cash gain in 2020 – £820 directly and £190 indirectly – is by some distance the lowest average gain. The distribution of gains and the number of people affected is relatively evenly spread across the other age groups.

The NLW will have most impact outside of London

While the NMW has been a hugely popular policy, some have argued that the rate should be varied across the country.^[15] The example often cited in support of this is the living wage, which is set at a higher rate in London than in the rest of the UK (though it should be noted that the purpose and logic of the living wage – voluntary and based on the cost of living – is very different to that underlying the NMW and NLW – mandatory and designed to prevent damage to employment). Labour markets

and pay scales do of course vary across the UK. But when the Resolution Foundation's review of the minimum wage explored this question, it reached the conclusion that the variation across the UK was not sufficiently wide to merit more localised wage-setting, with the exception of London.^[16]

The best indicator of how high a minimum wage is within a region is its 'bite'

The best indicator of how high a minimum wage is within a region is its 'bite'. While the bite of the NMW across the UK in 2014 is 55 per cent, seven of the eleven nations or regions included in our analysis^[17] have a bite of 59–61 per cent with the East Midlands having the highest regional bite. London stands out as the region in which the NMW has the least impact with a bite of just 40 per cent across all workers. As well as illustrating how the impact of the NMW varies across the UK, these figures also give us a sense of what is affordable and which parts of the country are likely to feel the pressure most from any further wage increases.

Figure 4 shows how the NLW's bite will vary across nations and regions in 2016 and 2020.^[18] First, it is clear that, as expected, the introduction of the NLW will push up the bite in all parts of the country. Second, there is no change in the ranking of these nations and regions, with those areas with the highest regional bites in 2014 still having the highest bite in 2020 (given that we assume for simplicity that median pay growth will not vary across regions). Of those high-ranking parts of the country, the East Midlands has the highest bite at 72 per cent but is very similar to several other regions. **The NLW's increase to 2020 will, if anything, make London an even more exceptional outlier in terms of bite; at just 47 per cent, it will still be lower in 2020 than the NMW bite in any other part of the UK in 2014.**

[15] For example, the Scottish National Party has called for the minimum wage to be devolved to Scotland.

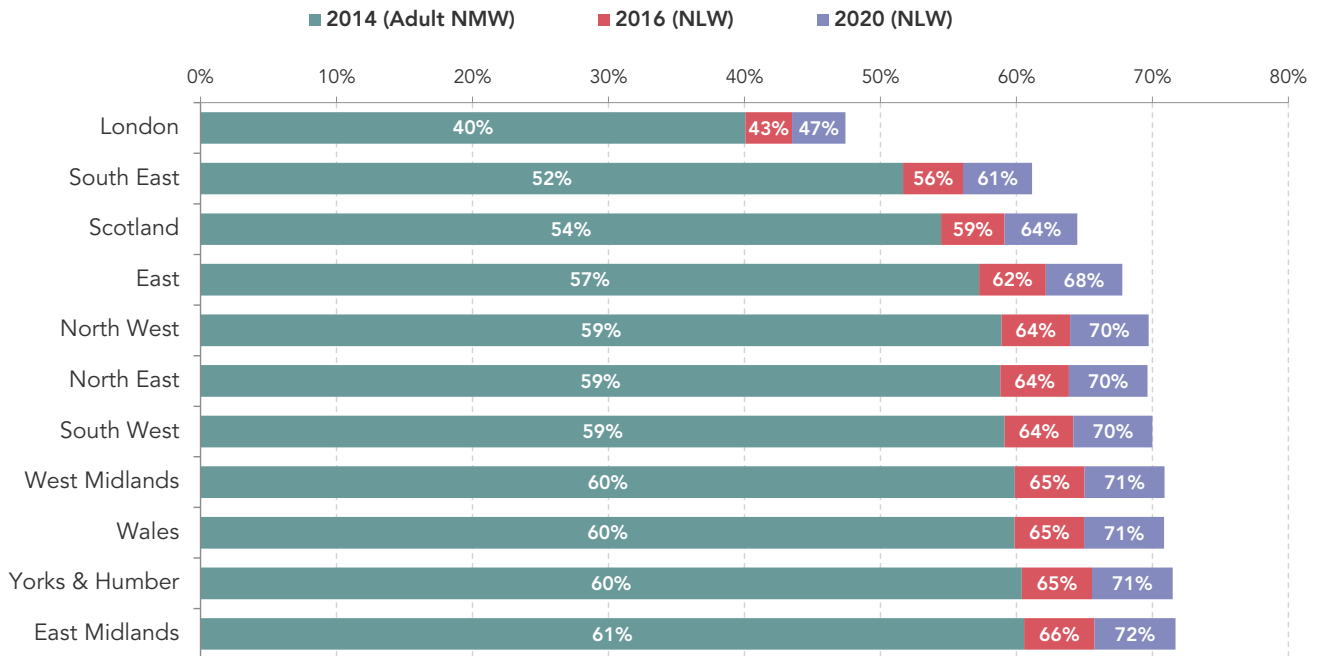
[16] The NMW has a much smaller impact in London, with the review recommending that the LPC should assess what minimum wage would be affordable in the capital and, absent any large reduction in low pay in London, over time the mayor should be given the power to make this higher rate binding.

[17] Data for Northern Ireland are not included in the ASHE micro-data on which this analysis is based. As such, we cannot provide figures for Northern Ireland in this analysis, although the published ASHE figures do include Northern Ireland, revealing that it has the highest bite of any part of the UK, at 63 per cent. This suggests that it is likely to face the most pressures in implementing the NLW.

[18] Annex 1 also provides data for city regions.

Figure 5: Regional bite of the wage floor

Bite of the minimum wage by region over time



Notes: Bites are relative to all-worker median rather than 25+ median. Assumes even regional growth from 2014, except for the impact of the NLW.

Source: RF analysis of ASHE

As well as considering the bite, the proportion of employees within a region likely to see their pay increase as a result of the NLW gives us a helpful indication of how significant its impact is likely to be. Unsurprisingly, a similar pattern to that seen in Figure 4 emerges, with a handful of nations and regions facing similarly-sized impacts in 2016 – one-in-five workers affected – and in 2020 – one-in-four workers affected. Again, London is the exception. Although the NLW should increase the wages of hundreds of thousands of workers in the capital, as a share of the total workforce only one-in-nine (11 per cent) will see their pay rise in 2016 as a result of the policy, rising to one-in-seven (14 per cent) in 2020. This is only half the proportion affected in Yorkshire and the Humber, where two-in-seven (28 per cent) are likely to receive a wage increase as a result of the NLW by 2020.

Summary

Given the range of ‘moving parts’ within the labour market, estimates of the NLW’s impact will inevitably be wide of the mark. But even with a margin of error, it is obvious that the policy will have a significant impact. Looking at who gains, women are set to be among the biggest winners with three in every ten female employees expected to receive a pay rise by 2020 as a result of the NLW. A majority of those working part-time and many workers aged 25-30 are also in line to see increases in their pay. Being more likely to be affected by the NLW does not necessarily equate to receiving the biggest average gains on an individual level however. Because of the greater share of men working full time, the average gross gains they receive are larger than those for women. And while the NLW should quicken the pace at which the gender pay gap closes, it will not – nor was it expected to – solve pay inequality between the sexes.

While the NLW's impact varies across individuals, the regional disparities are also wide. In some regions more than one-in-four employees should get a pay rise in 2020, but in London approximately half that proportion will, with the bite of its wage floor increasing only slightly. This highlights the challenge facing any wage floor which applies across a relatively large and diverse labour market. It does not mean that the NLW should become more localised, only that its impact in the most affected areas should be closely monitored and that in London the argument around whether employers there could (or should) afford to go further will persist.

Knowing who is likely to be affected, the size of the gains and how that picture varies across the country is important in estimating the effect of – and successfully implementing – the NLW. The following section moves beyond this, to consider how much of a boost these wage gains will provide to living standards.

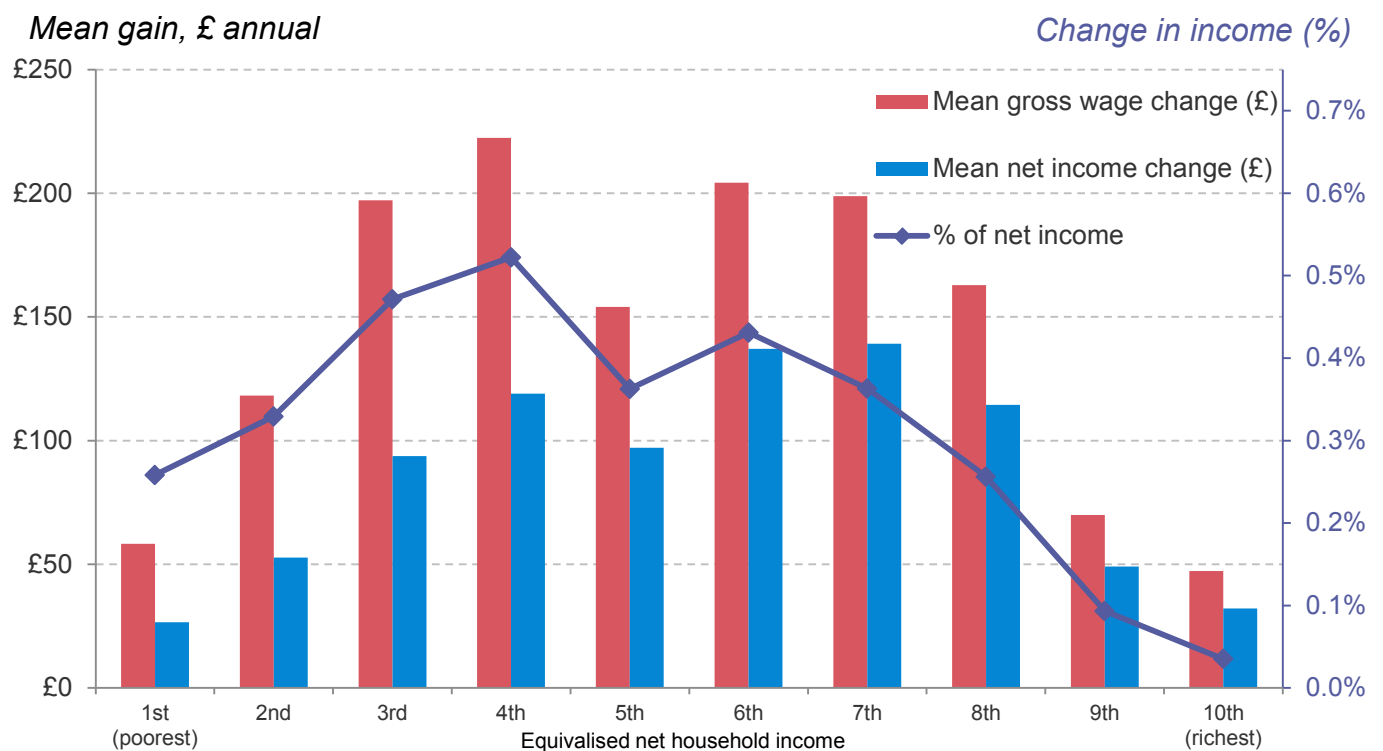
Section 3

Impact on household incomes

In Section 2, we discussed how many people will benefit from the NLW, their characteristics and how the impact is felt across Britain. Those furthest below the NLW will of course receive the biggest wage boost. But what that means for the living standards of families is a more complicated matter. The extent to which those cash gains translate into higher household incomes depends on the distribution of workers across households and on interactions with the tax and benefit system.^[19] In this section, we set out the transition from *gross wage* gains to *net household income* gains. We consider also the extent to which the NLW offsets the household incomes losses associated with other policies announced in July’s Budget.

Figure 6: Households in the middle gain the most from the NLW

Gains from the National Living Wage by household income decile, 2020



Notes: See Annex 2 for methodological details and assumptions

Source: RF analysis using the Family Resources Survey, the Labour Force Survey and the IPPR tax-benefit model

[19] For a full discussion of the assumptions we have used in this Section, see Annex 2.

Gains are concentrated in the middle of the income distribution

Figure 6 shows the effect of the NLW on households in 2020, from those with the lowest incomes on the left to those with the highest incomes on the right.^[20] The chart provides three different ways of approaching the question of who sees the most benefit from the policy, each of which give us a different perspective on the NLW's impact.

Looking first at gross wage gains (the red bars), those in the bottom 10 per cent of households and those in the top 10 per cent record the smallest average gains. Households at the very bottom

Much more instructive for living standards is the average net income change households are likely to experience

of the income distribution are less likely to have any members in work (due to unemployment, inactivity or being retired) and so are expected to gain very little from the NLW. At the other end of the spectrum, members of the highest income households are unlikely to be in NLW-paying roles. The households that gain the most in gross terms are those in the middle, between deciles

3-7. Households in decile four for example will receive average gross wage gains of £220. On this measure, households in the bottom half of the income distribution receive just over half (52 per cent) of the total wage gains from the NLW.

Much more instructive for living standards is the average net income change households are likely to experience, as depicted by the blue bars. The extent to which gross wage gains translate into income increases will of course vary across households, reflecting their differing experiences of taxation and state support. As we can see, the overall shape of the distribution does not change drastically from the gross gains: households in the middle deciles still gain more on average than those at the very top or bottom. But what is noticeable is the proportion of the gross gains lost by households in the middle, particularly in the lower-middle (deciles 2-4) part of the distribution.

The requirement to pay tax and National Insurance (NI) on these additional earnings explains part of this shift. In addition, members of this middle group of households are more likely than others to be eligible for Universal Credit (UC). Crucially, entitlement to UC reduces as earnings increase – for each pound earned above around £5,000 a year by a household,^[21] 65 pence of UC entitlement is deducted. This means a worker gaining the full £1.10 hourly boost implied by a NLW of £9.35 in 2020 (using the OBR projection) would only be 39p an hour better off, falling to 26p if they also pay tax and NI.

Overall, only 60 per cent of the gross wage gains are translated into net income gains with the situation more acute for those in the lower-middle part of the distribution; only around half (53 per cent) of the £220 gross gain in decile 4 finds its way through to household incomes.^[22] As such, the share of the total gain flowing to the bottom half of households falls from 52 per cent when calculated on a gross basis to 45 per cent on a net basis.

The final measure depicted in Figure 6 – shown by the line – describes the proportionate change in households' net income. Viewed in this way, it is clear that the greatest benefits will be felt by those in lower-middle of the income distribution (deciles 2-7). The actual percentage increases

[20] Incomes are 'equivalised' to account for family size – recognising that a family with two children will have a lower standard of living than an individual living on their own for any given level of income.

[21] Or around half this if renting

[22] METRs have been simplified as these estimates consider only income tax, NI and UC, they do not take into account Council Tax Support which would typically reduce the amount of income kept by around a fifth.

are small however, peaking at less than 0.5 per cent on average for those in the 4th decile. Again, these are the *average* changes in household incomes; different families within the same decile may have very different experiences, depending on their circumstances.

The distribution shown in Figure 6 is of course affected by the presence of significant numbers of pensioner households. Repeating the exercise above for working-age households only finds that 60 per cent of the gross wage gains and 54 per cent of the net income gains flow to the bottom half.

Families with children retain less of the gross gains associated with the NLW

Having explored how the gains from the NLW are distributed across households by income, we turn next to how different types of families benefit from the policy. Table 2 below shows how gains vary by family type. In terms of the numbers of families affected, 1.3 million families with children are set to gain from the NLW, with 850,000 couples without children and 1.4 million single people also benefiting. Pensioners (some of whom may have dependent children in their homes) make up 300,000 of the NLW-affected families.

As well as the number affected, Table 2 also shows the size of the gain each family type will receive on average in terms of both gross wages and net incomes. The final column sets out the extent to which gross wage gains convert to net income increases by showing the average share of gross gains that is retained on a net basis. On average, pensioners and people without children, whether single or in a couple, pocket the majority of their gross wage increase. This is because relatively few families of these types will be eligible for UC and so their reduction is primarily linked to income tax and National Insurance effects.

At the other end of the scale, single parents with children benefiting from the NLW will receive just 25 per cent of the gross gains on average. Again, the likelihood of being in receipt of in-work support explains much of this difference, with a much larger proportion of single parents entitled to UC. Falling somewhere in between these two groups are couples with children. While approximately 500,000 of these families who gain from the NLW will not be entitled to UC and are therefore likely to receive a higher proportion of the gross gains, another 350,000 families will be eligible for UC and are likely to face a similar effective tax rates to single parents. On average, this group retains around half (49 per cent) of any gross gains.

In general, and for the reasons just explained, families without children receive a bigger net income boost than families with children.^[23] On average, families without children pocket 64 per cent of the gross wage gains they receive while for families with children, just 42 per cent of gross gains flow through into net gains. Households with children are set to receive a smaller average net gain as a result of the NLW (£320) than households with no children (£420).

Table 2: Families with children will keep less of their gross gains

Family Type	Number of families gaining	Average annual gross gains	Average annual net gains	Average share of gross gains received
Pensioners	300,000	£600	£450	71%
Couple without children	850,000	£750	£500	65%
Single men	800,000	£650	£400	63%
Single women	600,000	£550	£350	61%
Couple with children	850,000	£850	£400	49%
Single with children	450,000	£700	£150	25%

Notes: Annual gains are reported to the nearest £50 a year, number of families gaining to the nearest 50,000. See Annex 2 for methodological details and assumptions.

Source: RF analysis using the Family Resources Survey, the Labour Force Survey and the IPPR tax-benefit model

[23] Calculation excludes pensioner households, some of whom may have dependent children in the home.

The NLW will only partially offset the benefit cuts announced in the Summer Budget

The NLW was not the only major policy change announced at the Summer Budget. The government also set out a number of measures to reduce spending on working-age benefits by a total of £13 billion by 2020. The most significant changes were:

- » Freezing working age benefits for four years from April 2016;
- » Reducing the point at which tax credits or UC entitlements start to be reduced as earnings rise;
- » Removing entitlement to the family element for new claims or new families entitled to UC or tax credits from April 2017; and
- » Limiting support from Child Tax Credit or the child element of UC to two children for new claims or births from April 2017, meaning that families with three or more children only receive support for two.

In setting out its cuts to welfare spending in the Budget, the government argued that gains from the NLW should be seen as a package along with welfare spending, with the Chancellor's speech noting that "taken together with all the welfare savings and the tax cuts in this Budget, it means that a typical family where someone is working full time on the minimum wage will

be better off."^[24] However, with the NLW expected to increase the nationwide wage bill by £4.5 billion in 2020, and only around 60 per cent of this gain expected to translate to gains in income, the policy clearly cannot fully offset the losses to income from the £13 billion cuts to welfare.

While reducing the impact from welfare cuts, the NLW is unable to make a considerable difference, reducing the total income loss to households in the bottom half by just 13 per cent

Figure 7 overleaf compares the impact on net household incomes in 2020 of the cuts to working-age benefits both with and without the mitigating effects of the NLW. As may be expected, the NLW helps

to offset some of the losses from welfare cuts. Comparison of the yellow (without the NLW) and black (with the NLW) lines shows that, particularly in the middle of the distribution, the policy serves to lessen the overall hit. For those in the 6th decile, it turns an average income fall as a result of the Budget into a small increase.

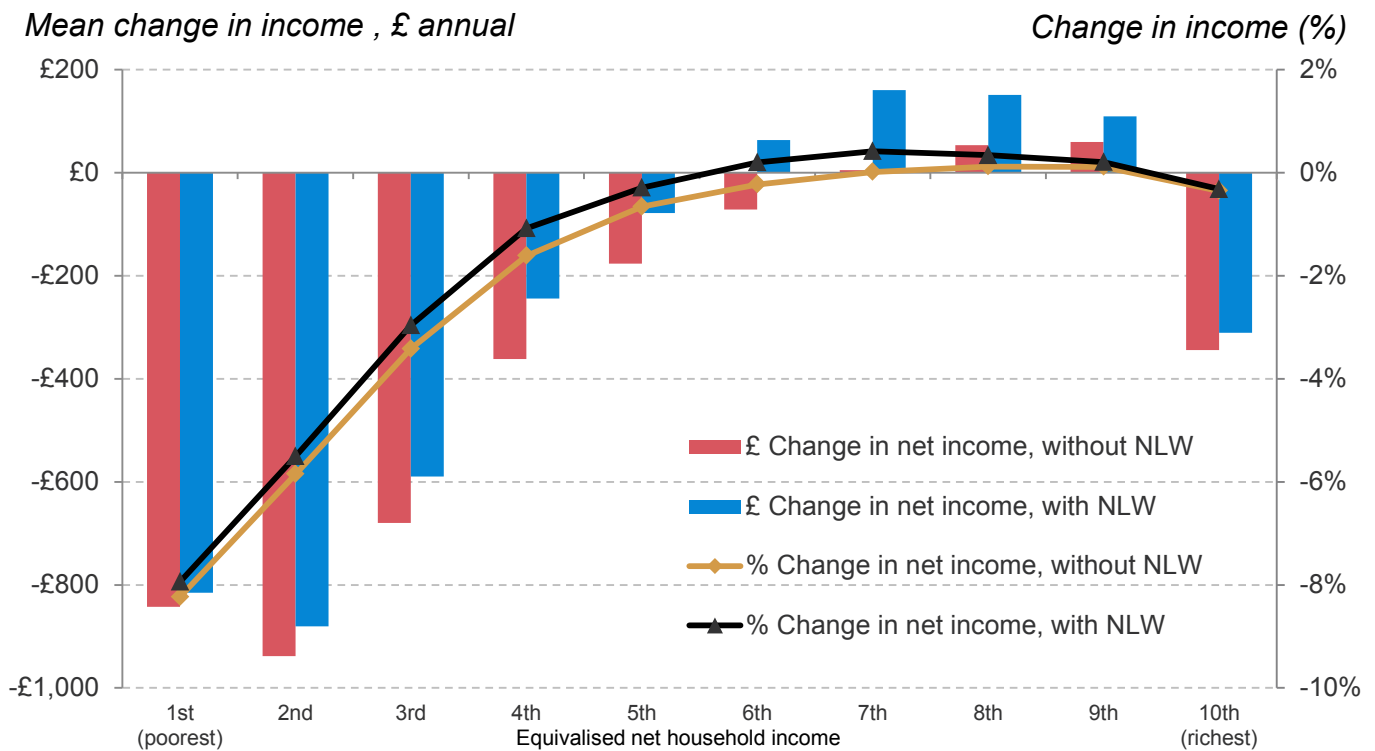
Overall however, Figure 7 makes clear that while reducing the impact from welfare cuts, the NLW is unable to make a considerable difference, reducing the total income loss to households in the bottom half by just 13 per cent. A number of factors lie behind this:

- » Workless households (likely to be in the 1st decile) do not benefit from the NLW as they are not in employment.
- » The NLW will not apply to under-25s but they will still lose income due to changes to benefits.
- » As stated, the overall gains from the NLW for those in work are significantly smaller than the cuts to in-work support.
- » Only 26 per cent of households gaining from the NLW are entitled to in-work support, meaning that significant numbers of households will experience income losses associated with benefit cuts without any accompanying increase in their wages.

[24] <https://www.gov.uk/government/speeches/chancellor-george-osbornes-summer-budget-2015-speech>

Figure 7: The NLW only partially offsets the losses low-income households face after the Summer Budget

Impact of the Summer Budget with and without the National Living Wage, 2020



Notes: See Annex 2 for methodological details and assumptions.

Source: RF analysis using the Family Resources Survey, the Labour Force Survey and the IPPR tax-benefit model

Summary

The NLW has sparked both praise and criticism for what it will (and will not) do. But while such evaluations need to be grounded in its impact on living standards, remaining practical about the limits of what any wage floor can do, no matter how high, is essential.

This section has highlighted that, contrary to what some may expect, the largest net gains from the NLW will not go to the very lowest income households. For many of these families, unemployment or inactivity is likely to be a bigger obstacle to higher income. Future Resolution Foundation work will focus on how the barriers facing groups with the lowest levels of participation in the labour market, including younger workers and people with disabilities, can be removed.

That said, many households on modest incomes will receive a welcome boost to their income from the NLW although its size will depend greatly on the interaction of these earnings with the tax and benefit system. Our analysis has illustrated that some families who it might be expected would gain the most from a higher wage floor, such as single parents, will receive only a portion of their gross wage gains. But rather than acting as an argument against the NLW, this example highlights that a minimum wage cannot be the *only* weapon in the fight against low incomes. It has to act in tandem with an effective, well-designed tax and benefit system that incentivises work and higher earnings while providing adequacy of income, rather than acting as a substitute. Previous Resolution Foundation analysis has shown in detail how the opportunity that UC represents to do just that is in danger of being squandered.^[25]

[25] D Finch, *Making the most of Universal Credit: Final report of the Resolution Foundation review of Universal Credit*, Resolution Foundation, June 2015 <http://www.resolutionfoundation.org/wp-content/uploads/2015/06/UC-FINAL-REPORT1.pdf>

Section 4

Conclusion

Our analysis has confirmed that the NLW will transform the lower end of the UK's labour market. With 6 million workers set to gain, and a total wage bill increase of £4.5 billion by 2020, it is a policy with a broad reach and – for some workers and families – a deep impact. It will take the UK's wage floor to its highest ever level, both in absolute terms and relative to the typical worker. To put the size of the increase in context however, had the NMW continued to grow at its pre-crisis rate after 2007 – that is, had the downturn never occurred – then it would be expected to reach approximately £8.60 in April 2016 and £10.44 in 2020. Nonetheless, this policy will undo much of the damage done to the pay packets of low earners since the crisis, although a return to persistent real wage growth is of course also needed.

It will similarly boost household incomes, though here the distribution of gains is more complex. Income tax and National Insurance contributions will of course reduce the impact for many employees but less remarked upon is the extent to which wage gains will translate into decreases in state support for many lower income beneficiaries. This doesn't mean the policy is poorly targeted, merely that interactions with taxes and benefits need to be considered. In particular, it highlights that a wage floor can't be used in isolation as a means of boosting living standards.

And when considered alongside the £13 billion cuts to working-age welfare announced at the Summer Budget, it is clear that the NLW will provide only partial relief from the very severe budgeting pressures facing many millions of low to middle income households in the coming years. Bold though the NLW is, it is a long way from solving the living standards challenge.

While acknowledging the welcome landmark the NLW represents in the low pay landscape, it is clear that the policy will have a price tag attached. The UK's experience with the NMW and evidence from elsewhere suggests that, as *The Economist* put it, at moderate levels minimum wages do more good than harm. That being said, the ambition of the NLW and the pace at which it is set to increase over this parliament push us beyond what the existing evidence tells us.

As we have shown, the impact of the NLW will vary across the country, meaning the challenges to employers and local jobs markets will also differ. Our next paper in this series will consider the extent to which different industries and firms will be affected by the NLW and the potential responses we might expect from employers. Understanding how businesses react will be crucial to determining the wider effects of the policy in terms of employment, prices, profits and pay elsewhere in the distribution – all of which will have consequences for the different groups and the Exchequer.

What's clear is that the NLW redoubles the need both for productivity gains in British industry and for the LPC to play a key role in weighing up the evidence to determine just what is achievable on a year-by-year basis. Again, these are issues we will revisit in future reports.

Annex 1: Summary table of findings

	2014		2016 (NLW at 55% of 25+ median)										2020 (NLW at 60% of 25+ median)									
	NMW Bite	Share of group directly affected	Share of group affected	Directly affected (000s)	Total affected (000s)	Average direct gain	Average indirect gain	Average all those affected	Share of all those affected	Share of all gains	Share of group directly affected	Share of group affected	Directly affected (000s)	Total affected (000s)	Average direct gain	Average indirect gain	Average all those affected	Share of all those affected	Share of all gains			
Total	55%	60%	7%	18%	1,880	4,510	£570	£160	£330	100%	100%	65%	12%	23%	3,200	6,000	£1,210	£240	£800	100%	100%	
Sex																						
Male	49%	54%	5%	13%	670	1,700	£700	£180	£380	38%	44%	58%	9%	18%	1,150	2,330	£1,450	£270	£860	39%	44%	
Female	61%	66%	10%	22%	1,210	2,810	£500	£150	£300	62%	56%	72%	16%	29%	2,050	3,680	£1,070	£220	£690	61%	56%	
Age group																						
25-30	57%	62%	11%	22%	380	780	£620	£190	£400	17%	21%	68%	18%	30%	640	1,080	£1,320	£290	£890	18%	21%	
31-35	48%	52%	8%	16%	230	490	£590	£180	£380	11%	12%	57%	13%	22%	390	670	£1,260	£270	£850	11%	13%	
36-40	45%	49%	7%	15%	200	420	£580	£170	£370	9%	11%	54%	12%	21%	340	580	£1,240	£260	£820	10%	11%	
41-45	47%	51%	7%	16%	240	510	£560	£170	£350	11%	12%	56%	12%	22%	400	710	£1,190	£250	£780	12%	12%	
46-50	49%	53%	8%	16%	250	540	£560	£170	£360	12%	13%	58%	13%	22%	440	760	£1,200	£250	£800	13%	13%	
51-55	50%	54%	8%	17%	220	480	£570	£170	£350	11%	11%	59%	13%	23%	390	680	£1,180	£260	£790	11%	12%	
56-60	53%	57%	8%	18%	170	380	£530	£170	£330	8%	9%	63%	14%	25%	300	530	£1,160	£250	£760	9%	9%	
61-65	57%	61%	10%	21%	100	220	£520	£160	£330	5%	5%	67%	17%	29%	180	310	£1,100	£250	£750	5%	5%	
66+	66%	72%	16%	32%	80	160	£390	£120	£250	3%	3%	79%	26%	42%	130	210	£820	£190	£580	3%	3%	
Region																						
North East	59%	64%	9%	20%	90	200	£550	£170	£340	4%	5%	70%	15%	25%	150	260	£1,200	£250	£800	4%	5%	
North West	59%	64%	9%	20%	240	550	£570	£170	£340	12%	13%	70%	14%	25%	410	710	£1,210	£260	£800	12%	13%	
Yorks & Humber	60%	66%	9%	21%	190	440	£560	£160	£330	10%	10%	71%	15%	28%	320	580	£1,200	£250	£770	10%	10%	
East Midlands	61%	66%	9%	21%	160	370	£610	£170	£360	8%	9%	72%	15%	27%	270	490	£1,290	£250	£830	8%	9%	
West Midlands	60%	65%	9%	21%	210	470	£580	£170	£350	10%	11%	71%	15%	27%	340	620	£1,260	£260	£810	10%	11%	
South West	59%	64%	8%	19%	170	430	£490	£150	£280	10%	8%	70%	13%	26%	300	580	£1,070	£240	£660	10%	8%	
East	57%	62%	8%	19%	180	460	£570	£150	£320	10%	10%	68%	13%	25%	320	610	£1,180	£230	£730	10%	10%	
London	40%	43%	4%	11%	170	420	£620	£150	£340	9%	10%	47%	7%	14%	280	570	£1,290	£230	£760	10%	9%	
South East	52%	56%	6%	16%	200	560	£550	£140	£290	12%	11%	61%	10%	21%	370	750	£1,110	£240	£670	12%	11%	
Wales	60%	65%	9%	21%	110	250	£560	£170	£340	5%	5%	71%	15%	27%	180	320	£1,230	£260	£800	5%	6%	
Scotland	54%	59%	7%	16%	160	370	£580	£160	£340	8%	9%	64%	11%	22%	260	510	£1,270	£230	£760	8%	9%	
City region																						
London	40%	43%	4%	11%	170	420	£620	£150	£340	9%	10%	47%	7%	14%	280	570	£1,290	£230	£760	10%	9%	
Manchester	58%	63%	8%	19%	90	200	£540	£160	£330	4%	5%	69%	14%	24%	150	270	£1,160	£250	£760	4%	4%	
Birmingham	58%	63%	9%	21%	110	240	£620	£170	£370	5%	6%	69%	15%	26%	170	310	£1,300	£270	£850	5%	6%	
Liverpool	58%	63%	8%	19%	50	110	£570	£160	£340	2%	3%	68%	14%	25%	80	140	£1,180	£260	£780	2%	2%	
Leeds	59%	64%	8%	20%	80	180	£540	£160	£320	4%	4%	70%	14%	26%	130	240	£1,180	£240	£740	4%	4%	
Sheffield	60%	65%	9%	22%	50	110	£560	£150	£330	2%	3%	71%	15%	28%	80	140	£1,200	£260	£770	2%	2%	
Newcastle	59%	64%	9%	19%	60	140	£550	£170	£340	3%	3%	69%	14%	24%	110	190	£1,200	£250	£800	3%	3%	
Nottingham	60%	65%	9%	20%	40	90	£560	£170	£340	2%	2%	71%	14%	27%	60	120	£1,270	£230	£790	2%	2%	
Bristol	54%	59%	8%	18%	40	100	£450	£140	£270	2%	2%	64%	12%	23%	70	130	£1,000	£240	£640	2%	2%	
Glasgow	53%	58%	7%	15%	50	120	£620	£160	£370	3%	3%	63%	10%	21%	80	170	£1,360	£210	£790	3%	3%	
Cardiff	59%	64%	9%	19%	50	110	£580	£170	£360	2%	3%	70%	14%	25%	80	150	£1,300	£240	£810	2%	3%	
Rest of CB	57%	62%	8%	19%	1,100	2,700	£560	£160	£320	60%	59%	68%	13%	25%	1,910	3,590	£1,190	£240	£750	60%	59%	
Hours worked																						
Full-time	48%	52%	4%	11%	740	2,080	£860	£210	£440	46%	62%	57%	7%	16%	1,390	3,030	£1,710	£300	£940	50%	63%	
Part-time	76%	82%	16%	33%	1,140	2,430	£380	£110	£240	54%	39%	90%	24%	40%	1,820	2,980	£820	£170	£570	50%	37%	
Hours by sex																						
Male full-time	46%	50%	4%	10%	390	1,100	£900	£210	£450	24%	34%	55%	6%	15%	730	1,640	£1,770	£300	£950	27%	34%	
Female full-time	51%	56%	5%	14%	350	980	£820	£210	£430	22%	28%	61%	9%	19%	660	1,390	£1,640	£290	£930	23%	28%	
Male part-time	79%	86%	15%	32%	280	600	£430	£110	£260	13%	10%	93%	22%	36%	420	690	£920	£160	£630	11%	9%	

Annex 2: Methodology

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

Data

In the main, our analysis uses data from the ONS, the 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.

ASHE does not contain information on employees' household characteristics or benefit receipt. Therefore, to assess the impact of the NLW on household incomes (Section 3) we turn to alternative sources. We use data from the DWP's Family Resources Survey 2012-13, the main source of information on the incomes of UK households, combined with data from the ONS's Labour Force Survey 2012-13 to improve the accuracy of information on the wages of adults in the household (see below for further details).

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 take a slightly different approach to estimating the NLW in the Family Resources Survey-Labour Force Survey data used in Section 3 – but with similar effects. Here we estimate the NLW at 13 per cent above the adult NMW, on the basis of Office for Budget Responsibility (OBR) forecasts for the difference between the NLW and NMW by 2020.

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 updated to 2016 and 2020 using 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.^[26]

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

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.^[27] There may also be indirect effects on groups of 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.^[28] This was in contrast to the evidence from the US, which has documented significant spillover effects.^[29] 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.^[30] 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.^[31] 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 ‘spillover 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.

[27] 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

[28] 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

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

[30] 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

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

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 Box 4.

Our modelling of spillovers assumes no disemployment 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 through 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.

Estimating the impacts of the NLW on household incomes

To estimate the impact of the NLW on household incomes we rely on the Family Resources Survey (FRS) which, as well as providing information on individual earnings, details the composition of households, the income of different earners and information needed to calculate eligibility for state benefits.

While the FRS contains information on individual wages, this is regarded as much less accurate than that contained in other sources including ASHE and the Labour Force Survey (LFS), particularly in terms of hourly rates. For this reason, we improve the quality of the wage data in the FRS by regression-based imputation using data from the LFS. The LFS is preferred over ASHE because it contains information on household structures and qualification levels which is used in the imputation. Our approach to imputation follows that set out by Brewer et al. (1999).^[32] It should be noted that whilst the wages we impute are unlikely to be accurate at the individual level, they should provide an unbiased estimate at the aggregate level for fairly large population groups, such as those low earners we focus on in this analysis.

Having imputed wages in the FRS, we follow the approach to projecting forward to 2020 and estimating direct and indirect effects described above.

Finally, in order to translate the gains from higher wages for some workers within households into household income changes, we use the IPPR tax-benefit model to simulate the tax and benefit system. We model a 2020 scenario in which Universal Credit has been fully rolled out.

In our initial analysis of gross wage compared to net income gains, we exclude all other policy announcements in the Summer Budget (other than the NLW itself).

[32] M Brewer, R May & D Phillips, *Taxes, Benefits and the National Minimum Wage*, Low Pay Commission, October 2009

In our analysis of the overall impact of the Summer Budget on household incomes, we assume that key measures announced are fully in place (including the four year freeze to working age benefits from April 2016; reducing UC work allowances; removal of the family element and limiting the child element to two children; reduction in the benefit cap and increases to the personal tax allowance in April 2016 and April 2017; restricting pensions tax relief). We include the full impact of measures to reduce support for families with children that will initially only apply to the flow of new cases. These cuts form a significant part of the overall package of spending reduction and will be taking effect for many families already by 2020, for instance around half of the total expected savings from the two-child limit will be realised in 2020 – the year in which our modelling occurs.

For more detail of each of these measures see the Summer Budget 2015 policy costings document.^[33]

[33] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/443195/Policy_costings_summer_budget_2015.pdf

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

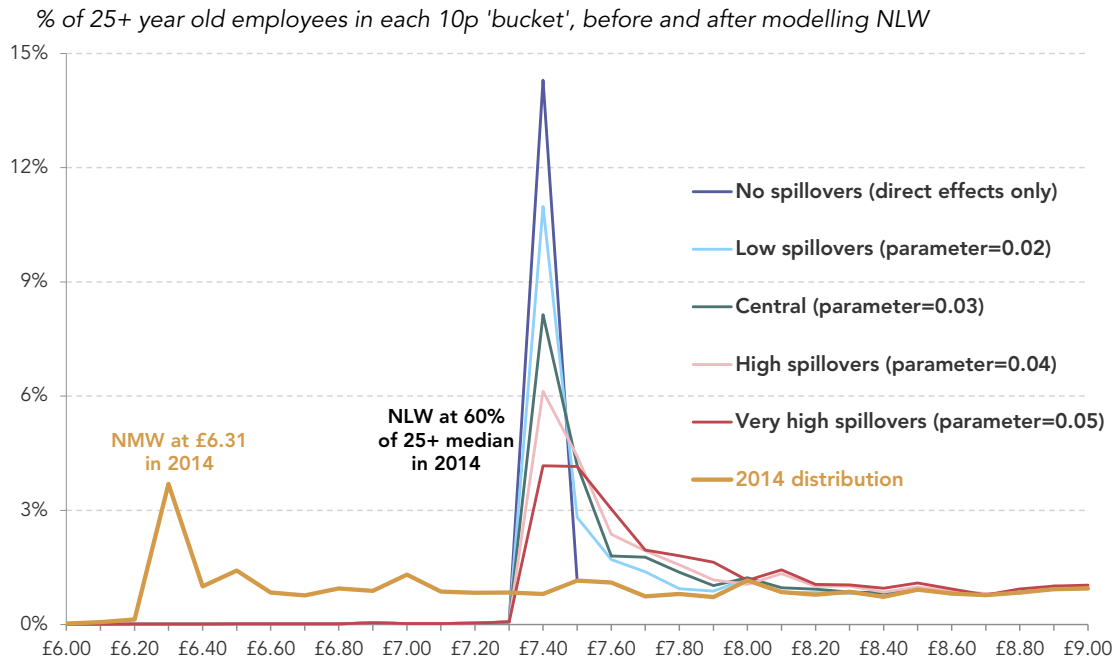
Magnitude of spillover	2016		2020	
	Total affected	% affected	Total affected	% affected
None (direct effects only)	1,900,000	7%	3,200,000	12%
Low (spillover parameter = .02)	3,200,000	13%	4,900,000	19%
Central (spillover parameter = .03)	4,500,000	18%	6,000,000	23%
High (spillover parameter = .04)	5,800,000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



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