RF

Resolution Foundation
REPORT

Low Pay Britain 2019

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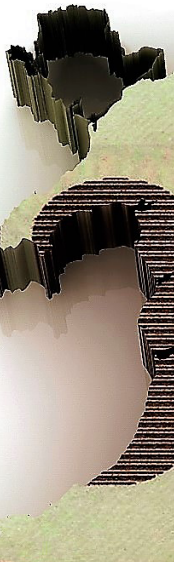


Executive Summary

This is the ninth annual Resolution Foundation report on low pay. This year we focus on the minimum wage, for two reasons. The first is that it is driving big, welcome changes to our labour market. As the UK's wage floor celebrates its 20th birthday, recent increases in its level have driven the first sustained reduction in low pay for four decades. Since the higher 'National Living Wage' (NLW) was introduced for those aged 25 and over in 2016, the percentage of employees in low pay (paid less than two thirds of median hourly pay) has fallen from 20.7 per cent in 2015 to 17.1 per cent in 2018.

The second reason is that the minimum wage is at a crossroads, with an uncertain future. The five year uprating period instituted in 2016 comes to an end next year, and policy makers need to decide where to take it next. The Chancellor and the Labour Party have both announced ambitious plans for its future, either of which would result in the UK having one of the highest minimum wage rates in the world. In this report we offer a framework for how to marry such (welcome) ambition with caution given that we do not know where the optimal level of the wage floor lies. We focus more on the journey, rather than the ultimate destination – how fast to boost wages for the lowest earners while managing the inevitable risks to employment.

Low pay is falling for the first time in four decades

For most of the past few decades there has been little change in the headline low pay statistics. The proportion of people with hourly pay below two-thirds of the typical employee's pay seemed to be stuck at approximately one in five, or 5.5 million people. But that changed with the introduction of the National Living Wage, which has pushed up hourly pay. In 2016 the proportion of employees on low pay fell below 20 per cent for the first time since 1986. It has continued to fall since, with almost 200,000 workers lifted out of low pay last year.

Because of these falls, in 2018 there were 4.7m employees in low pay, 17.2 per cent of the total – the lowest proportion since 1980, and the lowest number since 1997. Clearly, the UK still has a significant low pay problem, but it is a problem that is getting smaller after many years of stubbornly refusing to do so.

Of the 4.7m low paid employees in 2018, 2.8m (60 per cent) were women. Because women comprise the majority of the low paid, they have been the

biggest beneficiaries of the recent reduction. The number of women in low pay fell by 133,000 between 2017 and 2018. In terms of age, the biggest fall in low pay (in both proportion and number) was among 20 to 30 year olds with a 70,000 reduction for people aged 25 to 30. Sectorally, the biggest falls in low pay have taken place in the administrative and retail sectors, where combined the number of workers in low pay fell by 110,000 last year.

Increasing the minimum wage has not moved people out of low pay directly – the low pay threshold is, after all, higher than the minimum wage. But increasing the wage floor has a 'spillover' effect on higher earners – employers must increase the pay of those paid above the minimum wage if they are to preserve differentials between the lowest earners and those in more senior roles. The average rate of pay growth across the distribution over the past 20 years suggests increasing the minimum wage has affected the bottom third of hourly earners.

Note that we have so far defined low pay as hourly pay as being below two-thirds of the median. But there are two other ways we could measure it. The first is being paid less than the 'Real Living Wage', which is the higher, voluntary wage rate based on the amount needed to afford a decent standard of living. Troublingly, the proportion of people paid below the Real Living Wage has not fallen, and in 2018 stood at 24.0 per cent (comprising 6.5m employees). This was only slightly below the figure from 2015 of 24.1 per cent.

Another measure of low pay is being paid at or below the minimum wage, which in 2018 accounted for 2.0m employees, or 7.3 per cent of the total – reinforcing the need for effective enforcement of the minimum wage. Since the advent of the National Living Wage (which increased the minimum for those aged 25 and over) the number paid at the wage floor has increased dramatically, from 1.5m in 2015 (5.6 per cent of the total), to 2.0m in 2018 (7.3 per cent). Almost all of this increase came in 2016, the first year of the policy, when the cash value of the minimum increased by 11 per cent (or 70p).

Hours fell for low earners in 2018 – but this does not appear to be driven by the minimum wage

The achievement of the minimum wage has been to boost the pay of low earners without apparent negative effects on employment. At the time of its introduction some business groups suggested there would be over a million job losses. This did not come to pass, and two decades of careful evidence gathering by the Low Pay Commission has failed to find any significant employment effects.

It seems, however, that 2018 has brought a potential warning sign. Weekly pay fell (in both real and nominal terms) at the bottom of the distribution despite strong increases in hourly pay that came from the National Living Wage. This fall reflected a fall in average hours worked. In 2018, weekly pay at the tenth percentile was 1.6 per cent lower in real terms than the previous year, and 0.9 per cent lower at the twentieth percentile. This is concerning both because of the obvious impact on incomes and living standards, but also because it potentially raises alarm bells about the impact of the minimum wage. It is right to ask whether this fall in hours is connected to recent strong increases in the minimum wage.

New analysis in this report offers policy makers reasons for reassurance – with no strong evidence that hours falls are being driven by wage-floor increases. There are three key pieces of evidence here. First, the average hours worked for those on the minimum wage has increased in the NLW (post-2016) era. Second, individuals staying in a minimum-wage-paying job one year to the next have continued to see their hours increase on average, and by more than those working in higher-paying jobs. And third, the proportion of workers in the bottom hourly pay decile that say they would like to work more hours has fallen, along with workers overall (this follows the pattern of the economic downturn and then the labour market tightening after 2014). If employers were pushing down hours, we would expect that proportion to increase, or to diverge from the overall trends. So we can be fairly confident that the minimum wage is not having an employment effect. This is consistent with the findings of many years of research carried out and commissioned by the Low Pay Commission.

Instead of a higher minimum wage driving down hours worked, the evidence suggests that the changing composition of those at the bottom of the weekly pay distribution can provide a partial explanation. People joining the labour market in minimum-wage paying jobs (i.e. those that were not working the previous year) have, increasingly, been working fewer hours than the overall minimum wage worker group. And the net effect of movements into and out of the bottom weekly pay decile from non-employment has, since 2016, had a negative effect on the average hours worked by this group. Crucially, this change in the composition of those entering minimum wage jobs pre-dates the ramping up of the National Living Wage. Indeed, taken together, all this is consistent with a compositional shift driving falls in average hours worked by the lowest paid.

However, part of the change in hours remains unexplained. When we attempt to quantify the impact with the limited information we have about workers, we find that only around a fifth of the fall in hours worked by those in the bottom decile between 2017 and 2018 is attributable to compositional shifts.

The minimum wage has a promising, but uncertain, future

The UK's minimum wage is a 20 year policy success story. It has had a significant impact on the hourly pay of the lowest earners: since 1999, the minimum wage has grown nearly twice as fast as typical earnings. And, as 20 years of evidence suggests, and as we find in this report, it has done so without causing the negative employment effects predicted.

But the minimum wage is at a crossroads. Back in 2015, when then-Chancellor George Osborne introduced the NLW, he called on the Low Pay Commission to raise it at a pace such that it would reach 60 per cent of over 25 median hourly earnings by 2020. By setting an explicit future path for the rate, George Osborne placed what had been a technocratic exercise into the political arena. The NLW is set to hit that 60 per cent milestone next year. So the question is: what next?

The Chancellor, Philip Hammond, has set the bar higher, stating that the Low Pay Commission's post-2020 remit should include "the objective of ending low pay in the UK," where 'low pay' is commonly defined as two-thirds of median earnings. The Labour Party have been similarly ambitious, with shadow chancellor John McDonnell calling for a 'real living wage', which would be based on the cost of living, which they estimate to be at £10.

So there is a clear, cross-party consensus on ambition, but what could this mean for the labour market? In this report we outline how these ambitions would drive substantial change in the labour market. For instance, were the NLW set to two-thirds of median earnings in 2018, two and a half as many jobs would be covered than actually were: that is, 4.9m workers (or 18.9 per cent of those in work) would be covered, compared to 2.0m (7.3 per cent of the labour force) based on 2018 data.

While this analysis does not account for 'spillover effects,' where employers also extend pay rises to workers sitting above the minimum, these differences underscore the very substantial effects that proposed future levels of the minimum wage would bring to our labour market. They also bring forward the question of where the 'optimal' minimum wage point sits (that is, the level at which the detrimental effects on employment do not outweigh the benefits of increasing low pay). This report argues that it is reasonable to conclude that this point is higher than our current wage floor, but that its exact level is not precisely knowable in advance of it being reached. We therefore focus less on the destination for that optimal point, and instead on the pace at which policy makers should aim to get there given the uncertainties involved.

Under stable economic conditions, a NLW which increased at twice the rate of nominal earnings growth, which the Low Pay Commission's recommendations

have approximated during the post-2016 ramping up phase, could be worth 66 per cent of median over 25 pay by as early as 2023. But, crucially, we do not know if that point sits above the optimal level for the wage floor. Indeed, even if it does, there may be no immediate alarm bells when the NLW exceeds that point. The idea that the minimum wage has 'bitten' too much into median earnings will not become apparent until after employment effects set in. And at that point, the question will not be 'can we go further?' but rather, 'what is the quickest, and least painful, path back to the optimal point?' So we set out a loose framework that tests, under three successively more challenging scenarios, the pace of NLW growth, relative to earnings growth, that would allow policy makers to revert the minimum wage back to its optimal 'bite' in relatively short order without having to introduce nominal cuts to the minimum wage.

Crucially, policy makers charting a course for the minimum wage will want to recognise that stable economic conditions do not always hold. In particular, shocks to nominal earnings that see it grow more slowly than currently projected could make any overshoot of the optimal level of the NLW harder to row back from. Given this, policy makers seeking to combine ambition with caution might wish to aim for a still fast – but slightly slower rate – of increase than recently seen. This would see the target of abolishing low pay achieved in the middle of the next decade, subject to shocks or negative employment effects materialising. Of course, policy makers could choose to go faster, but in the face of significant shocks that could leave them facing the undesirable choice of implementing cash cuts to the value of the wage floor or accepting a prolonged period of employment effects before the National Living Wage is returned to its optimal point.

These difficult choices highlight the importance of a minimum wage policy based upon three things: a driving ambition, a sense of caution and a framework that allows for nimble reactions to the obstacles ahead. The UK minimum wage has been a story of success so far, and it should be set in a way that sees it continue to be a success in the future.

Section 1

Introduction

It's a busy time for the minimum wage. The National Living Wage (NLW) was increased to £8.21 in April 2019, the penultimate increase before the rate is due to hit 60 per cent of typical earnings for people aged over 25, or £8.62, next year. At the same time as we are entering the final phase of an increase in the wage floor, both main parties have set out ambitious plans for its future. So this report looks back at what the policy has achieved over the past few years, and forward at how the minimum wage might be pushed to new levels in future.

The minimum wage – a 20 year success story

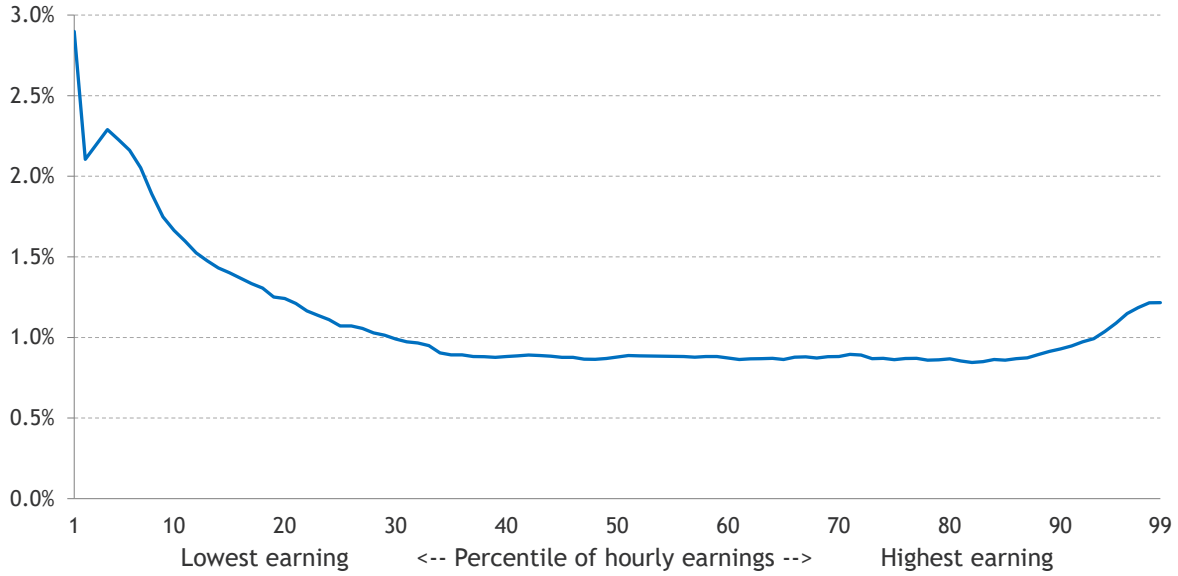
The minimum wage's introduction in 1999 was a relatively cautious one. Support for the policy was far from universal and the value of the minimum wage was set at just over 45 per cent of typical earnings for someone aged 25 and over, or £3.60 in cash terms. Even at that modest level, many predicted it would lead to unemployment and job losses.

20 years on, the minimum wage is celebrated as a true policy success story. It has achieved its primary aim of improving the hourly wages of the lowest paid. Over the past two decades hourly pay growth has been strongest at the bottom of the distribution: between 1998 and 2018 real annual pay growth was 2.1 per cent for the bottom decile (on average), compared to 0.9 per cent at the median. But the effects have not just been felt for the very lowest earners. As we can see in Figure 1, below, the effects of a higher minimum appear to have been felt throughout the bottom third of the hourly pay distribution.

Importantly, this success appears to have been achieved without the much-feared employment effects. Employment now stands at a record high, and two decades of careful evidence gathering by the Low Pay Commission has failed to identify significant impacts on employment or hours worked of the low paid.

Figure 1: Thanks to the minimum wage, hourly pay growth has been strongest for the lowest paid

Average annual growth in real hourly pay between 1998 and 2018, by percentile of the hourly earnings distribution



Source: RF analysis of Office for National Statistics (2018) *Annual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

Both major parties have ambitious plans for the minimum wage

Fast forward 20 years and the politics of the minimum wage have changed dramatically. Whereas its introduction was marked by caution and opposition, today the two major political parties are engaged in competition over the future ambition of the minimum wage. This new era began in 2015 when George Osborne announced that, starting in 2016, a new minimum wage for employees aged 25 and over would be introduced. The NLW was worth over 56 per cent of typical earnings for those aged 25 and over when it was introduced, and is on course to be worth 60 per cent by October 2020. As we show below, the NLW has transformed the pay landscape, significantly reducing the number of people who are 'low paid' (see Box 1) and increasing the share of employees whose pay is set by the state.

You might be forgiven for thinking that after this transformation we would be in for a quiet period for the minimum wage. Instead, both major parties have announced ambitious plans for its future. Philip Hammond, the Chancellor, has committed to using the minimum wage to achieve the 'ultimate objective of ending low pay in the UK'. Based on the international definition this would involve setting a minimum wage worth two-thirds of median earnings. The opposition Labour Party has pledged a £10 minimum wage for all employees aged 16 and over, which based on earnings forecasts, would be worth 69 per cent of typical earnings for all employees in 2022.

Reasons to be cheerful, and perhaps fearful?

Given these ambitious plans it is right that we take stock. So the focus of this year's Low Pay Britain report is the minimum wage. The next Section looks back at the 2016 introduction of the NLW and how the subsequent two years of uprating have reduced the number of people who are low paid. We then consider some of the risks that come with minimum wage increases. As yet, there is little reason to think that rises in the minimum wage have held back employment growth, or that significant increases have dented progression opportunities for employees who find that the NLW becomes the 'going rate'.

However, in Section 3 we turn to a puzzle which has arisen recently and which is more troubling – that of the divergence between strongly growing hourly pay and falling weekly wages amongst low earners. In doing so we shed some light on why working hours have fallen at the bottom of the earnings distribution.

Section 4 then turns to the future, assessing both parties' ambitions but placing less emphasis on the ultimate objective and more on the way in which we seek to get there. First we place Conservative and Labour pledges in an international context and spell out how, if enacted today, these pledges would significantly change the UK labour market. Second we set out a framework for thinking about how to go about trying to realise these ambitions for a higher wage floor while minimising the risks inherent in doing so. Finally, Section 5 concludes and Section 6 provides in-depth statistics on the low-paid workforce. The Annexes provide more detail on the methodology.

i Box 1: Measures of low pay

There are lots of specific definitions of low pay, but broadly these can be classed into two types: relative and absolute measures. Relative measures of low pay classify someone as low paid if they earn less than a specified percentage of a certain level of pay. Absolute measures of low pay designate someone as low paid if they earn below a specific amount. We use both types of measure. Specifically, the three measures that we use are:

A 'core' low pay definition: this is based on the approach taken by the OECD and captures those employees with hourly earnings (excluding overtime and premium payments) less than two-thirds of the national median across all employees. This threshold was approximately £8.40 an hour in April 2018.

A 'needs-based' low pay definition: this aims to relate pay levels to the cost of living by capturing those employees earning less than the Living Wage rate in their area, as promoted by the Living Wage Foundation. In April 2018, the London Living Wage rate was £10.20 and the UK Living Wage rate was £8.75. We take a workplace approach, so that individuals are considered low paid if they earn less than the appropriate Living Wage in the area where they work i.e. the London rate applies to people working in London.

A 'wage floor' definition: this captures those employees earning at, below or up to 1 per cent above their age-appropriate minimum wage. In April 2018, the wage floor for those aged 25 and over was £7.83 an hour, with lower legal minimums applying to younger workers and first-year apprentices.

Section 2

Low pay since the introduction of the National Living Wage

Since its introduction in 2016 the NLW has led to the first sustained fall in low pay since the 1970s. Women, younger workers and those in low-paid sectors have benefitted most. This success appears to have been achieved without any of the negative effects predicted by some before its launch. Employment is at a record high and has risen particularly strongly for lower-paid groups. There is also evidence that firms have reacted to a rising age floor by retaining pay differentials, increasing wages for those with wage rates above the NLW as well.

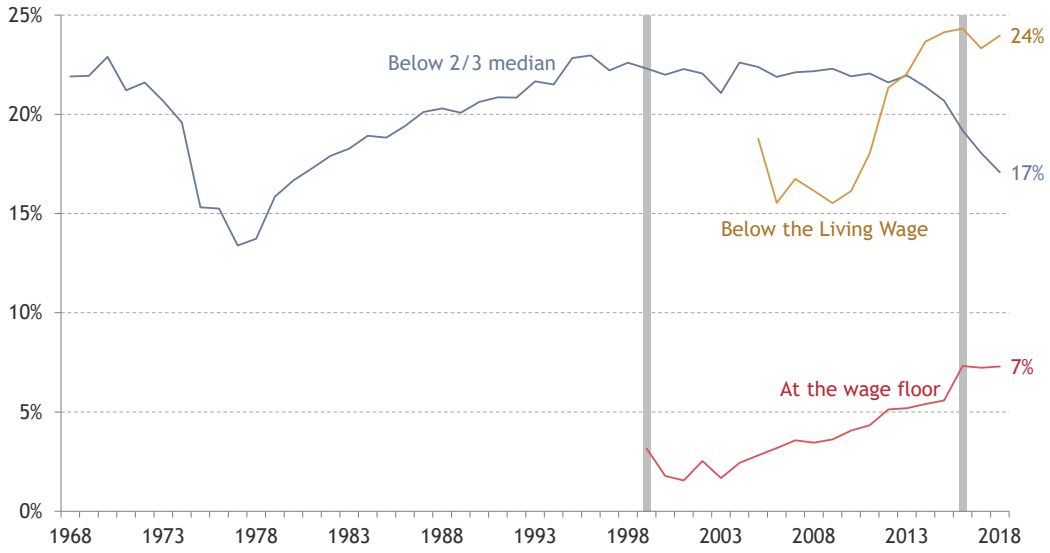
The NLW continues to reduce the number of low paid people in the UK

The proportion of employees in the UK who are low paid (paid less than two-thirds the typical hourly wage across all workers) has fluctuated over time. As shown in Figure 2, around one in five employees were low paid at the end of the 1960s before wage growth in the 1970s reduced that number. This was halted in the 1980s when rising wage inequality led to an increase in the proportion of low paid workers, a trend that continued into the 1990s, with that proportion peaking at 23 per cent in 1996.

1999 brought the introduction of the minimum wage. Initially this had little effect on low pay (as it was set at a relatively low level, around 43 per cent of typical earnings) and the proportion of low paid workers remained stable for two decades up to 2016.
However, things changed with the introduction of the NLW in April 2016. The minimum wage for people aged 25 and over increased from £6.70 to £7.20 and the share of low paid workers fell from 20.7 to 19.2 per cent – the biggest annual fall in low pay since the late 1970s (see Figure 2).

Figure 2: The NLW brought the first sustained fall in low pay in over four decades

Proportion of all employees below selected low pay thresholds: 1968-2018, GB



Sources: RF analysis of DWP, *Family Expenditure Survey;* ONS, *New Earnings Survey Panel Data* (NESPD); ONS, ASHE

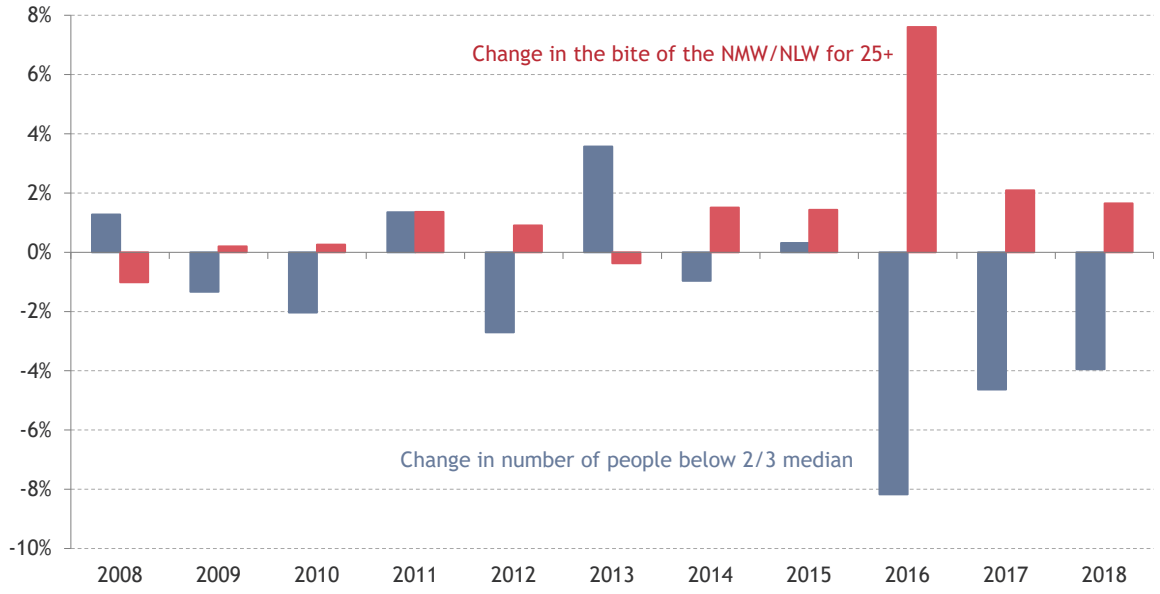
As of April 2018, 17.1 per cent of employees in the UK were low paid, down from 20.7 per cent in 2015. At the same time, the proportion on the wage floor has risen from 5.6 to 7.3 per cent and it is expected to rise further in the next few years as the value of the minimum wage rises faster than typical earnings.

When the minimum wage rises faster than typical earnings, its 'bite' (or relative value) rises, and this can push people above the low pay threshold. This is not because people on the minimum wage are themselves paid above the low pay threshold, but because the restoration of pay differentials between staff of different levels of seniority means the effects of the minimum wage 'ripple' through the distribution, pushing some above the low pay threshold. Indeed this may explain why the coverage of the minimum wage has not increased in the past few years despite a rising 'bite' (see Box 2).

Figure 3 provides evidence of this dynamic at work. Particularly since 2016, changes in the relative value of the minimum wage for people aged 25 and over have led to falls in the number of low paid employees. The biggest rise in the bite, in 2016, was associated with the largest fall in low pay, and continued rises in 2017 and 2018 have also coincided with large falls in low pay.

Figure 3: Changes in the minimum wage 'bite' are associated with falls in low pay

Change in the minimum wage bite and low pay



Sources: RF analysis of ONS, *ASHE*

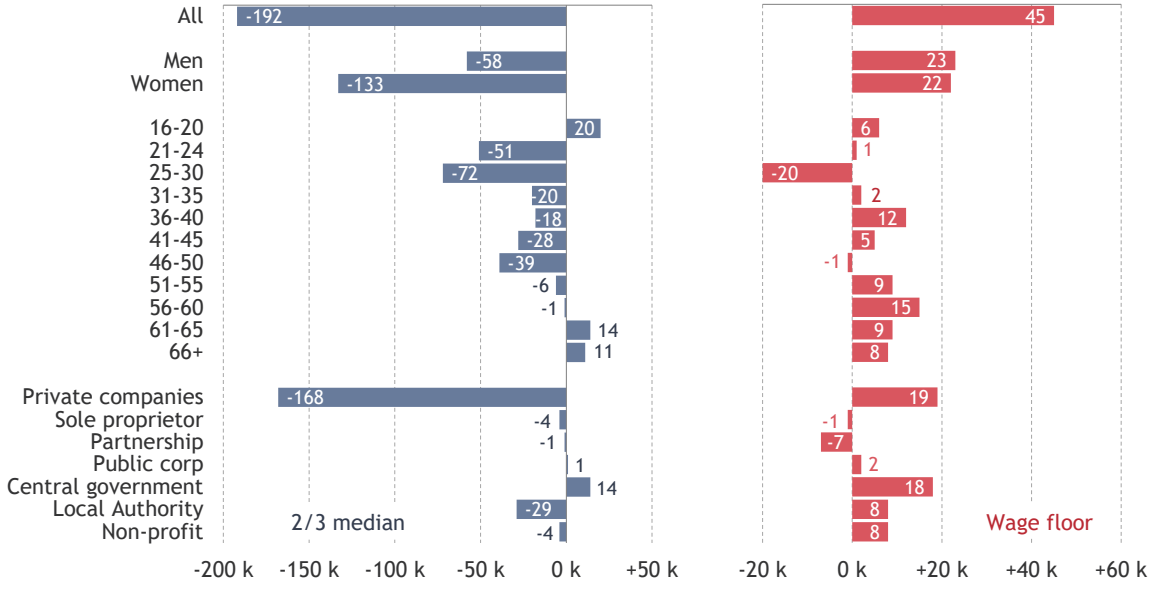
Giving a sense of who has benefitted from the most recent decline in low pay, Figure 4 shows the fall in the number of low-paid people and the rise in the number of people on the wage floor between 2017 and 2018. Of the 192,000 fall in the number of low paid people, 58,000 were men and 133,000 were women. Private firms accounted for the vast majority of the decrease (168,000) and younger workers benefitted more than older ones.

Generally the groups seeing a fall in the incidence of low pay are the same as those that have seen increases in the number of people on the wage floor, although the relationship is not an exact one. For example, men and women experienced a similar increase in the number of people on the wage floor, while the fall in low pay was much greater for women.

By contrast, the number of central government employees who were on low pay rose slightly even though the number on the wage floor increased. This may be because public sector pay structures and current pay restraint mean that pay rises were less common above the wage floor than in the private sector. There was also an increase in the number of 16 to 20 year olds on the wage floor at the same time as a rise in the prevalence of low pay for this group, something which also occurred for those aged 61 and over.

Figure 4: Increases in the NLW appear to have had the biggest effect on young people, women and those in the private sector

Change in the number of low paid people (left hand panel) and people on the wage floor (right hand panel): 2017-2018



Source: RF analysis of ONS, *ASHE*

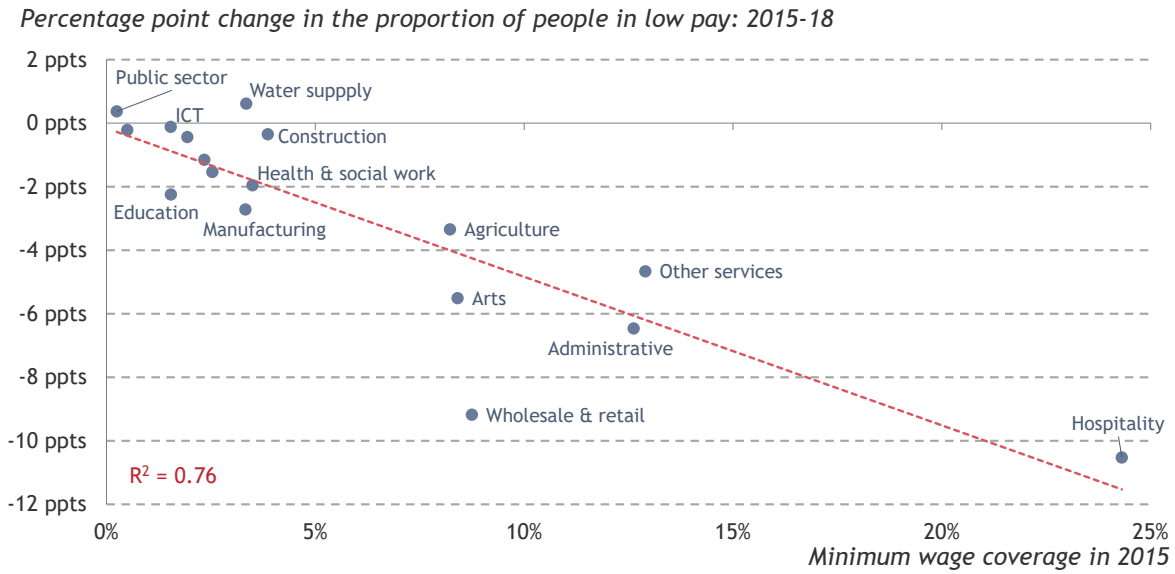
Rises in the wage floor are important, but wider economic and industry-specific forces still play their part. This is shown in Figure 5 which plots the relationship between the proportion of people on the minimum wage in 2015 and the percentage point change in the proportion of people in low pay since that time for 17 different industries. The relationship between the two is very strong, and yet some industries – particularly wholesale and retail - are off the line of best fit, suggesting that changes in the prevalence of low pay in those industries cannot wholly be explained by the prevalence of the minimum wage.

Wholesale and retail has experienced a larger decrease in low pay than would have been expected given the share of employees on the minimum wage in 2015. This could be for many reasons but perhaps technological change and changes in people's shopping preferences have led to fewer lower-paid jobs as employment in this sector has declined.[1] Nevertheless, while such forces are important, Figure 5 does suggest that the vast majority of the fall in low pay since 2015 can be attributed to the NLW.

[1] D Tomlinson & L Gardiner (2019) '*Sorry, we're closed: understanding the impact of retail's decline on people and places.* Resolution Foundation, London.

Figure 5: The coverage of the minimum wage in 2015 explains the majority of the change in low pay across industries

Percentage point change in the proportion of people in low pay



Sources: RF analysis of ONS, *ASHE*

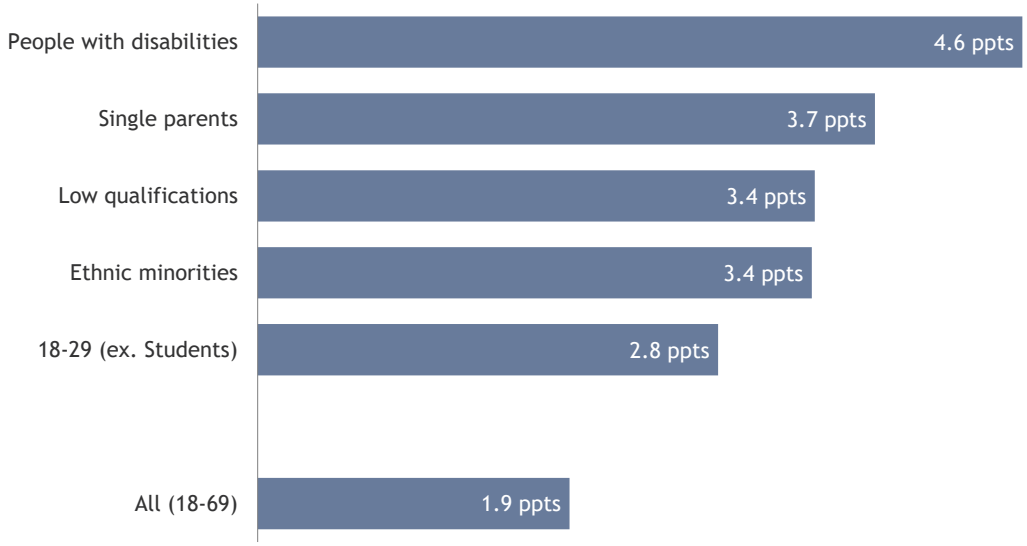
The NLW has reduced low pay at the same time as employment has increased for lower-paid groups

Restoration of pay differentials is a benign way in which firms can react to rises in the minimum wage. Another, less benign, way is through the destruction of low paid jobs, or reductions in the hours for those jobs. We shall address the latter concern in the next section, but here it is worth briefly recapping what has happened to employment since the introduction of the NLW.

Figure 6 shows the change in overall employment rate for people aged 18 to 69 and the change for five specific groups likely to be affected by a rising minimum wage. Of course it is impossible to observe the counterfactual in which there was no increases in the wage floor, but it is striking that, for all these groups, employment rates have increased strongly, and well above the rate for the population as a whole. This suggests that a rising minimum wage has not reduced employment for lower-paid groups.

Figure 6: Employment has grown strongly for lower paid groups since the introduction of the NLW

Percentage point change in employment rate: 2015-2018



Notes: Aside from the 18-29 group, all groups are aged 18 to 69
Sources: RF analysis of ONS, *LFS*

Another way in which the NLW may have affected the labour market is through rising coverage. This could have implications for progression if the NLW becomes the going rate in some industries with employers unwilling to maintain differentials for staff who would have previously been paid above the minimum. The fact that a rising wage floor has reduced low pay without the minimum wage reaching levels at which it would directly push people on it above the low pay threshold does suggest that this effect is not widespread. Furthermore, after an initial rise (from 5.6 to 7.3 per cent) the share of employees on the minimum wage has remained at just over 7 per cent for the past three years (see Box 2).

i Box 2: Why has there only been a relatively small increase in the proportion of workers paid the minimum wage?

As the minimum wage has increased in value relative to typical earnings the proportion of employees on the wage floor has not increased by that much. 5.6 per cent of employees were paid the legal minimum in 2015, this then increased to 7.3 per cent with the introduction of the NLW, but has since stayed at this rate, despite the fact that the bite of the minimum wage increased from 56.5 per cent to 58.6 per cent of typical earnings between 2016 and 2018. This has come as a surprise (and is contrary to what we predicted in previous Low Pay Britain reports), though is reassuring given that a sharp rise in minimum wage coverage poses challenges in terms of

pay progression and possibly negative employment effects.

There are a number of reasons why coverage may not have risen. It could be that the introduction and subsequent rises in the NLW have encouraged firms to change the way they operate, deploying fewer lower paid staff. However, as noted above, employment has increased strongly over the past few years, particularly among groups that tend to be low paid.

Another way that businesses could react is by retaining pay differentials. When the minimum wage rises, firms may increase pay for higher paid staff so that their wages remain above those of the lowest paid staff. There is some evidence that this has occurred and in future work we shall look at this puzzle in more detail.

This section has detailed some of the successes of the NLW to date. The policy has been the main driving force behind the first sustained decline in low pay since the late 1970s, and has had the biggest effect on young people, women and those in the private sector. Furthermore it has managed to achieve this without much sign of any negative impact on employment or progression opportunities.

But just because the record over the past 20 years is overwhelmingly a success does not mean we should ignore any warning signs of potential negative effects of a higher wage floor that develop. Over the past year one such sign has emerged. In 2018 the pattern we are used to of hourly pay growth being strongest for lower earners, as the UK's wage floor has risen, was evident. But weekly pay, which is ultimately what matters for living standards, performed very differently – actually falling towards the bottom of the earnings distribution – because of a reduction in hours worked. Could this be driven by the fast rises in the NLW? In the next Section we explore that question, given the answer to it is crucial to forming a judgement about the desirability of following widely shared ambitions for a still higher wage floor.

Section 3

Lower hours for low earners: a warning sign?

As important as the minimum wage has been for hourly pay, it is weekly pay that matters for living standards. And in the past two years weekly pay has fallen for low earners, as a result of a fall in the hours they work. Could this be due to employment effects from recent the minimum wage hikes? We find no evidence of such a link, which should reassure policy makers thinking of further rises in the years ahead. The average hours worked of workers that have seen their hourly wage increased by the wage floor rises has increased in the NLW era, as has the average growth in hours, year-on-year, of individuals that are staying in minimum wage jobs. Finally, there has been no increase in the proportion of the lowest hourly paid that say they would like to work more hours, which we would expect if employers were pushing down hours of minimum wage workers.

Instead we think that compositional changes, as fast rising employment brings into the labour force workers that tend to work shorter hours, are the more likely explanation of the reduction in hours worked for bottom weekly earners. Most notably, the make-up of this group has shifted slightly in favour of older workers. We also find that the hours of minimum wage workers that are entrants to the workforce has fallen (slightly) in the NLW era, which is consistent with a picture of a change in the type of people joining the workforce. But this work is far from exhaustive, so the government and Low Pay Commission should continue to actively monitor the hours worked by those on or near the wage floor to ensure no negative effects materialise.

Weekly pay fell for low earners in 2018

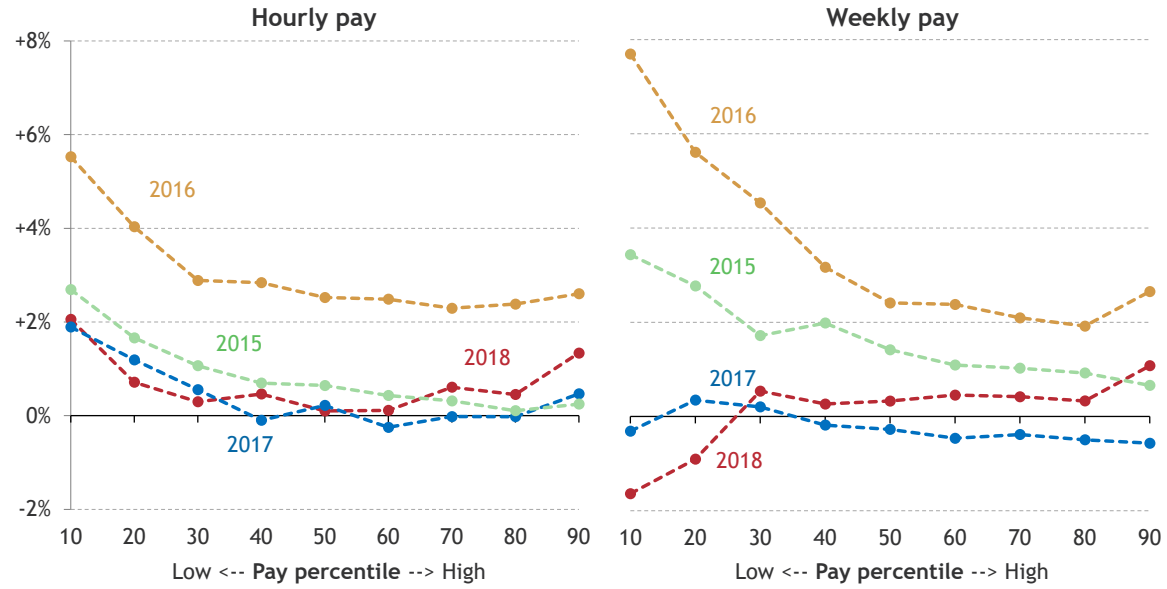
The NLW has raised hourly pay for low earners. In 2018, hourly pay growth at the tenth percentile was 2.1 per cent in real terms, compared to 0.1 per cent at the median. In this section, however, we turn our attention to weekly pay growth. Unlike hourly pay growth, which was strongest at the bottom, in both 2017 and 2018 weekly pay *fell* at the bottom of the distribution. This was particularly the case in 2018.

This can be seen in Figure 7 which shows real hourly and weekly pay growth across the distribution since 2015. While hourly pay grew at the bottom of the distribution, weekly pay fell, falling by 1.6 per cent at the tenth percentile. The divergence is also evident at the

twentieth percentile, where in 2018 hourly pay grew 0.7 per cent and weekly pay fell by 0.9 per cent. Above this point in the distribution real weekly pay growth increased in 2018.

Figure 7: the LW is driving up hourly pay, but this has not fed into weekly pay for lowest earners

Growth in real hourly and weekly pay by pay decile



Source: *ASHE*, as published by ONS.

The fall in weekly pay is clearly a concern, given that it is weekly pay and not hourly pay that matters for households' living standards. But it also presents a puzzle: how can weekly pay for low earners fall while hourly pay for low earners is growing more quickly than for other workers? The rest of this Section focuses on explaining this fall in hourly pay.[2]

One potential answer is that the low weekly paid are not the same group as the low hourly paid because people on much higher hourly pay may choose to work only a few hours a week and therefore be in the lowest weekly pay decile, so we are simply not talking about the same people. But this is only a small part of the story. In 2018, 43 per cent of people in the bottom weekly pay decile were also in the bottom hourly pay decile, and 90 per cent were in the bottom three hourly pay deciles. This is important because, as suggested by Figure 1, the past twenty years of pay growth seem to have affected the first three deciles of the hourly pay distribution.

Furthermore, Figure 8 below shows that, in fact, the bottom weekly pay decile did enjoy high hourly pay growth in 2018. Average hourly pay for this group increased by 4.7 per cent in real terms, almost as much as in 2015-16, the year the National Living Wage was introduced. So we need an explanation for how high hourly pay growth can be combined

[2] Note that the analysis that follows in this Section relates to the fall in hours on average within the bottom pay decile, as opposed to the fall in hours at the 10th or 20th percentile, which is set out in Figure 7. Box 3 explains the difference between these measures and why we use the former.

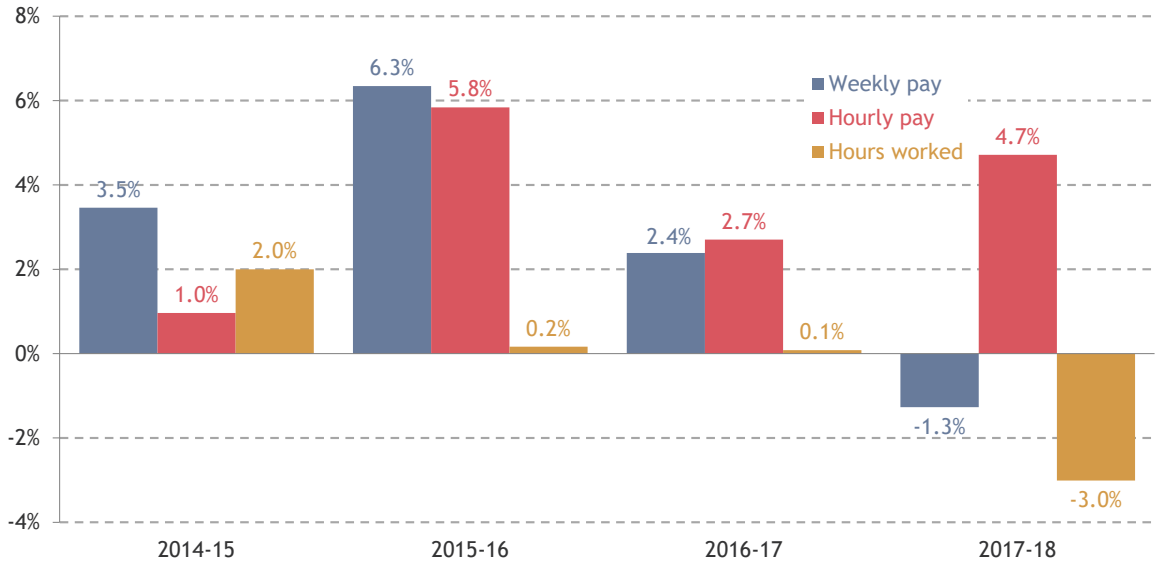
with the weekly pay fall amongst the bottom decile of weekly earners that goes well beyond pointing out that not all the very lowest hourly earners are amongst the lowest weekly earners.

Lower weekly pay in 2018 was driven by a fall in hours worked

The reason weekly pay in the bottom decile fell is down to the number of hours worked. Average weekly hours worked for bottom weekly earners fell by 3.0 per cent between 2017 and 2018. Since 2006, in most years, average hours worked of bottom decile weekly earners has not changed significantly. The exceptions are the recession year, 2008, when average hours worked fell 5.0 per cent, and now 2018. In all other years the changes have been within two per cent in either direction. This means that the fall in hours worked in 2018 was (economically and statistically) significant.

Figure 8: The fall in weekly pay for bottom earners in 2018 was driven by a fall in hours worked

Change in average weekly pay, hourly pay and hours worked, in the bottom weekly pay decile



Note: Bottom decile refers to the bottom 10 per cent of earners.
Source: RF analysis of Office for National Statistics (2018) *Annual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

The evidence suggests that the fall in hours has not been driven by the minimum wage

The fall in hours worked raises questions about the minimum wage. Could this be the first sign of much-feared employment effects as firms respond to a higher wage floor by cutting down the hours they give to workers? That would of course have serious implications for

minimum wage policy. This section surveys the evidence, and concludes that we do not need to worry about that yet. Instead, a better explanation of the hours fall relates to the changing composition of the lowest weekly paid.

As well as the minimum wage and compositional effects, we also discuss the possibility that changing incentives in the in-work benefits system are part of the explanation (see Box 4). While there are good grounds to believe the switch to UC might exert downward pressure on the hours worked by some, the volume of claimants is – to date – too small to have made a significant difference to overall hours worked. We also suggest that, when it comes to concerns about trends in weekly pay, looking across datasets provides policy makers with further reassurance that the minimum wage is not causing hours effects, since the fall in weekly pay seen in the Annual Survey of Hours and Earnings is not corroborated in the Labour Force Survey (see Box 3, below).

i Box 3: Different data, different stories

We can compare the picture set out in Figure 7 – falling real weekly earnings at the 10th and 20th percentiles – which is based on the Annual Survey of Hours and Earnings (ASHE), against other data. Doing so gives some reassurance.

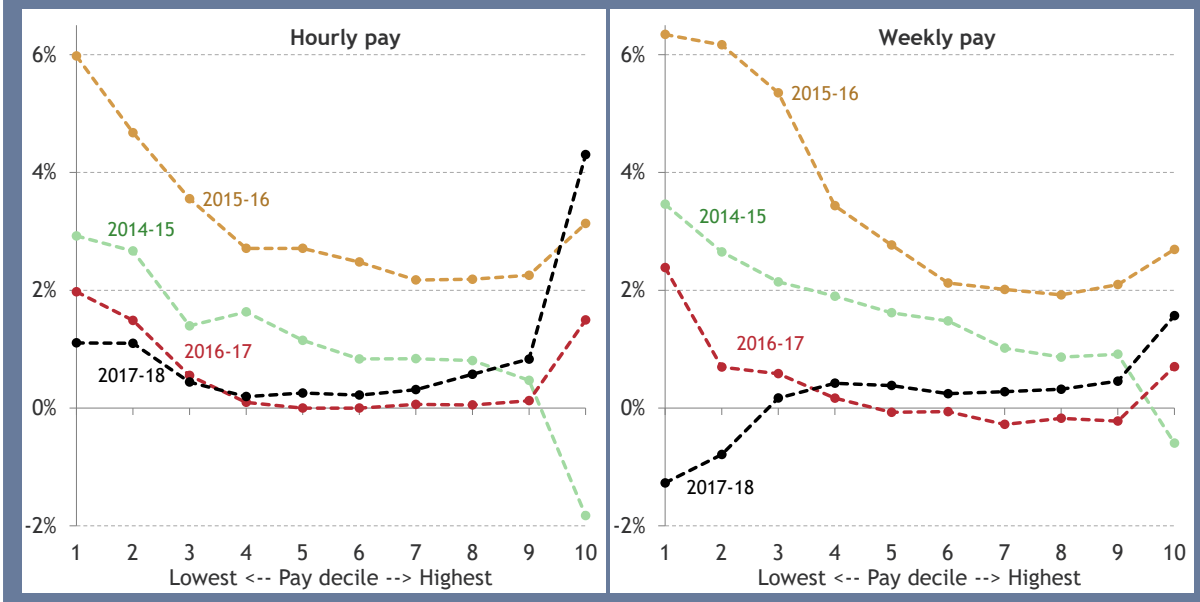
First, though, let's turn to a different method for measuring earnings growth across the distribution. Figure 7 looks at changes at single points in the distribution – for example at the 10th and 20th percentiles. A different method, used in Figure 9, below, takes the average within deciles. This method shows the same picture of falling real wages in the bottom two weekly earnings deciles in 2018. However, we no longer see falling weekly wages for low earners in 2017, suggesting the trend is not as entrenched.

This second method - using the average within deciles - is used for the rest of this section. It offers two benefits over the point-in-the-distribution approach. First is that it is less vulnerable to movements at specific points in the distribution. And second is that it allows us to more fully study compositional changes to the population of the lowest earners.

We can also compare the above results against a different dataset. All data in this section so far has come from ASHE, which is the most reliable source of data on employee earnings, and which is used for the majority of this section. But earnings data is also available in the Labour Force Survey (LFS). LFS is sometimes preferable to ASHE because it is a richer and timelier dataset. Unfortunately, however, the LFS has a less reliable measure of pay. Nonetheless, it provides a useful crosscheck, not least because LFS data are more frequent (available on a quarterly, as opposed to annual, basis), and more timely (we have LFS data up to 2018 Q4, another two quarters of data beyond what is available in ASHE, which was last collected in April 2018).

Figure 9: Taking the average of the bottom decile shows the same result – regressive pay growth between 2017 and 2018

Change in average weekly pay in the bottom weekly pay decile, on the previous year



Source: RF analysis of *ASHE*.
Note: In this figure the data refers to the average of the relevant decile, as opposed to a single point in the data. Decile 1 refers to mean of the bottom tenth of the distribution.

Figure 10, below, shows the growth in weekly pay for the bottom four weekly pay deciles over the past three years in LFS. There is a large fall (-3.1 per cent) in weekly pay growth, on average, in the bottom pay decile during the second quarter of 2018, which is the period in which data collection for 2018 ASHE took place. This appears to confirm the pattern observed in ASHE.

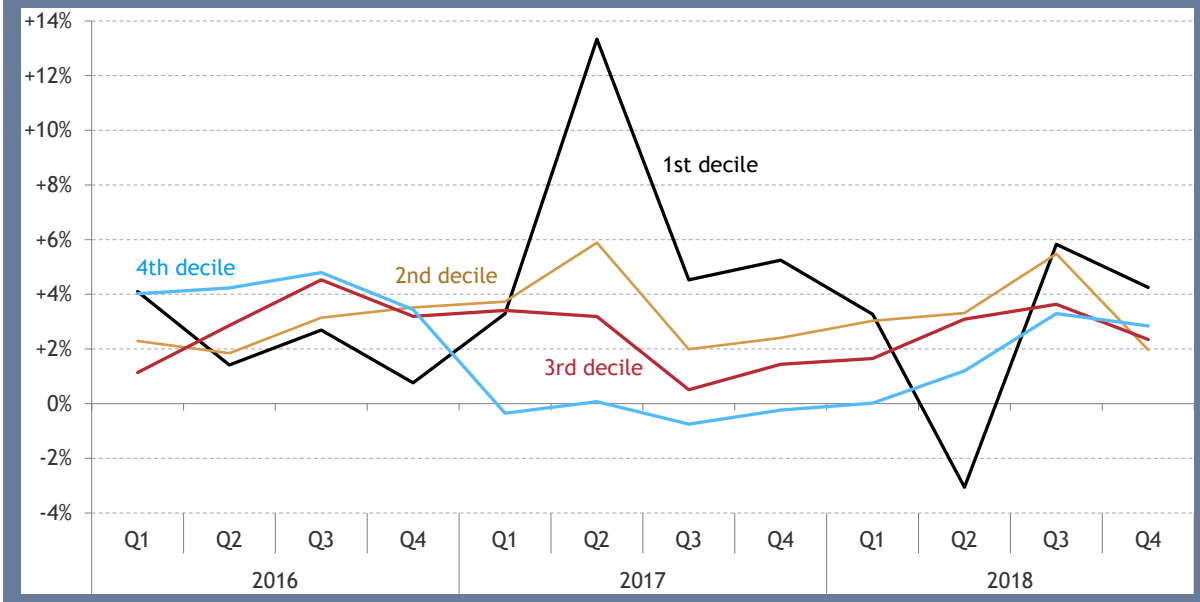
However, in the same quarter in 2017, pay growth in the bottom weekly pay decile is large and positive (+13.3 per cent). This is the opposite of what happens in ASHE in that year.

Furthermore, those two quarters are outliers in the LFS data. Other quarters, including those following the 2018 ASHE collection period, show pay growth in the bottom decile returning to normal levels. This pattern is consistent with 2018 Q2 – where the fall in hours is seen – returning to the mean, driven by the high value recorded in 2017 Q2.

Overall, therefore, the picture of falling real weekly pay for low earners seems to be limited to ASHE. This might give reassurance to policy makers concerned about the effects of the minimum wage.

Figure 10: In the LFS, the fall in weekly pay between 2017 and 2018 looks unique to the second quarters

Change in average real weekly pay in the bottom weekly pay decile, compared with the previous year



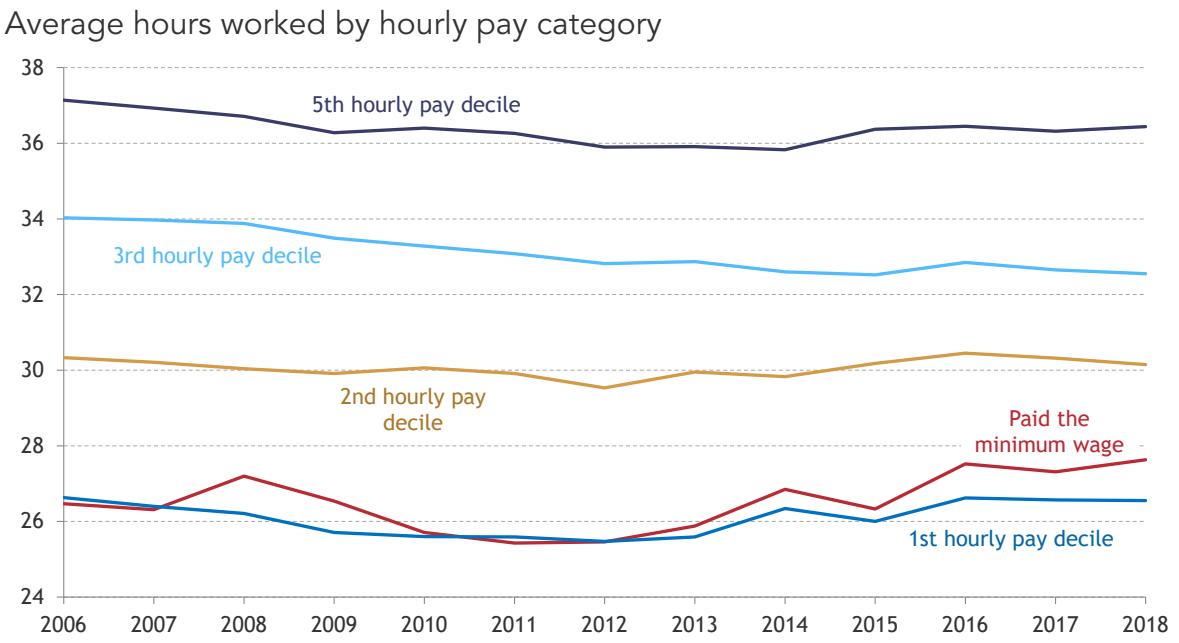
Source: RF analysis of *LFS*. Note: does not include the self-employed.

Was the fall in hours worked in 2018 caused by minimum wage employment effects?

Setting aside uncertainty about the data, the key question to address is whether the fall in hours for the bottom weekly pay decile is connected to the minimum wage. Here there are three key pieces of evidence to suggest the fall in hours is not a minimum wage employment effect.

First, the average hours worked of people paid at (or below) the minimum wage have not fallen, as we might expect in the presence of an employment effect (see Figure 11, below). Workers paid at the minimum wage worked 27.6 hours per week on average in 2018, more than at any point in the past decade. In the NLW era (2016 onwards) average hours worked by minimum wage workers have been increasing, not falling. But given its growing coverage, the average hours worked by minimum wage workers would however be expected to rise (as the wage floor comes to directly cover what were previously relatively higher paid workers, who tend to work longer hours). To avoid this compositional change to the population we can look at the full first hourly pay decile (which includes all wage floor workers throughout this time period) to provide a useful check. Again, there has been no reduction in hours for this group. As discussed above, the minimum wage has effects on pay above the wage floor, so it is relevant to look at the second and third hourly pay deciles. Hours in the third decile have been trending downwards, but hours in the second decile have remained where they were a decade ago.

Figure 11: Average hours worked of minimum wage workers have increased in the NLW era



Source: RF analysis of Office for National Statistics (2018) A*nnual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

The second piece of evidence is that individuals remaining in minimum wage paying jobs have, on average, seen their hours worked increase. Figure 12, below, uses the longitudinal feature of the ASHE dataset (i.e. tracking the same individuals over time) to measure the average change in hours worked for people paid at the minimum wage one year and the next, and those paid above the minimum wage one year and the next.[3] Workers receiving the hourly minimum wage have, on average, seen greater hours growth than above-minimum wage workers. Moreover, in the NLW era the average change in hours has increased for the minimum wage worker group, whereas it has ticked downwards for the above-minimum wage group. Certainly there is nothing in these data that would explain the fall in hours worked in 2018 in terms of an effect of the NLW.

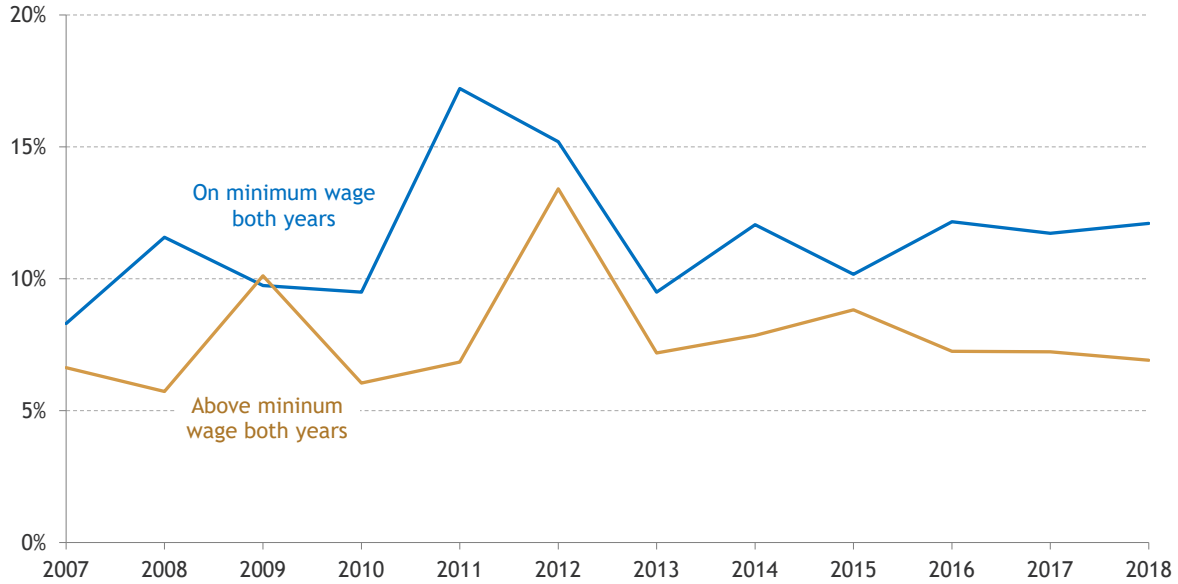
One group Figure 12 does not tell us about is people entering the workforce because the ASHE dataset does not include the out-of-work population.[4] However, we can proxy labour-market entrants with individuals who do not appear in the dataset in a previous year. Figure 13 shows that, on this basis, the average hours of NLW workers that are entrants to the survey, compared to NLW workers overall. Until 2011 there was very little difference in the hours worked of minimum wage entrants compared to minimum wage workers overall.

[3] Note this is analysis is not limited to those working for the same employer or in the same job in the previous year. It includes everyone that is paid at the minimum wage, or above the minimum wage, in both years.
[4] ASHE is a 1 per cent sample of all National Insurance Numbers and therefore it does not include anyone who is not an employee. People may enter the *ASHE* survey because they have moved into employment from unemployment, inactivity or started work for the first time.

However, from 2012 onwards, minimum wage entrants have worked fewer hours on average. And this gap has widened in the NLW era. In 2018 NLW entrants were working 26.5 hours per week on average, 1.1 hours per week less than the overall NLW group.

Figure 12: Workers staying on the minimum wage have tended to see their hours grow by more than other workers

Average change (longitudinal) in hours worked on the previous year, by whether staying in a NLW-paying job or an above-NLW-paying job

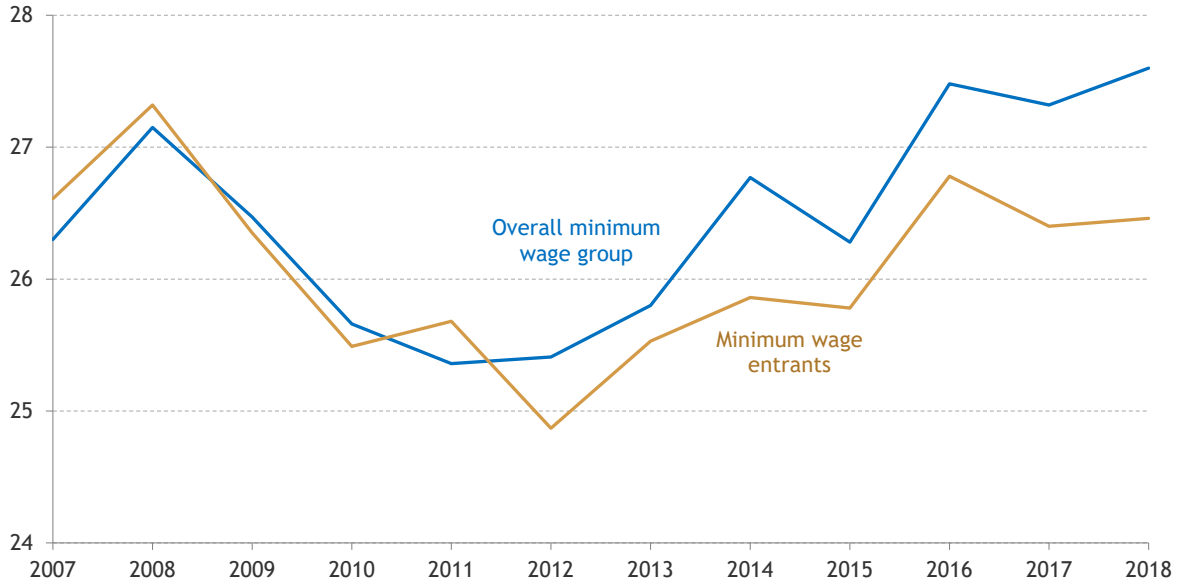


Note: this chart measures the average change, as opposed to the change in the average as used, for example, in Figure 7. This chart is not limited to workers in the bottom weekly decile.
Source: RF analysis of Office for National Statistics (2018) *Annual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

There are two interpretations of this trend. One is that, to the extent that there is a minimum wage employment effect, it is being felt in the hours of people entering the workforce, not by people already in work. This might make sense if there was a 'stickiness' in workers' hours – it would be easier to adjust demand through the hours of new rather than existing workers. However, this trend is also consistent with a compositional effect, perhaps driven by the labour market becoming tighter over this period, attracting into work groups more likely to work fewer hours. The timing of the gap between hours worked of NLW entrants and overall NLW group opening up well before the NLW was introduced in 2016 and at around the time that strong employment growth began to emerge implies a compositional rather than employment effect is taking place.

Figure 13: Newly employed NLW workers are working lower hours than NLW workers overall

Average weekly hours worked, the overall NLW worker group, and NLW workers not employed the previous year



Source: RF analysis of Office for National Statistics (2018) *Annual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

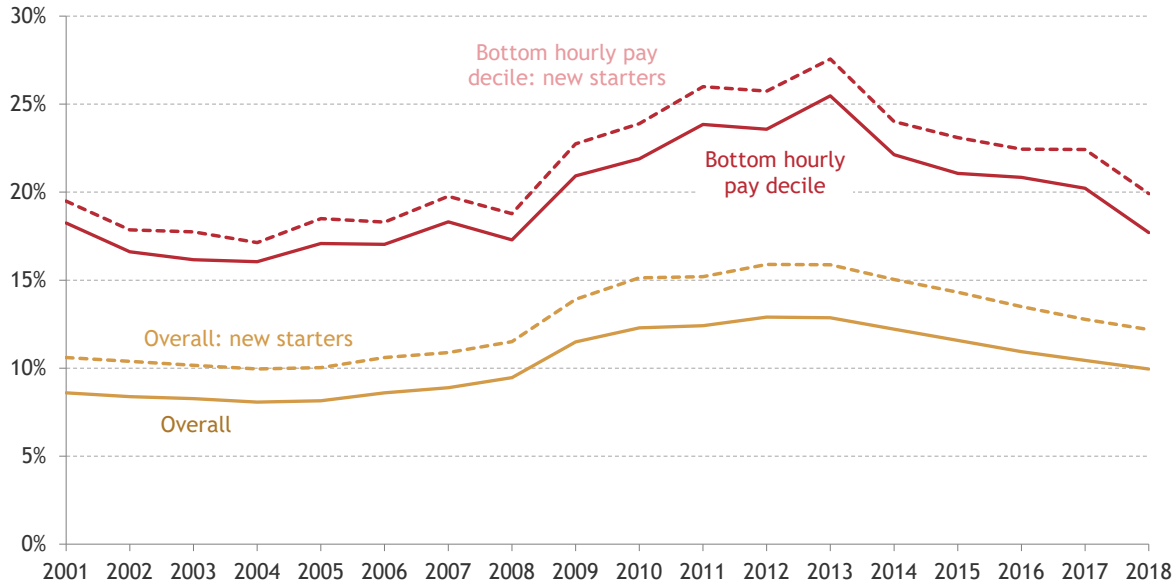
Even if we believed the minimum wage was causing an employment effect, it would be useful to distinguish between a negative employment effect (employers reducing demand for labour in response to higher wages) and an income effect (workers choosing to work fewer hours because they can achieve a given weekly pay target with fewer hours). These effects are hard to distinguish, but one piece of evidence that helps is comparing the hours people are working with those they say they would like to work. If employers were pushing down hours against the wishes of workers (a negative employment effect) we would expect to see a relative increase in the proportion of workers on the minimum wage saying that they would like to work more hours. Reassuringly, we do not see this in the data.

Figure 14 shows the proportion of workers, in the bottom hourly pay decile and overall, that say they would like to increase their hours worked. The proportion that want to work more hours is higher for those in the bottom hourly pay decile, most of whom are paid the minimum wage. However, the trend is the same as for overall workers, and reflects the economic downturn after 2008 (when demand fell and workers were unable to work as many hours as they wanted) and the subsequent recovery and the tightening labour market from 2014 onwards. The proportion of workers who would like to work additional hours – both overall and in the bottom hourly pay decile – is roughly back to where it was a decade ago. There has been no relative shift in the proportion that want more hours in the NLW era – the changes are driven by the economic cycle.

Figure 14 also compares the overall trends with those of new starters, defined as people who have been continuously employed for fewer than six months. This is to check the possibility raised above that any negative employment effects are being felt by entrants to the labour market. Although new starters are slightly more likely to want more hours, there is no evidence that this gap has been increasing since the introduction of the NLW.

Figure 14: The proportion of bottom hourly paid workers that want more hours has fallen

Proportion of workers that would like to work additional hours, overall and those in the bottom hourly pay decile, and for new starters



Note: 'new starter' is defined as having been continuously employed for less than 6 months.
Source: RF analysis of *LFS*.

The evidence presented in this section provides no evidence to support the idea that a minimum wage related employment effect is leading to reductions in hours worked. All of this is consistent with the mass of empirical evidence collected over the past two decades by the Low Pay Commission, which finds no significant employment effects connected to the minimum wage (which we summarise in Box 4 below). The analysis so far does, however, imply that at least part of the explanation may lie with new entrants to minimum wage work, whose average hours have tended to be lower than those already on the NLW (as shown in Figure 14, above). However, the data on desired hours suggests new entrants are not having their hours pushed downwards by employers. Instead of the minimum wage as the culprit, then, the evidence points us towards a compositional effect – which we explore in the rest of this section.

i Box 4: Employment effects: how much do we know?

'Employment effects' – where a new (or rising) minimum wage leads to a reduction in employment and/or hours worked – have long been a core feature of the wage floor debate. In the run-up the introduction of the national minimum wage (NMW) in 1999 fears of employment effects were widespread. In the end, the NMW does not appear to have led to an overall reduction in employment or hours worked. This is a finding backed up – in the main – by a voluminous international literature. However, concerns remain that, set at a high enough level, or if pushed up sharply, the wage floor would reduce employment and/or hours worked.

In 2015, when it was announced that a new, higher-level minimum wage called the National Living Wage (NLW) would replace the NMW for workers age 25 and older, the Office for Budget Responsibility (OBR) estimated that by 2020, the NLW would result in a 0.2 percentage point increase in unemployment (equivalent to 60,000 workers) and a 0.2 per cent reduction in hours worked, with most of these reductions taking place at the bottom of the earnings distribution.[5] This was based on assumptions about how much employers would reduce demand in response to higher wages. They assumed that for every one per cent increase in wages, total hours worked would fall by 0.4 per cent, and that half the effect would come through average hours worked and the other half through employment.

However, the evidence of NLW-driven employment effects remains mixed. Research commissioned in 2018 by the LPC found, as did previous analyses, no association between NLW uprating and either hours worked or employment. Researchers did, however, find a reduction in women working part-time, ranging from 1.5 to 2.6 percentage points, much of which occurred in retail.[6] Recently, the Chancellor proposed ending 'low pay' in the UK – which would require a minimum wage set at least to two-thirds of median earnings. The OBR estimated that doing so would, in the target year, raise unemployment by 0.4 per cent (a rise in unemployment of 140,000) and reduce average hours worked by 0.4 per cent.[7] It of course remains unclear whether these estimates will come to pass.

[5] OBR, '*Economic and Fiscal Outlook*', July 2015
[6] A Aitken et al, '*The Impact of the Introduction of the National Living Wage on Employment, Hours and Wages*', Low Pay Commission, November 2018
[7] The OBR analysis does warn that there is a "high degree of uncertainty" around their estimates. See: OBR, *Economic and Fiscal Outlook*, October 2018

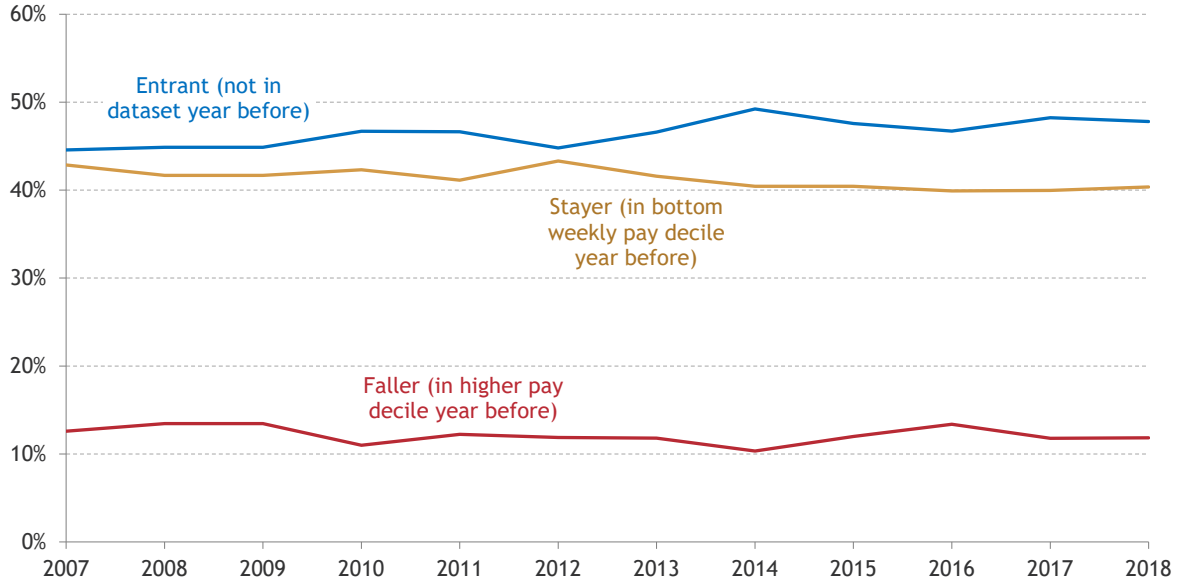
Did hours fall due to compositional changes among low earners?

The employment rate in the UK is at record levels, and this has particularly benefitted groups of people that have traditionally had lower employment rates, such as women, ethnic minorities, those with lower qualifications, and single parents[8] - groups that also tend to work fewer hours when they are in work. The theory explored here is that this has shifted the composition of the lower paid end of the workforce towards groups that tend to work fewer hours. There are several pieces of evidence which support this conclusion.

First, there has been a small increase in the proportion of the bottom weekly pay group that are entrants (see Figure 15 below). The proportion of the bottom weekly paid decile that were not in the survey, and so likely not in employment, the year before was 48 per cent in 2018, up from 45 per cent in 2012. However, this change is small, and does not explain the fall in hours in 2018.

Figure 15: There has been a small increase in the proportion of the bottom weekly pay decile that are entrants

Bottom weekly pay decile broken down into entrants (those not in the ASHE dataset the year before), and stayers



Source: RF analysis of Office for National Statistics (2018) *Annual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

If the volume of entrants in the bottom weekly pay decile has only increased slightly, the effect of entrants on hours worked has changed more significantly. Figure 16, below, compares the hours of those entering the bottom weekly pay decile from non-employment with those in the data overall, and with those leaving employment. There are two interesting points. First, entrants work fewer hours on average than other workers

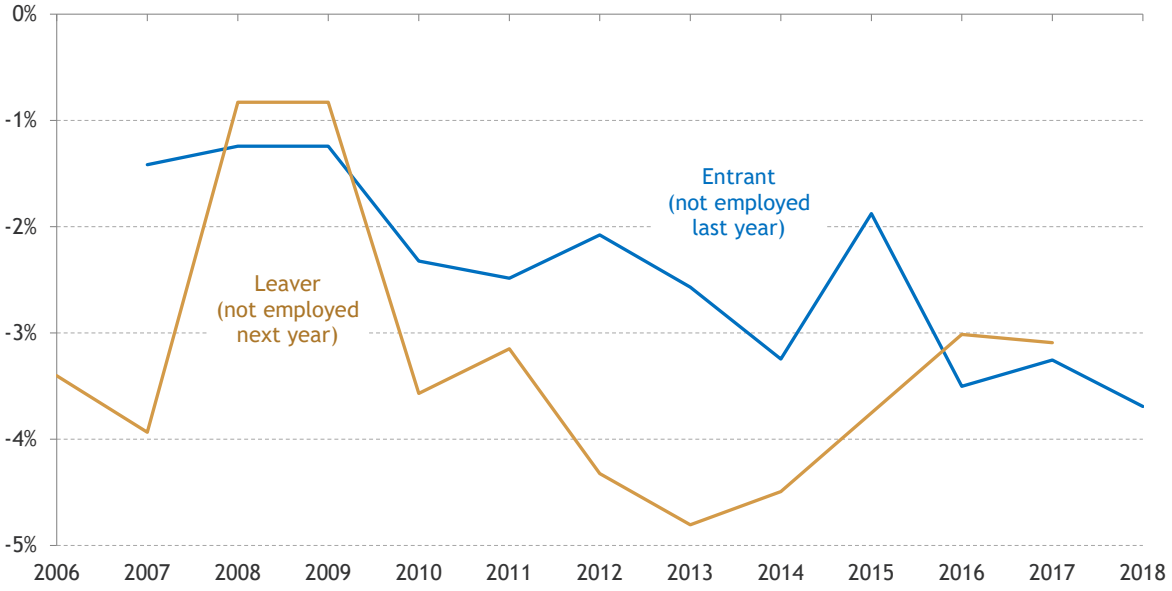
[8] These trends are discussed in our recent report on full employment: Clarke and Cominetti (2019) *Setting the record straight: how record employment has changed the UK*. Resolution Foundation, London.

in the decile, and by entering they bring down the overall average of hours worked. For example, in 2018 entrants worked 3.7 per cent fewer hours than the overall average of workers in the decile. Second, the difference has been getting bigger over time (as seen by the downwards trend of the blue line in the figure). A decade ago entrants only worked 1.2 per cent fewer hours than the overall decile, in 2018 that difference was three times as large. This means the negative effect of entrants on hours worked in the bottom weekly pay decile has grown over time, consistent with a compositional change story as a tighter labour market over recent years has brought into employment groups with lower average hours.

Figure 16 also shows the relative hours worked of those exiting employment from the bottom decile. In 2016 and 2017 the average hours of entrants (blue line) fell below the average hours of leavers (yellow line), meaning the net effect of flows into and out of work within the bottom weekly pay decile became negative.

Figure 16: Entrants to the bottom weekly earner decile are increasingly pushing down on average hours worked

Average hours worked, relative to the overall bottom weekly pay decile, of 'entrants' (people not in the dataset the previous year) and 'leavers' (those not in the dataset the following year)



Source: RF analysis of Office for National Statistics (2018) *Annual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

We have evidence that entrants are (increasingly) exerting downwards pressure on average hours in the bottom weekly pay decile, but this does not tell us much about how the decile is actually changing. Figure 17 charts the change in the composition of the bottom weekly pay decile between 2017 and 2018 using the LFS (used because it contains more information about workers' characteristics). For a selection of subgroups, and with

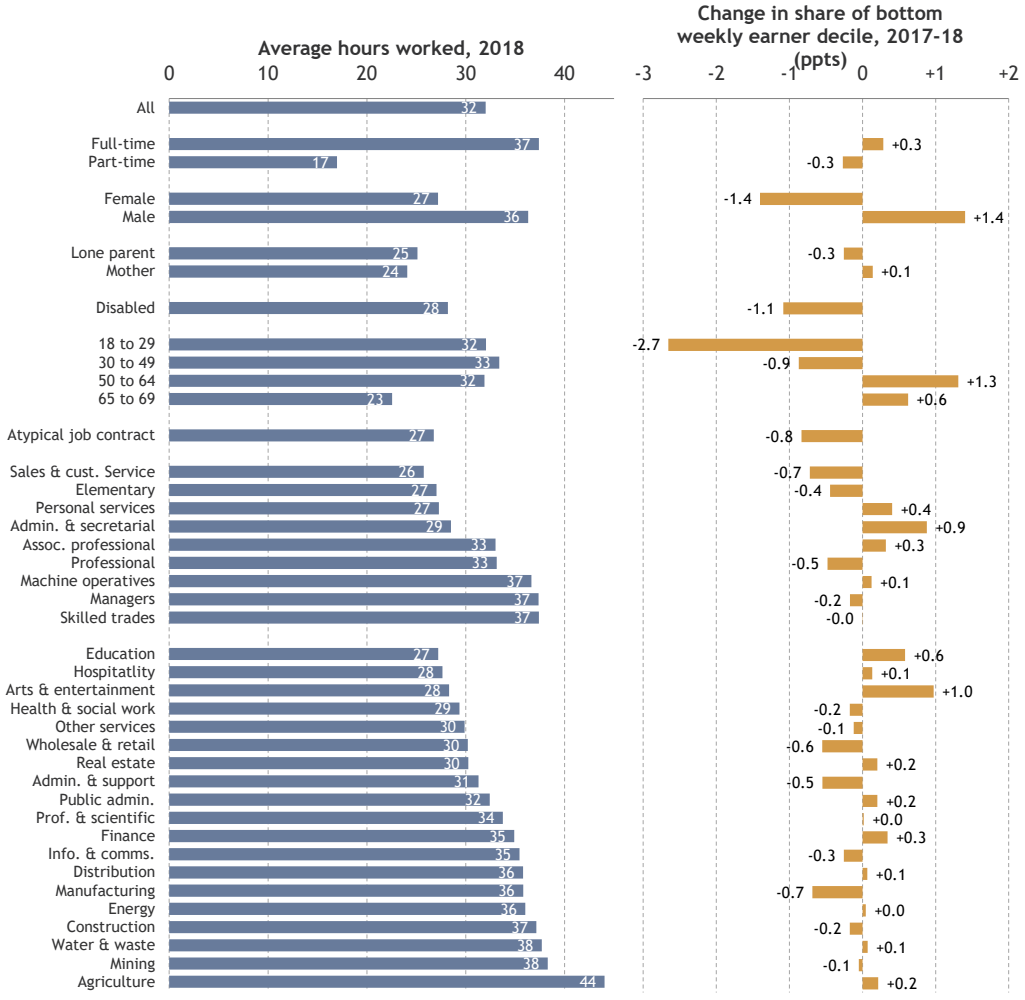
breakdowns by occupation and industry, the first panel shows the average hours worked in 2018, while the second panel shows the percentage point change in that group's share of the bottom weekly pay decile.

Some of the changes support the composition theory. Compared to 2017, the bottom weekly pay decile in 2018 had a higher share of older workers. For example, there was a 0.6 percentage point increase in the share of 65 to 69 year olds, who worked 23 hours per week on average, compared to 32 overall. We can also see that the two industry sections which saw the largest increase in their share, Education and Arts and entertainment, are two of the sectors with the lowest average hours worked.

However, in other respects the changes have had an upwards effect on the hours of the bottom weekly paid group. For example, there was an increase in the share of full-time workers, and men, both of whom have above-average hours. And there was a fall in the proportion of lower-paid occupations, workers on atypical contracts, and those with disabilities, all of whom have below-average hours.

Figure 17: The composition of the bottom weekly earner group has played a part in the fall in hours worked

Average hours worked in 2018, and the change in the share of the bottom weekly earner decile, by subgroups



Source: RF analysis of *LFS*.

Looking at the ASHE data in more detail provides some support for the impact of compositional factors, but is by no means conclusive given limitations in the data. Using the ASHE data to shed light on this issue is helpful because it is the best source for pay and hours data. But it includes much less detail on the characteristics of workers. With this in mind we can attempt to quantify some of the effect of changes in the composition of the bottom weekly pay decile. In particular, using an 'Oaxaca' decomposition, which uses regression methods to decompose changes in hours worked in the bottom decile suggests that only around a fifth of the change in hours worked among this group between 2017 and 2018 can be explained by changes in the limited set of observed characteristics of the people who make up this decile in ASHE.

Overall, while far from conclusive, the analysis in this section offers no evidence that the hours fall in 2018 should be attributed to increases in the minimum wage. It does, however, suggest that compositional effects are more important, although these cannot explain all of the fall in hours. It should provide reassurance to the Government (and opposition) in their ambitions for a higher minimum wage, but not a reason for ignoring the risks that go with those ambitions.

Even though evidence of significant negative employment effects has not materialised to date, it remains the case that, set high enough, a minimum wage is likely to have such effects. The question is, what is this level? This is the key issue tackled in the next Section. It offers a framework for thinking about how to reach the optimum minimum wage level at a pace which would, as far as possible, reduce the likelihood of causing lasting negative employment effects.

i Box 5: Has the introduction of Universal Credit led to a reduction in working hours?

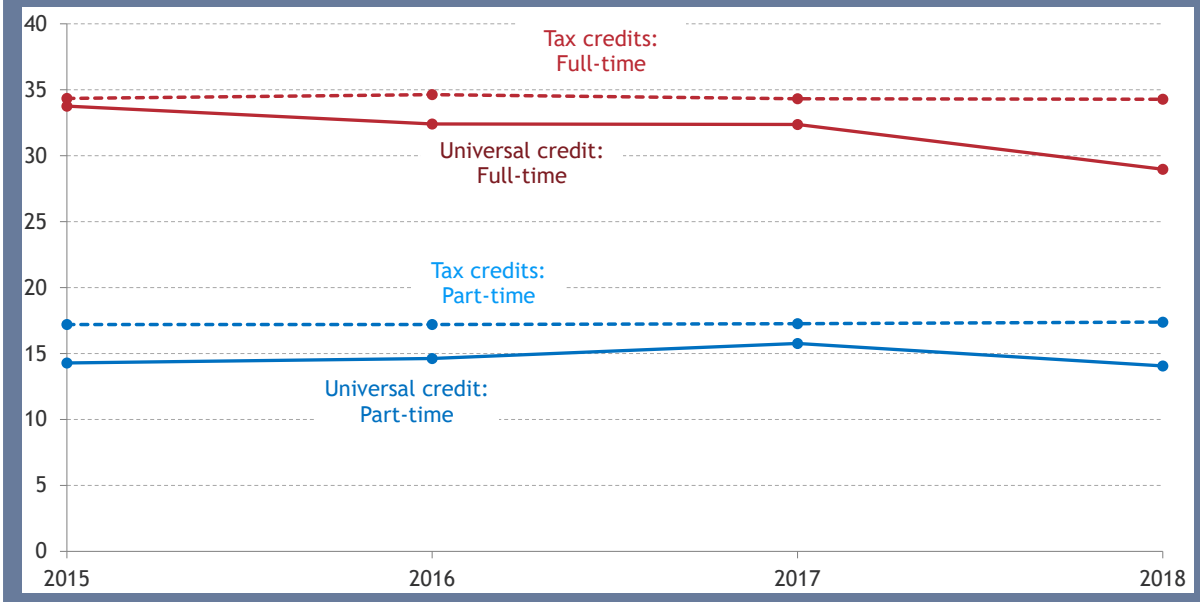
While the respective roles of changes in the workforce and wage floor in driving falls in the average hours of low earners is the focus of this chapter, it is worth addressing the idea that changes to in-work benefits are also playing a part. By design, the financial incentives relating to hours worked in Universal Credit (UC) are different to the tax credit system that it is replacing. Indeed, there is a strong incentive in the tax credits system for people to work at least 16 hours per week, which is when eligibility for working tax credits kicked in. This clear incentive is removed in UC, in favour of an increased incentive for someone to work shorter hours rather than not working at all. It does so by applying a consistent 'taper rate' that reduces benefit entitlement by 63p for each pound earnt above a certain level (the so called 'work allowance') without that taper being offset by an entitlement increase for any specific number of hours worked. So while there is a strong incentive for people to work up to the work allowance (which for example amounts to 8 hours for a single parent in rented accommodation), we would expect there to be some individuals working 16 hours a week on tax credits who would prefer shorter hours and who would reduce their hours on UC, if able to do so. For example, under UC, a single parent paid at the National Living Wage who moves from 16 to 8 hours per week would

see their income fall by only £1,275 even through their earnings have fallen £3,425.

A basic comparison of the average hours worked of people operating under the two systems suggests this possible effect deserves to be investigated more fully: in 2018, part-time workers on UC worked 3.3 hours per week fewer than part-time workers in the tax credit system. A basic linear regression suggests that this effect persists even controlling for a range of person and job characteristics.[9] If these relationships continue to hold as the roll out of UC expands, this could exert downward pressure on the number of hours worked for those on lower pay.

Figure 18: On average, UC claimants work fewer hours than TC claimants

Average weekly hours worked by type of benefit claimed



Source: RF analysis of quarterly *LFS*.

However, while it is plausible that the different incentives presented in the UC system are having a negative effect on hours worked, the number of UC claimants is (to date) simply too small to have made a significant difference to aggregate hours worked, even in the bottom weekly pay decile.

In the second quarter of 2018 – the period the 2018 ASHE relates to, and which shows the fall in hours worked – UC claimants only comprised 1.0 per cent of those in work. Of course, as UC continues to be rolled out this effect on aggregate hours worked may increase. This is something we will explore in future research.

[9] We will be investigating this result further in forthcoming research.

Section 4

Moving forward: the future of the UK minimum wage

In just over twenty years, the UK has moved from a country without a minimum wage to one at the cutting edge of wage floor policy. The UK now has one of the OECD's highest minimum wages, covering an above-OECD average proportion of the labour force. It's also on the cusp of meeting a core ambition: in 2015 then-Chancellor George Osborne set the Low Pay Commission the task to raise the National Living Wage (NLW) to reach 60 per cent of 25 and over UK median hourly earnings by 2020. In all likelihood the NLW will meet that goal next year.

So what next? Rather than settle for this new steady-state, both the Government and the opposition Labour Party have plans to push the UK's NLW further still. Over the next decade, the NLW could be worth as much as – if not more than – two-thirds the median wage. In other words, the UK could end low pay. So far the debate about the future of the wage floor has focused on the issue of what the ultimate objective target level should be. So this section starts there, examining the very significant change to our labour market that would be entailed by a higher minimum wage that meets the Government or opposition's goals. For instance, had the NLW been equal to two-thirds the median wage in 2018, it would have covered 2.5 times as many workers. It also compares the relative size, and structure, of the UK minimum against its OECD counterparts.

We contend that there is an optimal, and as yet unknown, UK minimum wage – above which substantial employment or wider side-effects will outweigh the benefit of a higher wage floor. Record employment, and the previous Section's largely reassuring conclusion that there is little evidence that the NLW has driven reductions in hours worked, leads us to surmise that this optimal level may well have not yet been reached. But they offer us little guidance on how much higher the wage floor should go.

Given these constraints, policy makers' approach to the minimum wage level should marry ambition with caution, and focus more on the way in which – and crucially the pace at which - we go about increases to the wage floor. For this reason, while much of the discussion about the minimum wage has focused on arguing where its optimal level lies, this section is more concerned with the journey towards it.

We set out a loose framework that policymakers could consider when deciding how fast to push towards that unknowable-in-advance optimal level: we note that going faster than recent years will allow us to reach 66 per cent of median earnings (or the optimal minimum, whichever comes first) sooner, but could lead to difficult trade-offs were the economy to run into a downturn. Pushing up the NLW at still-fast but slightly-lower pace of incresae than recently seen combines an ambitious goal with caution in its implementation. It could represent the best way to navigate such trade-offs in the years ahead.

The minimum wage has come a long way in 20 years

Goals and expectations for the UK's national minimum wage (NMW) have shifted markedly since it was implemented in April 1999. First set at just £3.60 for employees age 22 and older, the Low Pay Commission was tasked with recommending subsequent minimum wage levels that would help "as many low -paid workers as possible without significant adverse impact on employment or the economy."[10] Critics, including a number of economists, warned that a minimum wage would drag on employment levels, putting those on the wage floor most at risk.[11]

By July 2015, however, few such fears had come to pass. Buoyed by growing levels of employment (and by a lack of evidence here and from around the world that moderate minimum wages affect overall employment levels), the then-Chancellor George Osborne instituted a more ambitious plan. In the short term, the National Living Wage (NLW), a new minimum for employees aged 25 and older, would rise nearly 11 per cent in cash terms: from £6.50 in July 2015 to £7.20 by April 2016.

However, the real shift was in longer-term ambition. Provided sustained economic growth, the NLW was to be continually increased so as to reach 60 per cent of over 25 median hourly earnings by 2020 (i.e. a 60 per cent 'bite'), at that point projected to be £9 in cash terms.[12] The pre-existing NMW would continue to exist and apply to those under age 25. Since coming into force during April 2016, the NLW has risen roughly twice as fast as typical earnings and, at £8.21, is now 14 per cent higher in cash terms than in 2016. Rather than shifting downwards, employment stands at a post-World War II record high (76.1 per cent). The Low Pay Commission has repeatedly found that the NLW/NMW has not led to overall reduction in employment.[13]

At this year's Spring Statement the Chancellor, Philip Hammond, set the bar higher again: after reaffirming the Government's commitment for the NLW to reach 60 per cent of over 25 median earnings in a year's time, he stated the Low Pay Commission's post-2020 remit should include "the objective of ending low pay in the UK," where 'low pay' is commonly defined as two-thirds of overall median earnings.[14] The Chancellor did acknowledge

[10] Low Pay Commission, Factsheet, 2014.
[11] See: J Portes, '*Twenty years on the national minimum wage is a straightforward good news story*', Prospect, 31 March 2019; D Strauss, '*Minimum wage marks 20 years without employment effects*', Financial Times, 1 April 2019.
[12] BBC News, '*Budget 2015: Osborne offers country new contract*', 9 July 2015.
[13] See: J Cooper, '*Effects of the minimum wage on employment and automation – LPC publishes new commissioned research*', Low Pay Commission blog, 1 February 2019.
[14] This analysis defines 'low pay' as 66 per cent of median overall earnings for workers age 25 and above; the 25 year-old

concerns around employment: rather than setting a firm target or a specific year at which the NLW's bite should reach two thirds of median earnings, he announced that a labour market expert, Professor Arindrajit Dube, would lead a review of international evidence on the employment and productivity effects of minimum wage rates.

i Box 6: Ending low pay: sooner (or later) depending on your definition

The Chancellor's intention to "end low pay" in the UK has been interpreted as a call to ensure that the minimum wage is set, at least, to two-thirds of median pay. However, there are several ways to measure 'median pay.'

Some measures compare minimum wages against a typical workers' pay, regardless of age or working pattern. Others, like the OECD, limit the population that's included in the median: they compare the minimum wage against median pay for full-time workers. These choices affect the level that the minimum wage would have to be set at in order to eradicate low pay.

For instance, the 2018 NLW (£7.83) was worth 58 per cent of 25+ overall median pay but would have been worth 61.5 per cent of all-age, overall median pay. £7.83 was equivalent to 55 per cent of all-age full-time pay and as much as 84 per cent of all-age part-time pay. In other words, the specific measure of median hourly pay (e.g. 25+ or all age, overall pay or full-time only) matters for how far the minimum wage needs to go up in order to eradicate low pay.

As a thought experiment (and a partial middle ground) this analysis defines 'low pay' a two thirds of median overall (inclusive of full and part-time) earnings for workers age 25 and above, given that this is the definition used for the National Living Wage's increased ambition in recent years. However, it is important to note that the 66 per cent 'bite' required to end low pay would be met sooner if the median pay figure included workers under age 25.

The Labour Party have also raised ambitions for the minimum wage: in 2016 the shadow chancellor, John McDonnell, announced that the National Living Wage would be set by an independent review body "at the level needed for a decent life."[15] Under this cost of living approach, the shadow chancellor estimated that the wage be at least £10 by 2020.[16] Its bite in 2022 (the earliest it could be implemented given timescales) would be equivalent to 69.3 per cent of all-age median pay and 65.6 per cent of over 25 median pay.[17]

threshold is applied in order to be consistent with minimum wage age bands. There are, however, alternative measures: see Box .

[15] BBC News, '*John McDonnell vows £10 'real living wage*'', 26 September 2016

[16] P Walker, '*John McDonnell announces £10 an hour living wage plan*', The Guardian, 26 September 2016.

[17] In order to estimate median hourly pay in 2022, we take median hourly pay figures for both all-age workers and for workers age 25+ in 2018 and use OBR estimates to project them forward.

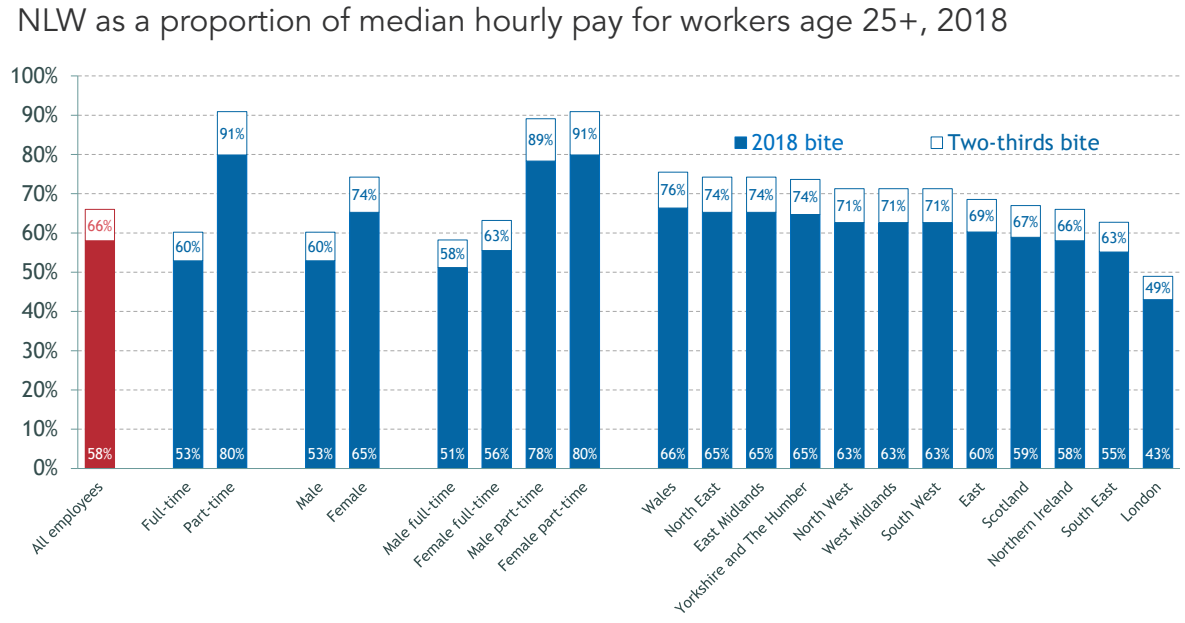
Both parties' ambitions demonstrate that there is cross party consensus on the desirability of a higher wage floor. It is worth reflecting on how big a change such a shift would bring about for our labour market, and more importantly the pace under which any such change should be brought about. We discuss both those issues below.

A National Living Wage set to eradicate low pay would offer a significant bite

The 2018 NLW was set at £7.83: while this was equivalent to 58 per cent of median 25+ pay, that bite varied widely across different types of workers and different places. For instance, £7.83 was equivalent to just 53 per cent of full-time hourly pay and as much as 80 per cent of part-time hourly pay. It ranged from just 43 per cent of overall hourly pay in London to as much as 66 per cent in Wales.

We can think of these differences as reflecting two related patterns: wages vary substantially by a host factors (e.g. gender, working mode, region, occupation) and, accordingly, so does the share of workers bunched on or near the wage floor. Were the NLW's bite to reach 100 per cent in a given category, by definition half of all workers in that category would be paid the minimum. In other words, the minimum wage would be the pay rate for the typical worker – and considered the 'going rate'.

Figure 19: The NLW's bite varies widely according to worker characteristics and region



Notes: We compare the cash value of the 2018 NLW (£7.83), which applied to workers 25+, against the 2018 median hourly wage for workers age 25+ in each of the above categories. The 2018 median full-time hourly pay figure is rounded to the nearest 5 pence.
Source: RF analysis of Office for National Statistics (2018) *Annual Survey of Hours and Earnings*, 1997-2018: Secure Access. [data collection]. 13th Edition. UK Data Service. SN: 6689, http://doi.org/10.5255/UKDA-SN-6689-12

Figure 19 displays the 2018 NLW as a percentage of over 25 median hourly pay by sex, working pattern and region. It also shows how a minimum wage designed to achieve a 66 per cent bite would have varied across these categories had it been in place during 2018 without causing any wider changes to the labour market.[18] In practice, as the bite rises we would be likely to see 'spill-over effects', where employers extend pay rises to workers sitting above the minimum wage in order to maintain some of the pre-existing occupational pay hierarchy. For some types of workers such 'spill over effects' would push up the median or typical wage, implying a lower bite than the projections shown in Figure 20. Were the 2018 NLW set to reach two thirds of overall over 25 median hourly pay, its value would again vary substantially by subgroup: it would be worth 60 per cent of median full-time pay but as much as 91 per cent of median part-time pay – so nearly the going rate. It would range from as much as 76 per cent of median hourly pay in Wales, but still be just under 50 per cent in London.

The current level and potential further increases to the bite of the wage floor for some groups underscores just how significant a labour market intervention the UK's rising wage floor has proven, and how recent proposals represent another large step forward.

A National Living Wage set to eradicate low pay would also increase coverage rates

While the bite provides us with a useful mechanism for thinking about the relative value of a minimum wage, it is the coverage rate (the number of workers paid at or near the minimum) that really matters for workers and firms. And given that the UK has a larger concentration of workers at the bottom of the hourly pay distribution than many other similar countries, increases in the minimum wage that may not, on the surface, appear very large can have a substantial effect on coverage.

As with 'the bite,' the proportion of workers covered by the minimum wage varies according to a host of factors. This section attempts a thought experiment, looking at who would fall under the coverage of a higher NLW, and how that coverage rate would differ according to a range of worker and job characteristics. In so doing, it asks, were the NLW to be set at two-thirds of 25 and over median earnings in 2018, which workers, by region, occupation and industry, would be affected by its (larger) scope?

For simplicity, our analysis focuses on the Chancellor's proposal to eradicate low pay (ie an NLW set to two thirds of over 25 pay) and it does not account for dynamic effects such as 'spill-overs,' nor does it assume 'employment effects,' (where employers respond to an increased wage bill by cutting back on staff hours or on employment), or supply effects (where a higher hourly rate allows some workers to reduce their total hours worked while maintaining a similar level of weekly pay).

In 2018, two million people (7.3 per cent of the labour force) were paid at or near the NMW/NLW.[19] The NLW, set at £7.83 in April that year, was equivalent to 58 per cent

[18] In order to have reached 66 per cent of median 25+ pay in 2018, the NLW would have had to have been set at £8.89.
[19] This figure includes workers paid the minimum wage as well as those paid one per cent above the minimum wage (relevant to their group), due to uncertainty in hourly wage data.

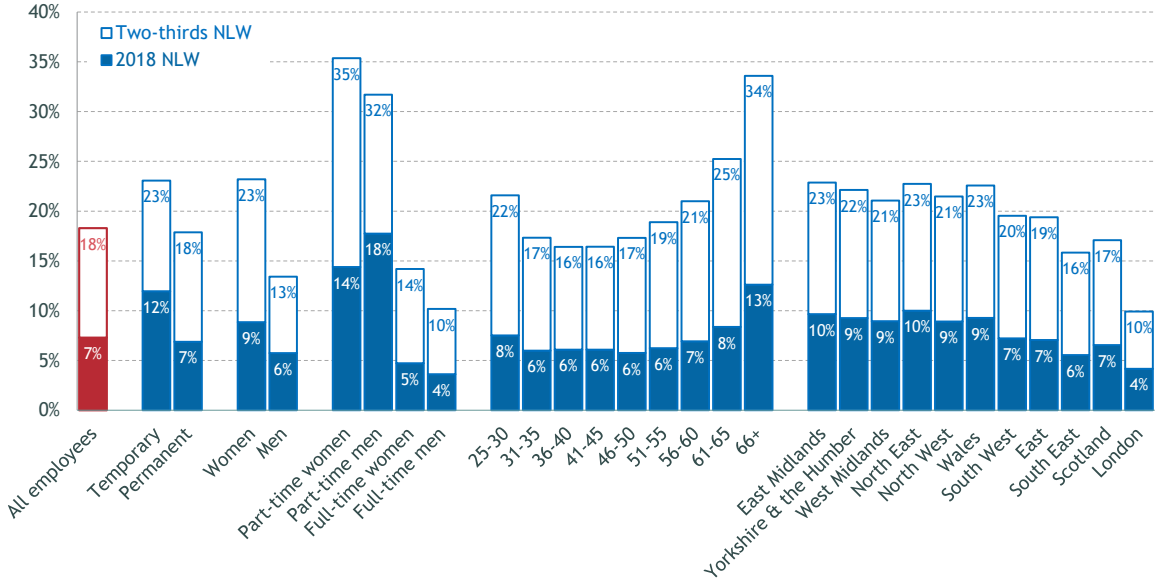
of median earnings of those age 25+. Were the NLW set at 66 per cent of median 25+ earnings in 2018, its cash figure would have been 14 per cent higher (£8.89), with the number of workers covered would have been be 2.5 times as large, at nearly five million (or 18.3 per cent). This 66 per cent coverage estimate illustrates quite how significant a change for our labour market proposed further increases to the minimum wage would represent. It is a rough indicator that demonstrates relative incidence across worker characteristics, occupations and industries, rather than a precise prediction.

The Office for Budget Responsibility (OBR) has modelled both spill-overs and employment effects, estimating that a minimum wage set at two-thirds the median wage could boost hourly earnings "up to 40 per cent above the new NLW," meaning that "around half of the work force would be subject to some spill over effect." On employment, they estimated that raising the minimum wage to two-thirds of the median wage would, in the target year, raise unemployment by 0.4 percentage points (a rise in unemployment of 140,000) and reduce average hours worked by 0.4 per cent.[20]

Putting these dynamic effects to one side, these coverage estimates shed light on the sheer size of the labour force that would be directly affected by an NLW with a two thirds bite, and how this coverage rate varies by individual characteristics. Figure 20 sets this out by illustrating the share of employees covered at or near the minimum wage in 2018, versus the share that would be covered had the NLW been set at £8.89 (two thirds of median 25+ earnings) in 2018.

Figure 20: A NLW set to two-thirds of median pay could substantially increase coverage

Proportion of workers covered by the NLW/NMW by sex, age, working pattern and region;



Notes: This analysis uses median hourly pay for workers age 25+ to determine how many workers, of all ages, would be covered if the minimum wage was £8.89 – equivalent to a 66 per cent bite of workers age 25+.
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* 2018

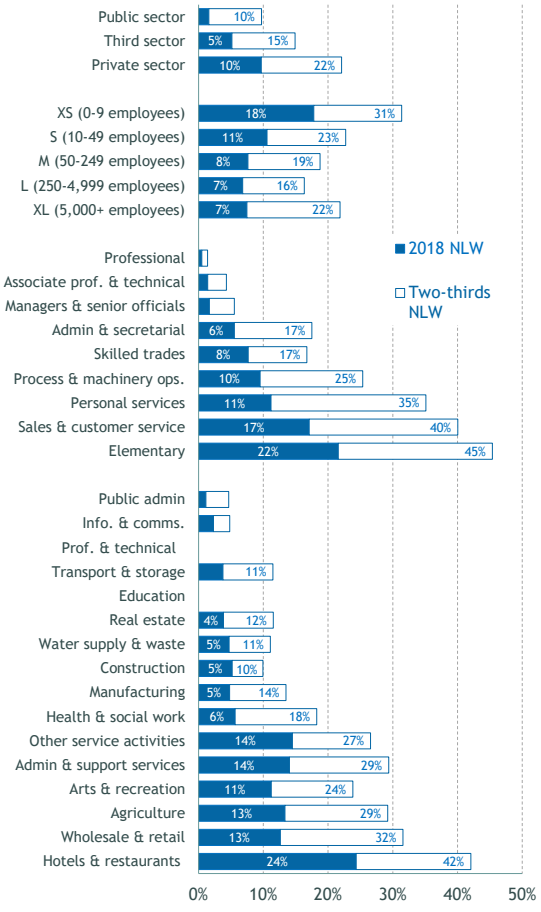
[20] The OBR analysis does warn that there is a "high degree of uncertainty" around their estimates. See: OBR, *Economic and Fiscal Outlook*, October 2018

Importantly, a two-thirds bite would bring groups that have historically been less affected by the minimum wage well and truly into the fold of the wage floor. For instance, the share of full-time men being paid at the minimum rate would more than double, from just 4 per cent to one-in-ten. The share of workers in London that are paid the minimum would similarly rise from 4 to 10 per cent. The share of workers aged 50-60 who are on the minimum would treble from 6-7 per cent to 19-21 per cent.

And for some groups, the minimum wage will start to become the going rate: nearly one-in-four (23 per cent of) women overall would be paid the minimum (up from 12 per cent), including more than one-third (35 per cent) of women who work part-time; 13 per cent of men overall would be at the minimum (up from 6 per cent), including nearly one-third (32 per cent) of men who work part-time. While roughly one-in-ten workers in the Midlands and North were, in 2018, paid at the minimum, roughly one-in-five would be.

Figure 21: A NLW set to two-thirds of median pay could substantially increase coverage across different firms, occupations and sectors

Proportion of employees covered by the NMW/NLW by firm type, firm size, industry and occupation



Notes: This analysis uses median hourly pay for workers age 25+ to determine how many workers, of all ages, would be covered if the minimum wage was £8.89 – equivalent to a 66 per cent bite of workers age 25+.
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings 2018*

These patterns are equally apparent when viewed through the lens of firm type, firm size, industry and occupation, as shown in Figure 21. For instance, under a 66 per cent bite, public sector bodies would be substantially more affected than they have been so far (with at last one-in-ten of their employees at or near the minimum), even if they would still have a smaller share of employees on the minimum than either third or private-sector firms.

This is also the case for firms operating in the construction, real estate and administrative and support sectors: the share of workers paid the minimum will have more than doubled, to at least one-in-ten.

For other industries and occupations, minimum wage jobs would become substantially more predominant: they would comprise, for instance, nearly half (45 per cent) of all workers in elementary occupations, 40 per cent of workers in sales occupations, 42 per cent of workers in hotels and restaurants, and nearly one-in-three workers in wholesale and retail.

These estimates help to underscore just how much coverage could increase were the NLW to be scaled up to two-thirds of median hourly pay. Overall the share of workers at, or near, the wage floor would more than double, with many new types of roles and industries being brought into the fold. These are huge changes for our labour market. Of course, these estimates do not factor in spill-over effects, and there is evidence that in recent years NLW increases have pushed up wages more than expected, while coverage rates have grown less than expected.

In other words, raising the wage floor has yielded pay rises not just to the minimum level but, for many, above it. That is one reason why the pace of change to the minimum wage – not just the minimum wage level – matters: minimum wage increases do not just raise wages for those at the bottom, they cause firms to rethink job design and compensation structures, and they also bring new types of firms and industries into the fold. Allowing firms time to anticipate and adjust to a changing minimum could help with workforce planning, so as to absorb rising labour costs and ensure that progression opportunities continue.

Enforcement is, of course, a critical component here: as the NLW rises and brings both a greater number, and different types, of workers into its fold, the incentives for underpayment will rise at the same time as enforcement resources are spread more thinly. For that reason, it is important that the labour market enforcement budget – which allows agencies to investigate and take action against underpayment – rises commensurate with growth in the minimum wage. We turnnext to other countries' minimum wage levels, and the speed at which they've raised them.

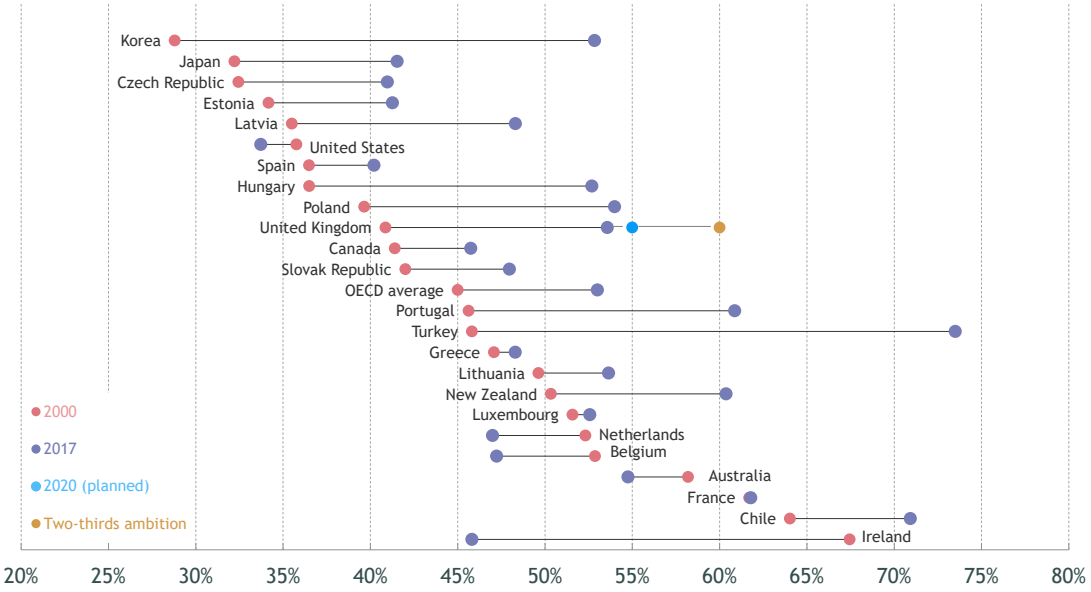
The UK stands out for having an ambitious minimum wage

During its early years, the UK minimum wage appeared unremarkable by international standards. According to OECD figures, which measure minimum wage bites as a proportion of full-time earnings, the UK minimum's bite was 41 per cent in 2000. This was below the OECD average at the time (45 per cent) and the 15th largest out of 24 OECD countries with available data. However, as Figure 22 shows, the UK's relative position has

since changed drastically: by 2017, its full-time bite was 54 per cent – slightly higher than the OECD average (53 per cent), and the 9th largest of these 24 OECD countries.

Figure 22: The UK's minimum wage has a higher bite than the OECD average

Minimum wage as a proportion of median full-time hourly pay by country



Notes: Figures for 2000 and 2017 are derived from the OECD; UK figures for 2020 and the two-thirds ambition, apply on the Government's proposed 'bite' relative to overall hourly earnings to median hourly full-time pay for workers age 25+ in 2018. The 2018 median full-time hourly pay figure is rounded to the nearest 5 pence.
Source: RF analysis of OECD Statistics

Of course, if the Government's ambitions for the NLW are enacted, its bite is expected to reach 60 per cent of overall hourly pay in 2020 (equivalent to 55 per cent of 2018 full-time hourly pay), and could reach 66 per cent of overall hourly pay (equivalent to 60 per cent of 2018 full-time hourly pay) at an unspecified point.

A 60 per cent overall bite (55 per cent of the full-time median) would – today – place the UK 7th of 24 countries and nearly equal with Australia. A 66 per cent bite (60 per cent of the full-time median), would rank the UK equal fifth with New Zealand. France would be the only European country with a higher bite.

International comparisons of the proportion of the labour force covered by wage floors are shaped by both their design and wider labour market factors. For instance, geographical remit: while the UK's NMW/NLW applies to the entirety of the UK, OECD minimum wage figures for countries like the United States and Canada represent federal minimums, and are overridden by the majority of states/provinces and localities that set their own.[21]

[21] 29 out of 50 US states currently have a minimum wage that is higher than the federal minimum ($7.25). Five states (Alabama, Louisiana, Mississippi, South Carolina and Tennessee) do not have a minimum wage while one (New Hampshire) has formally adopted the federal minimum as their own minimum wage. See: NCSL, *2019 Minimum wage by state*, 1 January 2019.

A minimum wage's impact also depends on the share of workers whose pay is decided through collective bargaining: in places where such collective labour market institutions remain important the minimum wage can sometimes be restricted to the proportion of firms and workers outside the collective bargaining system, even if these agreements can serve to drive up standards for the labour market as a whole.

A country's pay distribution also plays a part: the minimum wage will naturally affect a larger share of workers in countries that have a greater concentration of workers in low pay (below two-thirds of the median). Self-employment matters, too: where self-employment is common, minimum wage changes matter less. Finally, the formality of work also matters: setting an ambitious minimum wage will matter little to workers outside of the formal labour market.

The UK's current NLW begins to stand out from other OECD countries when considered against some of these factors. For instance, of the 11 other countries that have both a minimum wage worth more than 50 per cent of median full-time pay and OECD-published figures on low pay, only four (Israel, Korea, Lithuania and Poland) have a higher share of adults on low pay (between 21 and 23 per cent) than the UK. Two (Slovenia and Hungary) have a similar share as the UK (19 per cent) and five (Chile, France, Luxembourg, New Zealand and Portugal) have a lower share (between 9 and 12 per cent). Because of its more unequal pay distribution, a given minimum wage rise would affect a larger share of employees in the UK than it would, for instance, in New Zealand.[22]

i Box 7: Minimum wage setting across the OECD

Most OECD countries have a minimum wage, although the processes and formulas used in setting the minimum wage rate can vary quite widely.

For instance, age: in the UK, the full NLW only applies to those age 25 and older; younger workers, on the NMW, receive a lower rate. In Australia, the federal minimum wage applies to all workers 21 and above; in France, workers over age 18 receive the full minimum, with younger workers receiving a smaller portion of that minimum contingent upon their age, length of employment and whether or not they are on an apprenticeship.[23]

The frequency of adjustment also matters. In the US, there is no provision for uprating the federal minimum wage over time – it has been set at the same nominal level (US $7.25) since the Fair Minimum Wage Act was signed into law during 2007. The US's fixed nominal wage stands in clear contrast to minimum wages in most other countries – including France, Spain, and the UK – where minimum wages are adjusted each year. In the Netherlands, minimum wages are adjusted twice a year.

Finally, there are the metrics used to adjust the minimum wage level. The UK's LPC takes into account a

[22] According to the OECD figures for 2017, 19 per cent of workers in the UK were classed as being in low pay, relative to 11 per cent in New Zealand, where the OECD defines low pay as the share of full-time workers earnings less than two-thirds gross full-time median earnings.
[23] OECD, '*Minimum wage comparisons*', 20 August 2018

host of qualitative and quantitative information – from inflation, wages, productivity and employment to stakeholder feedback – and rounds that information into the next year's rate. In many other countries, however, minimum wages are uprated according to a specific formula such as prices or earnings. For instance, in Belgium the minimum wage is uprated according to inflation, in the Netherlands its uprated according to a weighted average of collectively agreed wages.[24]

France's minimum wage is set by a combination of the two: inflation and growth in average workers' salaries over the previous years. The government also has the discretion to raise the minimum above what the price and wage-based formula would indicate – called a 'coup de pouce' – although they have rarely done so over recent years.[25]

Were the UK to shift towards an NLW equivalent to 66 per cent of 25 and over pay (60 per cent of full-time 25 and over pay) it would have the fifth largest bite, equal with New Zealand and behind Chile, France, Turkey and Portugal. A far higher share of French workers are covered by collective agreements than in the UK, and these workers often receive wages that are higher, while New Zealand and Portugal have similar collective agreement coverage rates as the UK. Although Chile and Turkey have lower collective agreement coverage rates than the UK (21 and 7 per cent, respectively), they also have far higher rates of informal employment – meaning that a change to their minimum wage may not affect as large a share of their labour force as a change to the UK minimum would achieve for its own.[26]

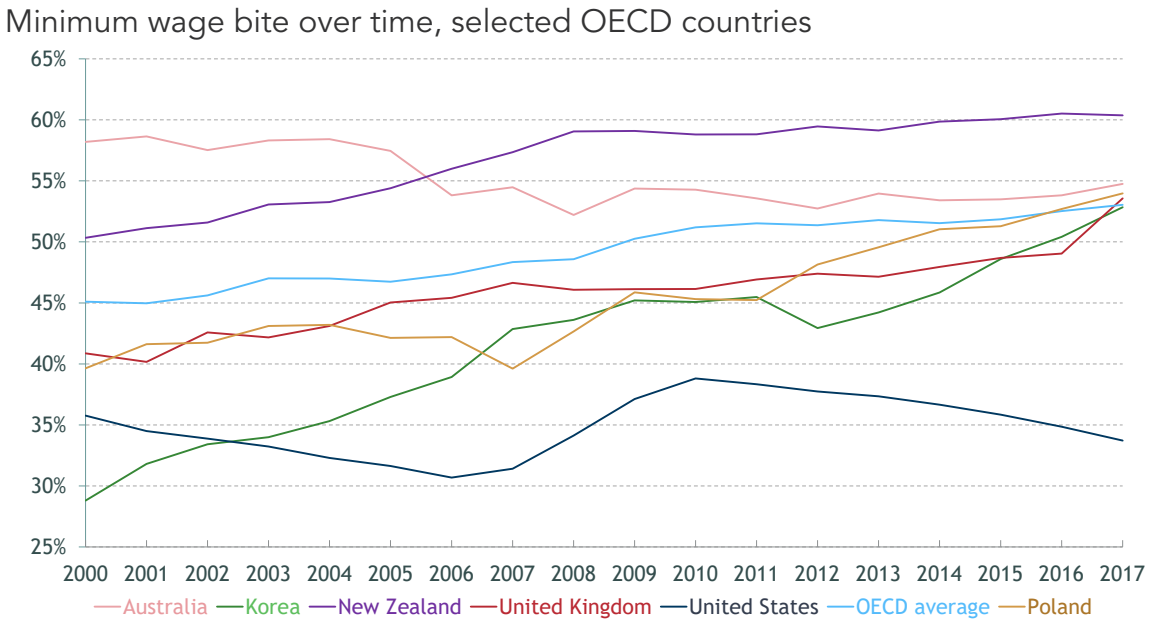
These wider considerations reinforce the scale of the proposed labour market change, with comparisons to other countries focusing purely on the bite understating the relative importance of our wage floor's role.

The UK's minimum wage system is most remarkable because of the pace at which it has grown, and the pace at which it is expected to grow over the short-to-medium term. A quick glance at Figure 6 helps to illustrate just how far the UK has come: since 2000, its bite has grown more than 1.5 times the OECD average.

This is not to imply that the UK's minimum grew at a steady or consistent pace. On the contrary, much of the UK's progress has occurred from 2016, when the NLW was implemented. Figure 23 shows, for instance, that over most of the 2000-17 period, the UK's minimum grew at a similar rate as New Zealand (albeit from a lower starting point). From 2016, when the NLW was introduced, the UK's minimum wage bite grew at a pace rarely achieved by any other country.

[24] ILO, '*Setting and adjusting minimum wage levels*', 2019
[25] OECD, '*Minimum wage comparisons*', 20 August 2018
[26] Despite having high minimum wage bites, informal employment in Turkey is high relative to other OECD countries, with one-third of all employment in Turkey estimated to be in the informal sector. See: A Acar et, al, '*Do firms exit the formal economy after a minimum wage hike? Quasi-experimental evidence from Turkey*', World Bank Group, Policy Research Group Working Paper 8749, February 2019

Figure 23: Relative to other countries, the value of the UK's minimum has risen sharply over time



Notes: Figures are based on OECD statistics, which calculates the bite as the minimum wage relative to all-age median full-time earnings
Source: RF analysis of OECD Statistics; ONS, *Annual Survey of Hours and Earnings 2018*

Poland's minimum wage bite has grown steadily since 2012, moving from a 48 to 54 per cent bite in six years; the UK's pace has been slightly punchier, moving from a 48 to 54 per cent bite in just four. Only the US and Korea experienced recent periods characterised by such as fast a pace of minimum wage growth as the UK has seen since 2015, and both currently have a lower bite than the UK.

Shortly after regaining control of Congress in 2006, the US Democrats significantly increased the federal minimum wage, which explains the fast paced rise displayed by the US. Important as that rise was, it did not affect a large share of US workers because more than half of US states – and many cities – have minimum wages that are above the federal level.

The Korean minimum wage has, since 2012, grown faster than that of any other country, even though its 2017 bite (53 per cent) was just below the UK's and at the OECD average. The transition towards a higher minimum in Korea has not, however, been without difficulty. Some commentators have blamed near-record high unemployment on minimum wage hikes, a cap on hours and broader macroeconomic challenges.[27]

These concerns and disagreements over them help to underscore the importance of designing a minimum wage system that is premised upon ambition but responsive to evidence of economic impacts. We turn next to how that is best done.

[27] See: S Jung-a, '*South Korea's jobless rate soars to 9-year high*', Financial Times, 13 February 2019; Reuters, '*South Korea's jobless rate jumps to 9-year peak as minimum wage hike roils labor market*', 12 February 2019; S Jung-a & B Harris, 'Slowing South Korean economy threatens to spark crisis for SMEs', Financial Times, 5 November 2018

How are we charting a course for the future?

Since 2016, the NLW has averaged an annual rate of growth that was slightly less than twice as fast as nominal earnings. Leaving aside minimum wage target levels, or indeed the underpinning rationale for such levels (ending low pay or tying minimum wages to the cost of living), there is a question of speed: how fast should we go in getting there? The contention of this paper is that this question of pace is in many ways the more important one for policy makers uncertain about where the optimal level of the wage floor stands. So this section we consider the question of the appropriate pace of increases in the wage floor.

In particular, we set out a framework for thinking about the pace at which we should increase the minimum wage. Our framework proceeds from five key arguments about the impact of the minimum wage:

- There is an optimal point, relative to earnings and productivity, at which the minimum wage should sit. This is the point at which the benefits of a higher wage floor for lower earners is outweighed by employment falls[28] or other negative side-effects;

- It is reasonable to conclude that we have not yet reached this optimal point, but for exactly that reason we do not know where that optimal minimum wage is and are unlikely to become aware until some negative effects have been felt;

- The challenge is to increase the wage floor's bite in such a way that we can swiftly return to the optimal level if evidence emerges to show we have exceeded it;

- For reasons both political and economic, minimum wages are to a significant extent nominally rigid downwards, i.e. it is difficult to reduce them in cash terms. The pace of nominal earnings growth is therefore a central driver of the flexibility of the wage floor's bite, determining the pace at which we can return to an optimal bite if we find we have exceeded it;

- The optimal pace of increases would take into account the fact that shocks, including weak nominal earnings growth, can happen.

We take these together to provide a framework for policy makers thinking through what pace of minimum wage increase best allows us to combine ambition and caution; and more specifically what pace will allows us to row back a bite increase once it becomes clear that we've exceeded the minimum wage's optimal level. This is important: we will not know what the optimal level is until we pass it, so our key concern is reaction time. Or, as Figure 24 illustrates, once we realise we've exceeded our optimal point, how long will it take to traverse back to it?

[28] A substantial reduction in employment or hours worked, particularly concentrated among workers on the wage floor. See: Box 4 in Section 3.

i Box 8: What is the optimal minimum wage level?

This report has referred to an 'optimal' level for the minimum wage, and frames much of that discussion in terms of employment, ie the highest level that the minimum wage can reach without generating a drop off in employment or hours worked that outweighs the benefits of a higher minimum wage.

In the past, the optimality for a minimum wage was defined almost exclusively in terms of its effect on employment. Up to the National Minimum Wage's introduction in 1999, much of the academic literature in the area centred on employment effects: whether, as long had been assumed, minimum wages lead to job losses, and if so, at what scale.[1] In fact, the Low Pay Commission's terms of reference instruct it to "recommend levels for the minimum wage rates that help as many low-paid workers as possible without any significant adverse impact on employment or the economy."

As the minimum wage's real terms value ramped up, so did the tolerance for (small) employment effects. For instance in 2015 the OBR estimated that the (higher) National Living Wage could result in result in a 0.2 per cent increase in unemployment (equivalent to 60,000 workers) by 2020.[2] There is some evidence that as the minimum rose, there's been a small reduction in employment among some groups, such as part-time women.[3]

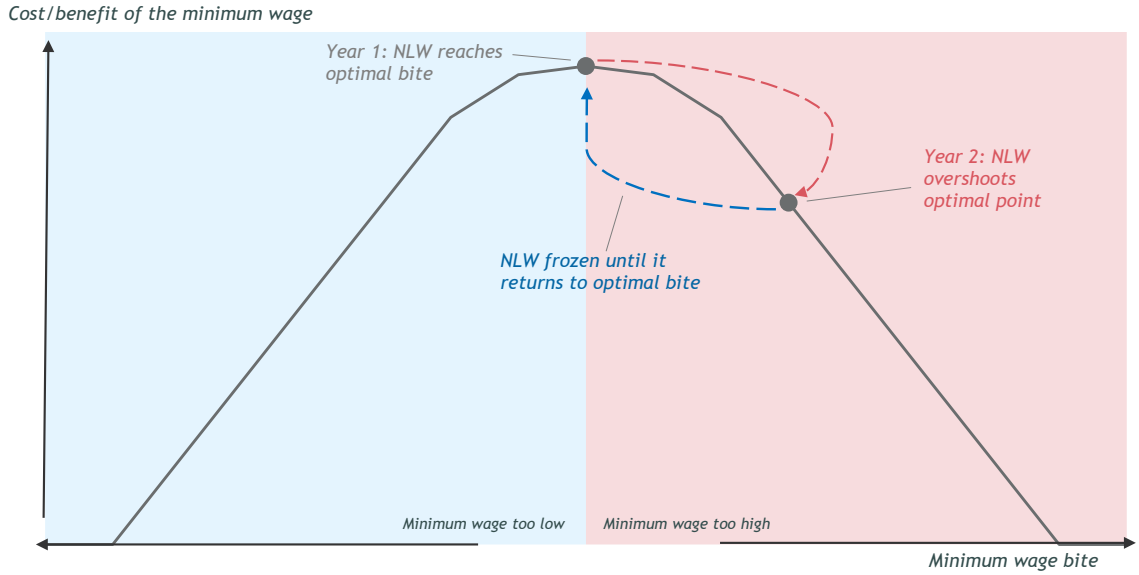
Going forward, policymakers may want to focus on a wider range of metrics to help gauge the optimal level of the minimum wage: in addition to understanding the NLW's effects on overall employment, they could delve deeper into whether minimum wage increases have led to substantial employment change in particular regions, sectors, or subgroups of workers. They may also want to add indicators on job progression and productivity into their list of measures.

Committing to a clear set of metrics, which provide a rounded view on the impact of the minimum wage, would help policy makers navigate the uncertain and often choppy economic context in which NLW operates. It would also help them to identify, and ultimately balance, the trade-offs that a more ambitious NLW would likely bring.

[1] See: D Card & A Krueger, 'Minimum wages and employment: A case study of the fast food industry in New Jersey and Pennsylvania', American Economic Review, 84(4), September 1994; D Neumark and W Wascher, 'Employment effects of minimum and subminimum wages: panel data on state minimum wage laws', ILR Review, 46(1), October 1992
[2] OBR, 'Economic and Fiscal Outlook', July 2015
[3] A Aitken et al, 'The Impact of the Introduction of the National Living Wage on Employment, Hours and Wages', Low Pay Commission, November 2018

Figure 24: In choosing the appropriate pace at which to raise the wage floor it is important to allow flexibility to reverse course

Costs and benefits of increasing the minimum wage around its optimal level



Notes: Figures are based on OECD statistics, which calculates the bite as the minimum wage relative to all-age median full-time earnings
Source: RF analysis of OECD Statistics; ONS, *Annual Survey of Hours and Earnings 2018*

To illustrate the strengths of this framework, we run three successively more challenging scenarios. In each of these scenarios we test whether the recent rate of minimum wage increases relative to median nominal pay growth (i.e. with the rate of increases in the minimum wage roughly double that of nominal pay growth) are consistent with being able to return swiftly to the optimal bite without reducing the cash value of the NLW, in the event that a) the optimal bite is exceeded; b) it is exceeded and we see slowdown in nominal wage growth; or c) that slowdown is very severe.

Scenario 1: Optimal bite exceeded during normal economic conditions

Our first scenario is based on the current OBR forecast for nominal earning growth and so can be seen as operating in a world of normal economic conditions. We assume that nominal earnings grow at 3.3 per cent a year and that the NLW therefore grows at 6.6 per cent.[29]

The NLW reaches exactly its optimal bite in year one but there are no warning signs to alert policymakers to this. So policy makers therefore raise the minimum wage again in year 2, exceeding the minimum's optimal point, after which employment effects become evident.

[29] Our earnings growth assumption is based on OBR average earnings growth projection. See: OBR, '*Economic and fiscal outlook*', March 2019

How do policymakers respond, if reducing the cash value of the NLW is not an option? They do so by freezing the NLW in cash terms during year three. Under this course of action, the NLW's bite could be brought back to its optimal level over the course of just one year.

Table 1: Scenario one: exceeding the bite during favourable conditions

Year	Nominal earnings growth	NLW uprating (1.5x prev 3 yrs' nom. earnings growth)	NLW Bite	Progress
1	3.3%	6.6%	64.7%	<-- Optimal bite
2	3.3%	6.6%	66.8%	<-- Optimal bite exceeded (employment effects)
3	3.3%	0.0%	64.7%	<-- NLW frozen; optimal bite returns
4	3.3%	3.3%	64.7%	<--Steady state
5	3.3%	3.3%	64.7%	<--Steady state

Scenario 2: Optimal bite exceeded during nominal earnings volatility

This scenario adds nominal earnings volatility to the picture. Here, we model a scenario in which nominal earnings growth had been ticking along at 3.3 per cent, and the NLW growing at 6.6 per cent, with the NLW again reaching its optimal point in year 1 and exceeding it in year 2.

This time, however, in year 3 - the year after the NLW exceeds its optimal point – there is a short, sharp hit to nominal earnings growth, which falls to 1 per cent.

Freezing the NLW in cash terms during year 3, will help to walk the bite back some way towards its optimal level but the sharp slowdown in nominal earnings growth makes it hard to cut into the bite of the NLW. For that reason, policymakers would need to consider freezing the NLW during year 4 as well. After two years of nominal freezes and up to three years of some net-negative effects of an above optimal NLW, the wage floor returns to its optimal bite.

Table 2: Scenario two: optimal bite exceeded during earnings volatility

Year	Nominal earnings growth	NLW uprating (1.5x prev 3 yrs' nom. earnings growth)	NLW bite	Progress
1	3.3%	6.6%	64.7%	<-- Optimal bite reached
2	3.3%	6.6%	66.8%	<-- Optimal bite exceeded (employment effects)
3	1.0%	0.0%	66.1%	<-- Downturn, NLW frozen, bite moving back
4	3.3%	0.0%	64.0%	<-- Downturn over; NLW still frozen; optimal bite returns
5	3.3%	3.3%	64.0%	<-- Steady state uprating

The possibility of scenarios of this kind taking place and leading to prolonged employment effects may mean policy makers choose to see recent rates of bite increases for the NLW as the upper limit of future rises, or more cautious policy makers may prefer to go slightly slower.

Scenario 3: Optimal bite exceeded during an economic downturn

Our third scenario adds a more prolonged slowdown to the mix. Like scenarios one and two, nominal earnings had been growing at 3.3 per cent annually, with the NLW rising at 6.6 per cent. Once again the optimal bite is reached in year one and exceeded in year two. However in this unlucky, and to some extent unlikely, scenario a two-year earnings slowdown (on a scale, but not duration, of that seen in the aftermath of the financial crisis) kicks in just after the bite was exceeded: nominal earnings grow by only 0.2 per cent in year 3 and 0.5 per cent in year 4.[30]

Policymakers face a difficult trade-off: it would take three years (years 3 to year 5) of freezing the NLW in cash terms before it could be walked back to its optimal bite, with higher unemployment or less hours during that prolonged period the cost. These costs would have to be weighed up against the desire not to impose cash cuts to the NLW.

This extreme, but not inconceivable, scenario reinforces the idea that prudent policy makers, acting to reduce the risks associated with more difficult economic times, should exercise caution in choosing the rate at which to increase the wage floor, particularly if the nature of those times are likely to see low nominal earnings growth.

[30] These examples are informed by nominal pay growth in 2010 (0.2 per cent) and 2011 (0.5 per cent), the first two years after the financial crisis hit.

Table 3: Scenario 3: Optimal bite exceeded during a downturn

Year	Nominal earnings growth	NLW uprating (1.5x prev 3 yrs' nom. earnings growth)	NLW Bite	Progress
1	3.3%	6.6%	64.7%	<-- Optimal bite reached
2	3.3%	6.6%	66.8%	<-- Optimal bite exceeded (employment effects)
3	0.2%	0.0%	66.6%	<-- Downturn, NLW frozen; bite moving back
4	0.5%	0.0%	66.3%	<-- Downturn, NLW frozen; bite moving back
5	3.3%	0.0%	64.2%	<-- Downturn over, NLW still frozen; optimal bite returns
6	3.3%	3.3%	64.2%	<-- Steady state uprating

Combining ambition and caution suggests that a reasonable course is to aim to abolish low pay by the middle of the next decade

Finally, we attempt to estimate when, in a world without nominal pay volatility and/or nominal pay slowdowns, the NLW would reach 66 per cent of over 25 median earnings, to abolish low pay. Assuming nominal earnings growth of 3.3 per cent annually, and setting NLW growth at twice that (6.6 per cent), the NLW would reach 66 per cent of earnings in 2023 (66.8 per cent). Going slightly slower, at the average relative pace of wage floor increases since the minimum wage was introduced (one and a half times nominal earnings growth rather than twice as fast) would see a 66 per cent bite reached in 2026. Being overly precise about such timelines is obviously to be avoided, but a fair conclusion would be that a policy maker combining ambition with caution might chart a course for low pay to be abolished eradicated roughly in the middle of the next decade. Whether that target would be met in practice should of course be determined by where it turns out the optimal level of the wage floor is found to lie.

Policymakers could of course go faster, and there may be a temptation to do so. But the scenarios above, and the reality that we do not know where the optimal level of the wage floor is, show that to do so carries risks. If the past 11 years has taught us anything, it is that shocks do occur. Combining caution and ambition is a difficult, but desirable, balancing act.

i Box 9: A fixed timeline?

Understanding whether and when employment effects occur is central to minimum-wage setting process. Each year the Low Pay Commission engages in a lengthy and robust review of qualitative and quantitative evidence around the effects of the minimum wage. This review informs the LPC's October minimum wage announcement, where they

recommend the NMW/NLW rates for the following April. The review process includes but is not limited to: a range of UK labour market data analyses, commissioned academic research, a series of nationwide stakeholder engagement sessions and conferences with international actors. This work is hugely valuable, and should be seen as even more important by policy makers seeking to push the wage floor even higher than it currently stands into the 2020s. Strengthening this work should be an integral part of policy ambition in this area.

While some firms and government can provide the LPC with near-real time qualitative information, there will always be lags when it comes to accessing and analysing labour market data. For instance, the Annual Survey of Hours and Earnings (ASHE) is a key tool for generating descriptive statistics about the NMW/NLW, such as coverage rates and bites; it is also important for helping policymakers to estimate the link between recent minimum wage rises and changes in either employment or hours worked. When the LPC form their October announcement, they have access to ASHE data on hours and earnings data from the April of the same year (i.e. a lag of 6 months). But it takes longer to commission and undertake the more substantive econometric analyses that would be necessary to confirm links between minimum wages and changes in hours, employment and other variables. That analysis feeds into the rate setting decisions the following year – i.e. econometric analysis of the April 2017 uprating was not available to the LPC until their October 2018 rate setting. Some of this delay is inevitable: not only can it take time for employers to respond to changes in labour costs, it equally takes time to collect and analyse data that is rich enough to base such important policy decisions on. For instance, ASHE data is typically collected in April and published in October – typically too late for the LPC to use to inform its October announcement on the NMW/NLW rates that will come into force the following April. But making sure that decisions are based on data that is not only timely but also robust is important – and will become even more important as the minimum wage rises ever closer to its optimal level.

In that light if the UK is about to embark on another phase of swift wage floor rises, the LPC, government, the UK Statistics Authority and the Office for National Statistics should come together to redesign the process by which data is collected and analysed so that it can feed into minimum wage decisions in a more timely manner. There is also an opportunity to make greater use of new and innovative data sources such as HMRC's Real Time Information earnings dataset.

The LPC has long commissioned research that examines whether the (rising) minimum wage has resulted in a reduced employment, with most research papers drawing on data from at least two years prior. This commissioned research into employment effects has utilised a number of different statistical methods, in line with continual advances in the labour market economics literature. While the LPC should continue to commission academic research into employment effects, they could also consider developing a more systematic 'rapid response' monitoring system.

For instance, a standardised set of employment analyses that could be run as soon as the latest labour market data is released would provide LPC members with more timely data on employment effects. This includes whether there has been a fall in employment or hours, and whether those falls could be linked to minimum wage rises. While this analysis would need to be supplemented with the longer-term research that the LPC has traditionally commissioned, it would – in the interim – provide decision makers with clearer, more rapid insight than is currently available.

Steady on?

Our three projection scenarios highlight the challenges that policymakers face when balancing caution and ambition: risk aversion can extend the time it takes to reach the optimal wage floor; running downwind could put employment at risk for those on the wage floor. But the pace of rises is not the only decision facing policy makers. Once the NLW has reached the desired destination, they need to consider how to uprate the minimum wage in future, so as to keep a steady state. There are two big picture choices before them based on international experience and conceptual frameworks: uprate the NMW/NLW in line with prices or wages.

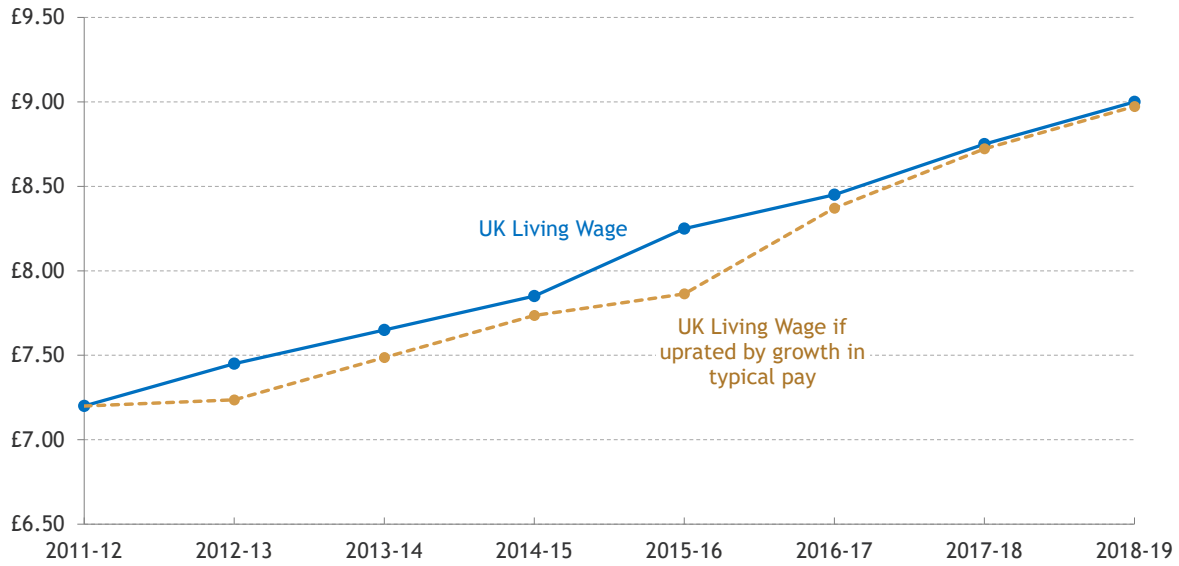
We ultimately favour wages. At a simplistic level, prices generally rise at a slower pace, failing to keep up with average earnings and over time seeing the real value of a minimum wage reduced. Much more importantly, however, prices do not reflect the factor that determines where the optimal bite sits. And while a number of factors will determine this point, earnings – and ultimately productivity - will capture many of them, albeit imperfectly. So a wage floor linked to typical earnings is more likely to over time remain at its optimal level.

It is also worth noting that just as nominal earnings shocks can occur, so can price shocks – for example on the back of sharply rising oil prices. Linking the minimum wage to prices would mean that in the event of an inflation spike the bite of the minimum wage could rise sharply while typical nominal earnings, and even earnings of those just outside the minimum pay threshold would be unlikely to do so.

On the surface, then, it appears that the Government and the Labour Party have opposing views on this, with the former embracing an earnings-link and the latter a prices-link by talking about a "real living wage" tied to the cost of living. Over the longer term, however, these approaches look more similar than many might expect, given that the method of calculation used to determine a cost-based living wage (such as the UK Living Wage, which the Resolution Foundation helps to calculate) typically build in societal norms of what goods and services people require to have an acceptable standard of living in a society at a given point in time. These social norms are very much affected by earnings growth. Figure 25 illustrates this by comparing the UK's actual Living Wage rate against what it would have been had it been uprated with earnings since its inception in 2011.

Figure 25: Earnings and cost-based indexing will, over the longer-term, bring about a similar result

UK Living Wage versus value of the Living Wage uprated median nominal earnings growth



Source: RF analysis of ONS, *Inflation and Price Indices*; ONS, *Annual Survey of Hours and Earnings (ASHE);* Living Wage Foundation, *The Calculation*

The voluntary Living Wage has a clear role as a benchmark that firms aspire to and that provides, for firms that can afford to pay it, a minimum guarantee to their workers. In the very long term this kind of rate is likely to rise at a similar pace to average earnings, despite being tied more closely to prices in the shorter term. But the big picture remains that a legal wage floor is best thought of as linked directly to average earnings, which is the relationship that best helps us understand whether an optimal bite has been met or indeed exceeded.

Conclusion

The UK has come far in its progress to reach the optimal minimum wage. Just over two decades ago, there was no real lower limit on pay; today the NLW policy is at the world's cutting edge. Pushing towards that edge, however, brings with it challenges. The evidence supports the political consensus for further ambition for the UK's wage floor, but that is not to say policymakers should throw caution to the wind.

Our focus is on the journey to that optimal point: because it is an unknown destination, we may only know that we've found it once we've already passed it. For that reason, speed matters: how long will it take to walk back to our ideal point if we find we have exceeded it? Future increases would be best delivered through an approach that combines ambition and caution. There is no absolutely right answer for the pace at which the minimum wage should rise – given the uncertainties involved and the inevitability of shocks that must be navigated. But the analysis in this section implies that policy makers looking to go as

far as abolishing low pay might consider a timetable of around 5 years to do so, and in so doing should remain alert to the evidence provided by the Low Pay Commission and others about the effects on the labour market of such increases. In the end whether the ambition to abolish low pay via a higher wage floor can be achieved without problems emerging is not something we can know in advance. That does not mean we should not try, but these are not easy decisions for policymaker who ultimately need to be equipped with three things: a sense of caution, a driving ambition and the information and tools that allow nimble reactions to obstacles ahead.

Section 5

Conclusions

In 2015, Britain's low pay problem seemed here to stay. The proportion of employees in low pay had been above 1 in 5 for almost three decades. The last time there was a substantial fall in low pay was four decades ago, in the 1970s. Four years on, both the number and proportion of employees in low pay is falling, and we are seriously discussing the end of low pay. It is staggering how much has changed.

This change has, to a significant extent, reflected the introduction of the National Living Wage (NLW) in 2016. The obvious and intended impact of the NLW was to increase the level of the minimum wage. The wage floor for those aged 25 and above increased 11 per cent in cash terms in its first year, and set the rate on a five-year growth path, targeting 60 per cent of median pay by 2020 – referred to as the 'bite' of the minimum wage. OBR projections suggest this would imply 30 per cent growth in the wage floor between 2015 and 2010, double the projected 15 per cent growth in average wages over the same period.

But the other effect has been to change how the minimum wage is set. Until 2016, the power to set the minimum wage was given over to a non-governmental body – the Low Pay Commission. The government could reject its recommendations, but in practice it never did. Setting the minimum wage was therefore a technical exercise, with experts at the Low Pay Commission making their recommendations based on research and evidence.

In 2016 the government took back much of the power that had rested with the Low Pay Commission. There is still a role for the Low Pay Commission in setting how quickly the 'bite' is to be ratcheted upwards, and setting the rates for the lower age groups and for apprentices as before. But, in practice, this is a much smaller role than under the previous system. For the main rate, the National Living Wage, which applies to over 25s, the Government has set both its target level and the pace at which this target should be reached. Setting the minimum wage is therefore mostly in the hands of the Government.

Politicians have responded to this new power with rival but equally ambitious plans for its future. As we have explored in this report, the Chancellor wants to increase the 'bite' to a level that would 'end low pay', while Labour want to set it based on the value of the higher 'Real Living Wage', which they think will be equivalent to roughly £10 in 2020. Either plan would represent a significant change in minimum wage policy, on top of the change that has taken place over the past half decade.

The politicisation of the minimum wage carries both risks and benefits. The benefit is that politicians have an incentive to push the rate higher, and doing so may move us closer to the optimal level of the minimum wage - the point where negative employment effects outweigh the benefits of higher wages. The fact that, since 2016, the National Living Wage pushed up the rate without (it seems) any employment effects, points strongly to the conclusion that we have been below that optimal level.

The risk is that the same incentives will see politicians push the rate too high. Even though adverse employment effects have not materialised so far, at some point, a minimum wage would cause employment effects, either through lower employment or through lower hours. There are also effects on businesses to consider, which would take the form of an impact on profitability, prices, and firm survival. All these effects should be taken seriously, and are why ambitious plans must be matched with caution. We set out in Section 4 a framework that navigates between moving quickly, and moving at a pace that allows us to manage any unwanted effects if, or when, they happen. In practice this is likely to be the key trade-off facing policy makers.

The ambition our main political parties are showing on the minimum wage is welcome. We can expect the rate to go higher, and in so doing make further inroads into low pay. The framework we have set out in this report provides a sensible approach to realising their ambitions.

Section 6

Low Pay in Depth

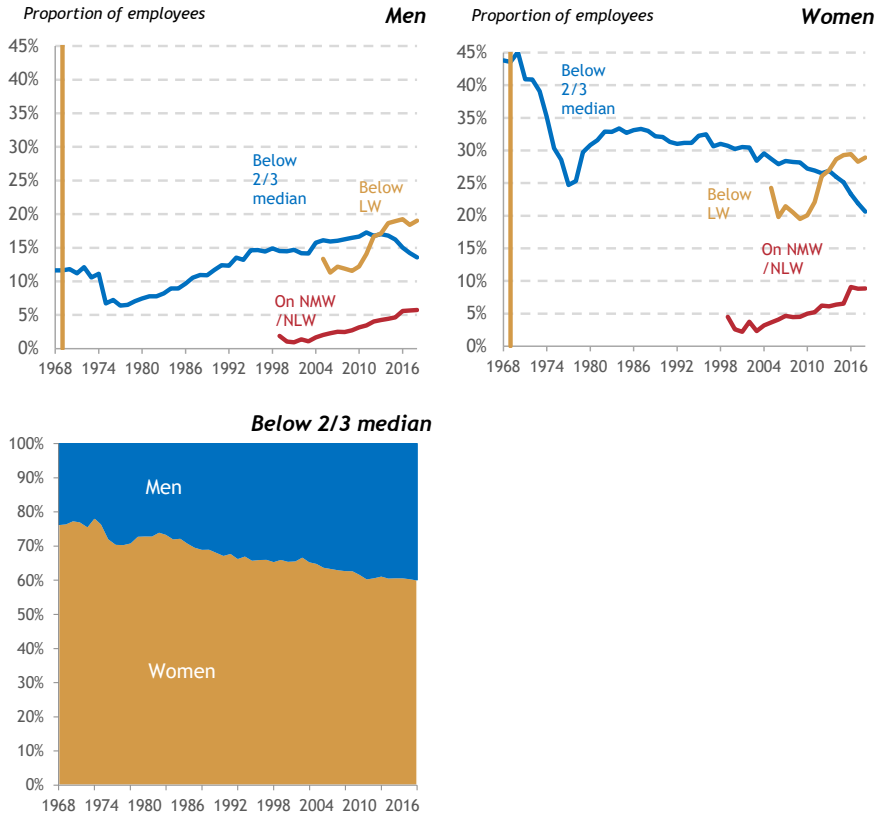
Table 4: Low Pay in April 2018

	Below 2/3 median hourly pay			Near or below NLW			Below Living Wage		
	Number (000s)	% in group below threshold	% of all below threshold	Number (000s)	% in group below threshold	% of all below threshold	Number (000s)	% in group below threshold	% of all below threshold
All employees	4,655	17%	100%	1,990	7%	100%	6,535	24%	100%
Sex									
Women	2,800	21%	60%	1,200	9%	60%	3,925	29%	60%
Men	1,855	14%	40%	785	6%	39%	2,605	19%	40%
Age group									
16-20	995	72%	21%	225	16%	11%	1,120	81%	17%
21-24	605	31%	13%	175	9%	9%	840	43%	13%
25-30	560	15%	12%	290	8%	15%	845	22%	13%
31-35	370	12%	8%	190	6%	10%	570	18%	9%
36-40	335	11%	7%	190	6%	10%	515	16%	8%
41-45	340	11%	7%	185	6%	9%	505	17%	8%
46-50	385	14%	8%	195	6%	10%	575	17%	9%
51-55	390	17%	8%	195	6%	10%	570	18%	9%
56-60	330	23%	7%	165	7%	8%	495	21%	8%
61-65	215	17%	5%	110	8%	6%	320	25%	5%
66+	130	10%	3%	70	13%	4%	185	32%	3%
Region									
East Midlands	420	22%	9%	185	10%	9%	550	28%	8%
Yorkshire & the Humber	475	21%	10%	210	9%	11%	605	27%	9%
West Midlands	480	20%	10%	210	9%	11%	620	26%	9%
North East	225	21%	5%	105	10%	5%	280	27%	4%
North West	600	20%	13%	265	9%	13%	770	26%	12%
Wales	240	20%	5%	110	9%	6%	325	27%	5%
South West	445	19%	10%	170	7%	9%	580	25%	9%
East	445	18%	10%	175	7%	9%	595	24%	9%
South East	575	15%	12%	215	6%	11%	790	20%	12%
Scotland	360	15%	8%	160	7%	8%	505	21%	8%
London	385	9%	8%	180	4%	9%	905	21%	14%
City region									
Nottingham	95	22%	2%	45	10%	2%	125	29%	2%
Sheffield	135	21%	3%	60	9%	3%	175	27%	3%
Tees Valley	60	22%	1%	30	11%	2%	75	28%	1%
Liverpool	130	21%	3%	55	9%	3%	160	27%	2%
Newcastle	165	21%	4%	75	10%	4%	205	26%	3%
Birmingham	220	19%	5%	105	9%	5%	285	25%	4%
Leeds	220	20%	5%	95	9%	5%	275	25%	4%
Cardiff	110	18%	2%	50	8%	3%	145	25%	2%
Manchester	215	19%	5%	95	8%	5%	280	25%	4%
Bristol	80	14%	2%	25	5%	1%	105	19%	2%
Glasgow	120	14%	3%	55	7%	3%	165	20%	3%
London	385	9%	8%	180	4%	9%	905	21%	14%

Occupation									
Elementary	1,555	49%	33%	685	22%	34%	1,970	62%	30%
Sales & customer service	995	42%	21%	400	17%	20%	1,355	58%	21%
Personal services	755	29%	16%	290	11%	15%	1,140	44%	17%
Process & machinery ops.	310	19%	7%	155	10%	8%	455	28%	7%
Skilled trades	310	16%	7%	155	8%	8%	430	22%	7%
Admin & secretarial	410	13%	9%	175	6%	9%	655	21%	10%
Managers & senior officials	100	4%	2%	45	2%	2%	165	6%	3%
Associate prof. & technical	160	4%	3%	55	1%	3%	260	7%	4%
Professional	60	1%	1%	30	0%	2%	115	2%	2%
Hours worked									
Part time	2,710	35%	58%	1,200	15%	60%	3,570	45%	55%
Full time	1,945	10%	42%	790	4%	40%	2,965	15%	45%
Hours worked and sex									
Part-time women	1,880	32%	40%	830	14%	42%	2,525	44%	39%
Part-time men	830	40%	18%	365	18%	18%	1,045	51%	16%
Full-time women	920	12%	20%	370	5%	19%	1,400	18%	21%
Full-time men	1,025	9%	22%	420	4%	21%	1,565	13%	24%
Contract type									
Temporary/casual	600	27%	13%	265	12%	13%	800	36%	12%
Permanent	4,055	16%	87%	1,720	7%	86%	5,735	23%	88%
Firm structure									
Sole proprietors	205	47%	4%	120	28%	6%	240	56%	4%
Partnerships	180	31%	4%	80	14%	4%	230	40%	4%
Private companies	3,625	21%	78%	1,560	9%	78%	4,945	28%	76%
Non-profit bodies and mutuals	280	12%	6%	120	5%	6%	430	18%	7%
Local authorities	175	7%	4%	55	2%	3%	350	13%	5%
Central government	190	6%	4%	45	1%	2%	335	10%	5%
Pub. corps & nationalised ind's	5	3%	0%	:	:	:	5	4%	0%
Broad sector									
Private sector	4,180	22%	90%	1,755	10%	88%	5,220	30%	80%
Third sector	280	12%	6%	120	5%	6%	430	18%	7%
Public sector	370	6%	8%	100	2%	5%	690	11%	11%
Firm size									
XS (0-9 employees)	680	30%	15%	405	18%	20%	850	37%	13%
S (10-49 employees)	860	22%	18%	405	11%	20%	1,120	29%	17%
M (50-249 employees)	630	17%	14%	275	8%	14%	875	24%	13%
L (250-4,999 employees)	1,025	16%	22%	435	7%	22%	1,435	22%	22%
XL (5,000+ employees)	1,090	22%	23%	365	7%	18%	1,570	32%	24%
Industry									
Hotels & restaurants	905	55%	19%	400	24%	20%	1,085	66%	17%
Wholesale & retail	1,245	31%	27%	510	13%	26%	1,715	42%	26%
Agriculture	45	30%	1%	20	13%	1%	55	38%	1%
Arts & recreation	175	29%	4%	70	11%	4%	235	38%	4%
Admin & support services	435	26%	9%	230	14%	12%	600	36%	9%
Other service activities	130	25%	3%	75	14%	4%	170	33%	3%
Health & social work	615	15%	13%	230	6%	12%	935	23%	14%
Manufacturing	295	12%	6%	120	5%	6%	420	17%	6%
Construction	105	10%	2%	55	5%	3%	140	14%	2%
Water supply & waste	15	9%	0%	10	5%	1%	25	13%	0%
Real estate	35	9%	1%	15	4%	1%	55	15%	1%
Education	330	9%	7%	110	0%	6%	575	0%	9%
Transport & storage	95	8%	2%	40	4%	2%	150	13%	2%
Prof. & technical	130	7%	3%	55	0%	3%	190	0%	3%
Info. & comms.	50	5%	1%	25	2%	1%	80	8%	1%
Public admin	30	2%	1%	15	1%	1%	60	5%	1%
Finance	20	2%	0%	5	1%	0%	40	4%	1%

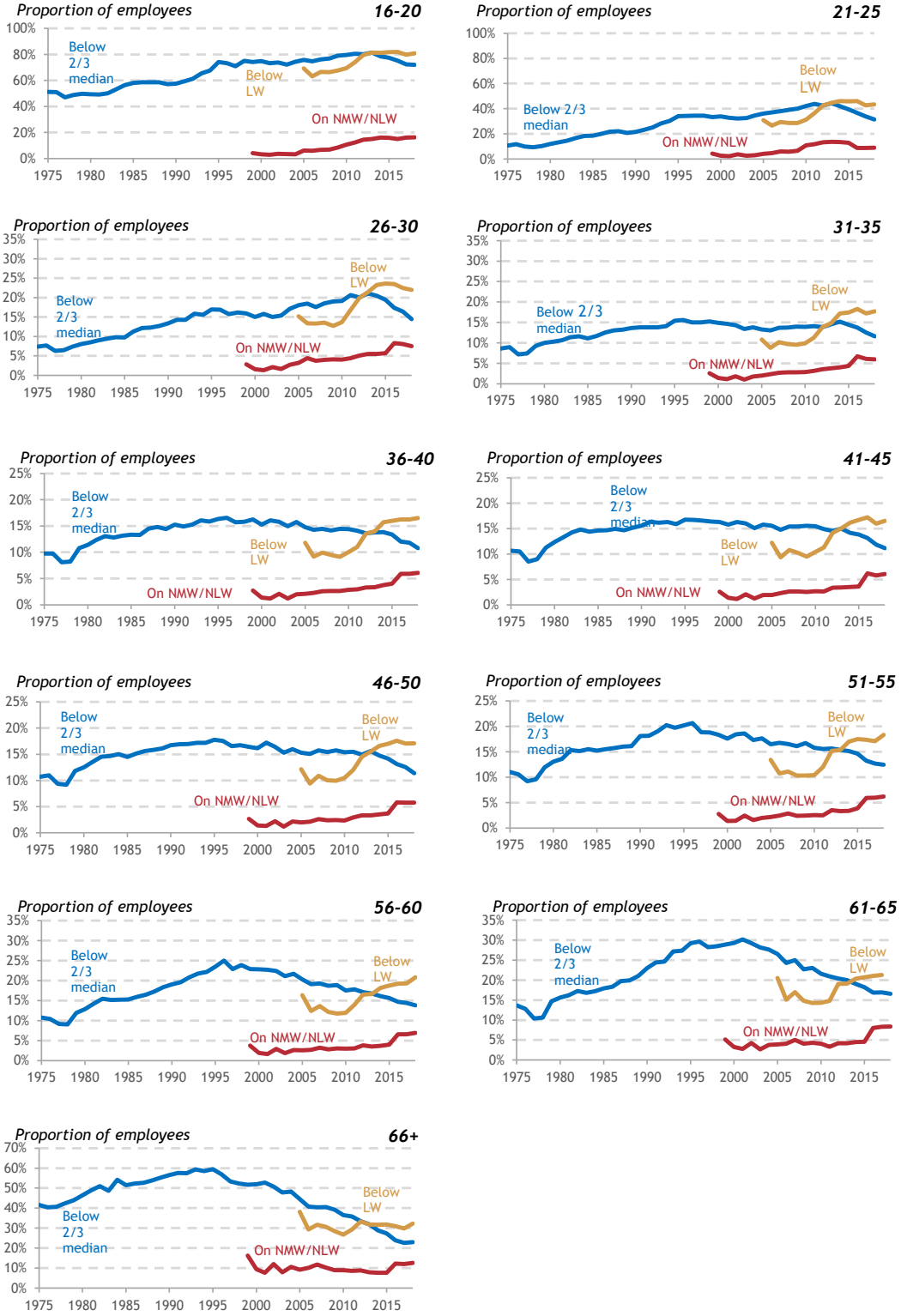
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

Figure 26: Proportion of employees below selected low pay thresholds & distribution of low by sex: GB, 1968-2018



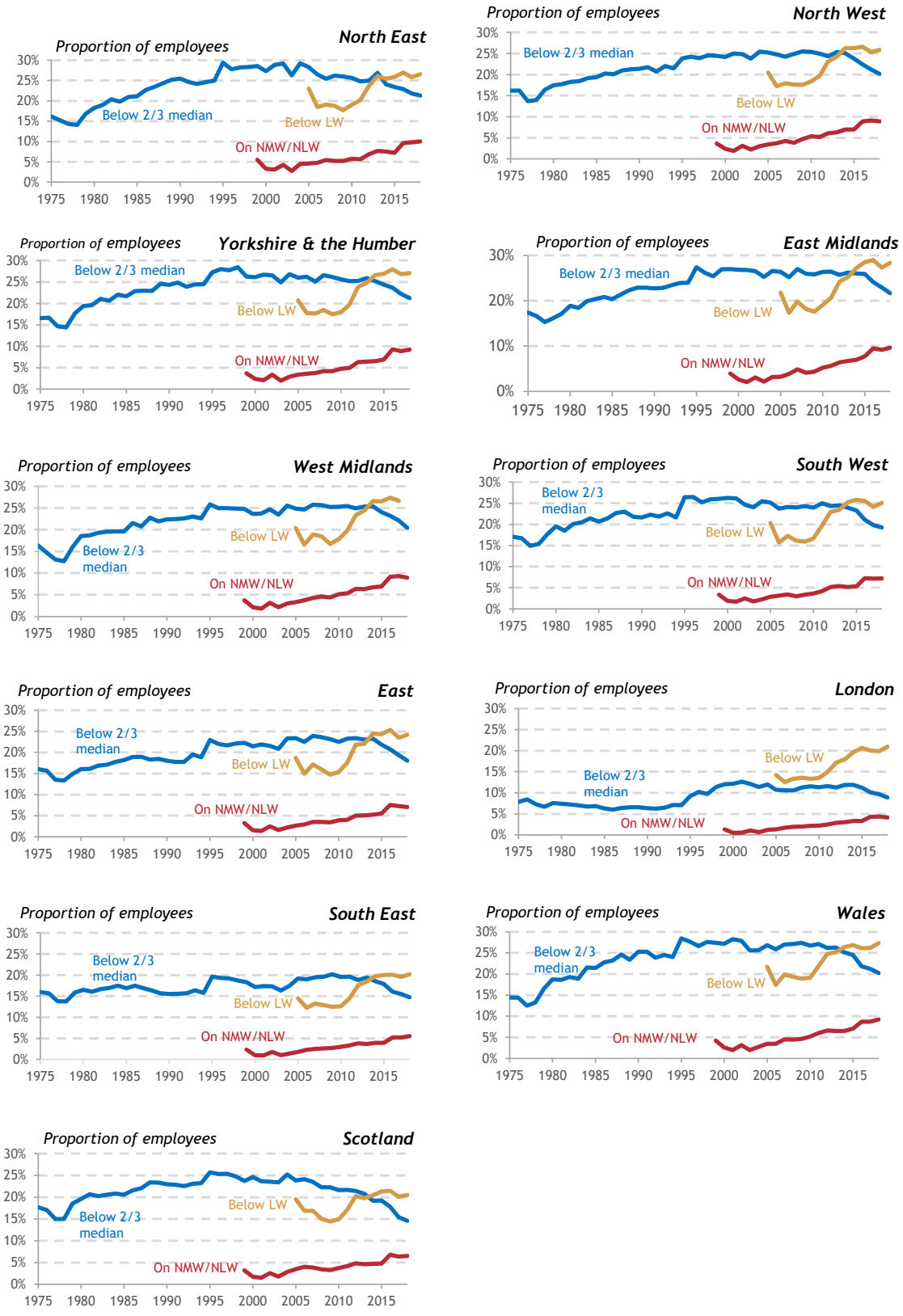
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

Figure 27: Proportion of employees below selected low pay thresholds by age: 1975-2018



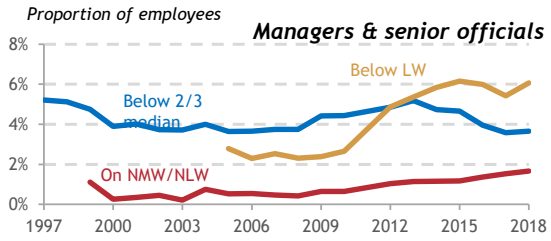
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

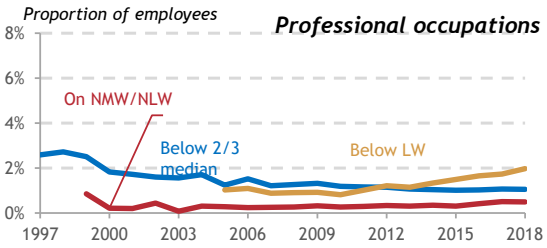
Figure 28: Proportion of employees below selected low pay thresholds by region: 1975-2018

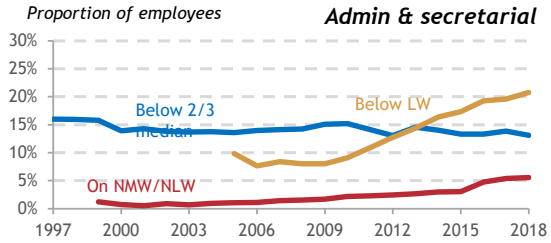


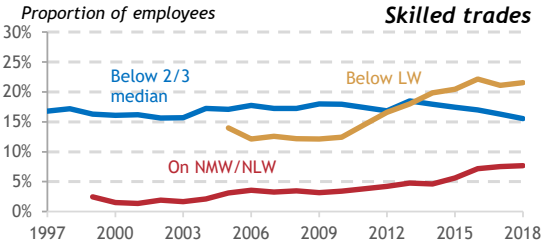
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

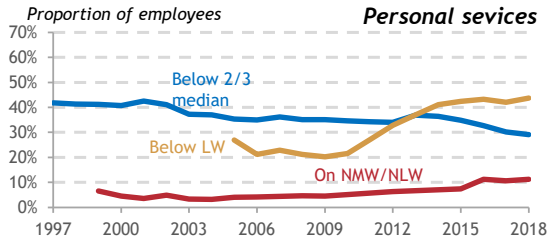
Figure 29: Proportion of employees below selected low pay thresholds by occupation: 1997-2018

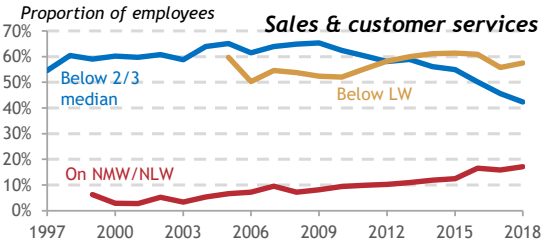


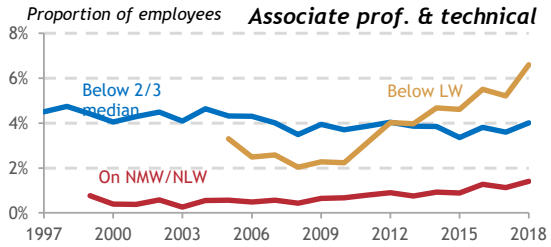


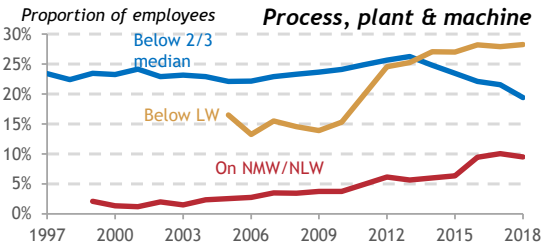












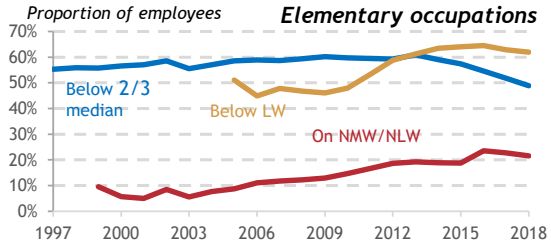
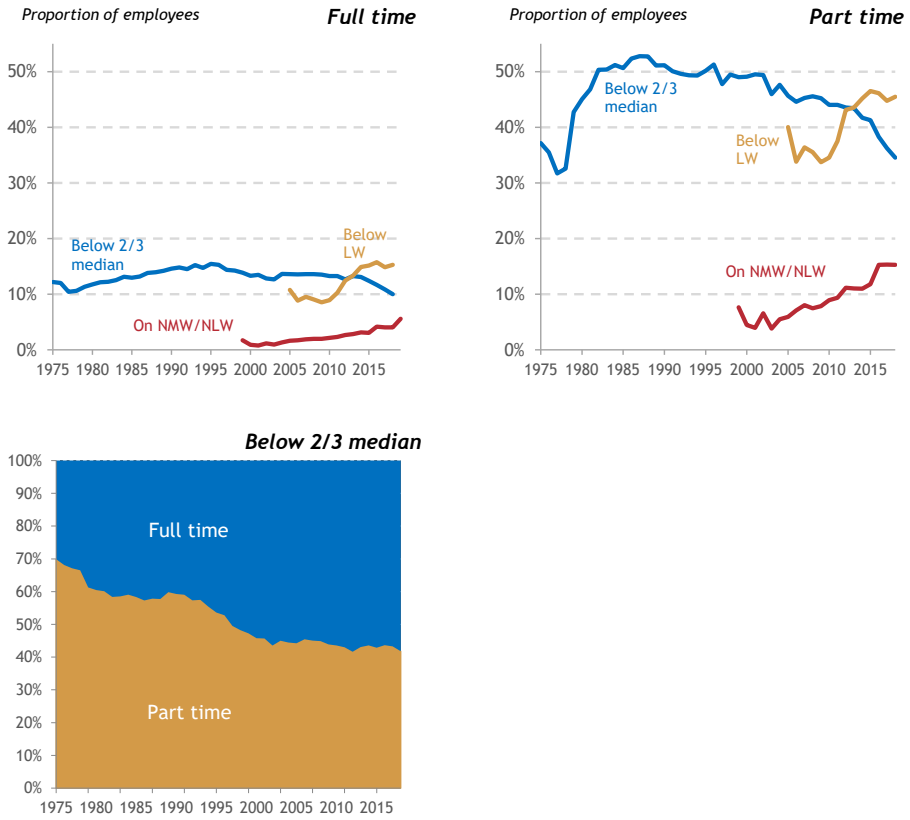
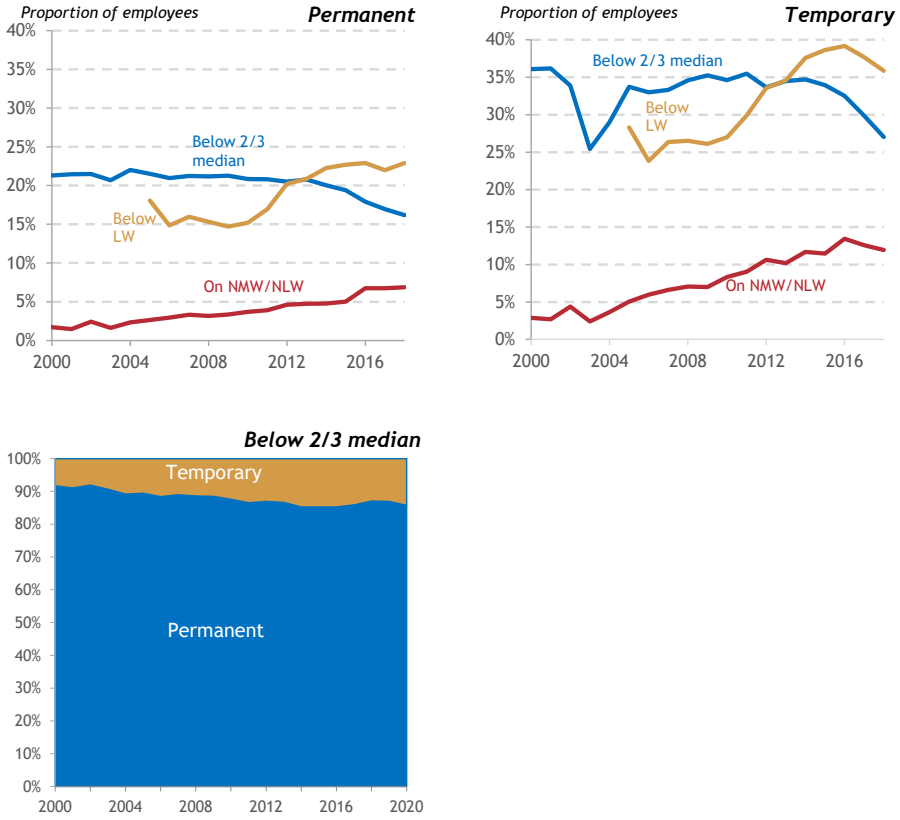


Figure 30: Proportion of employees below selected low pay thresholds & distribution of low pay by hours worked: 1975-2018



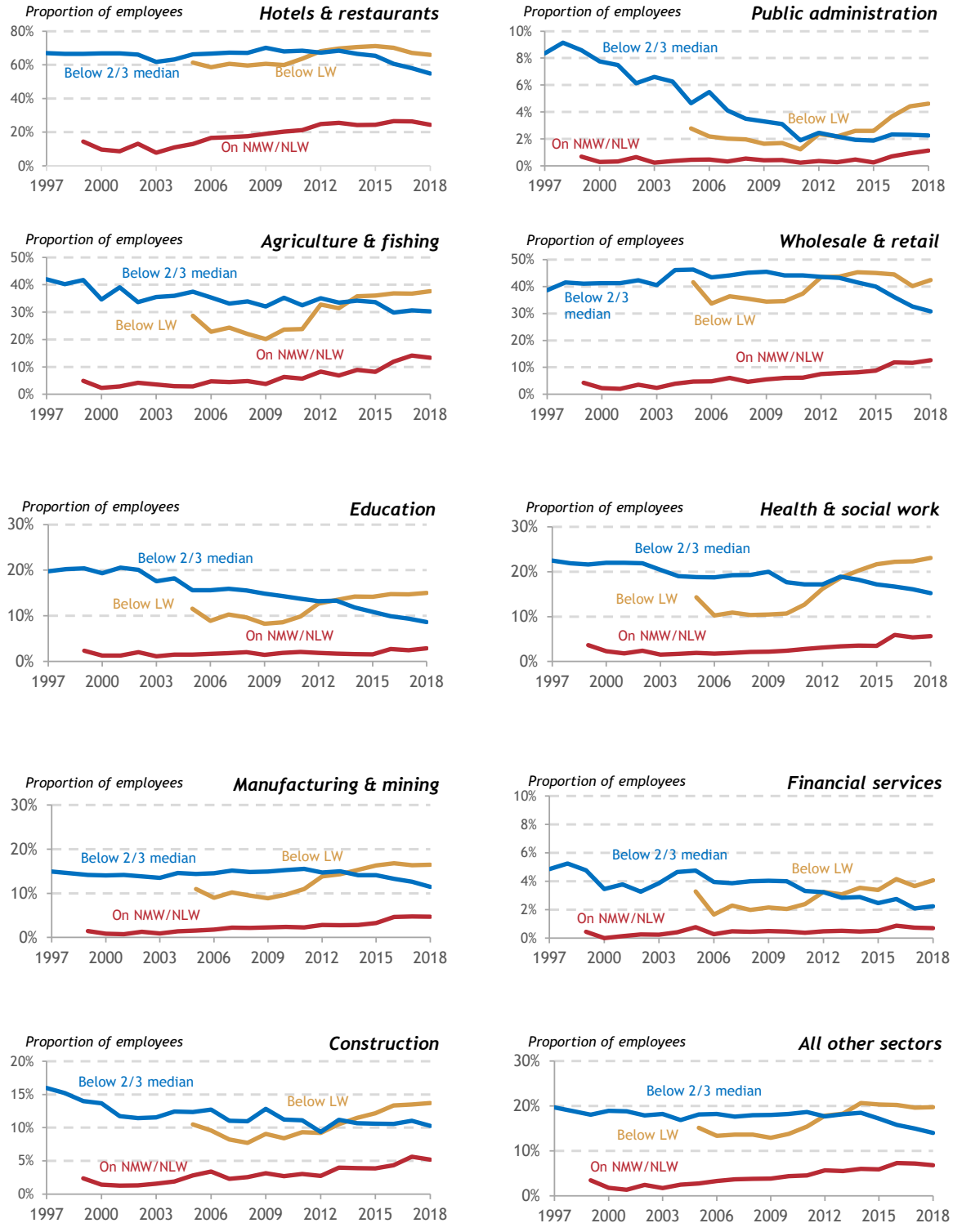
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

Figure 31: Proportion of employees below selected low pay thresholds & distribution of low pay by work status: 2000-2018



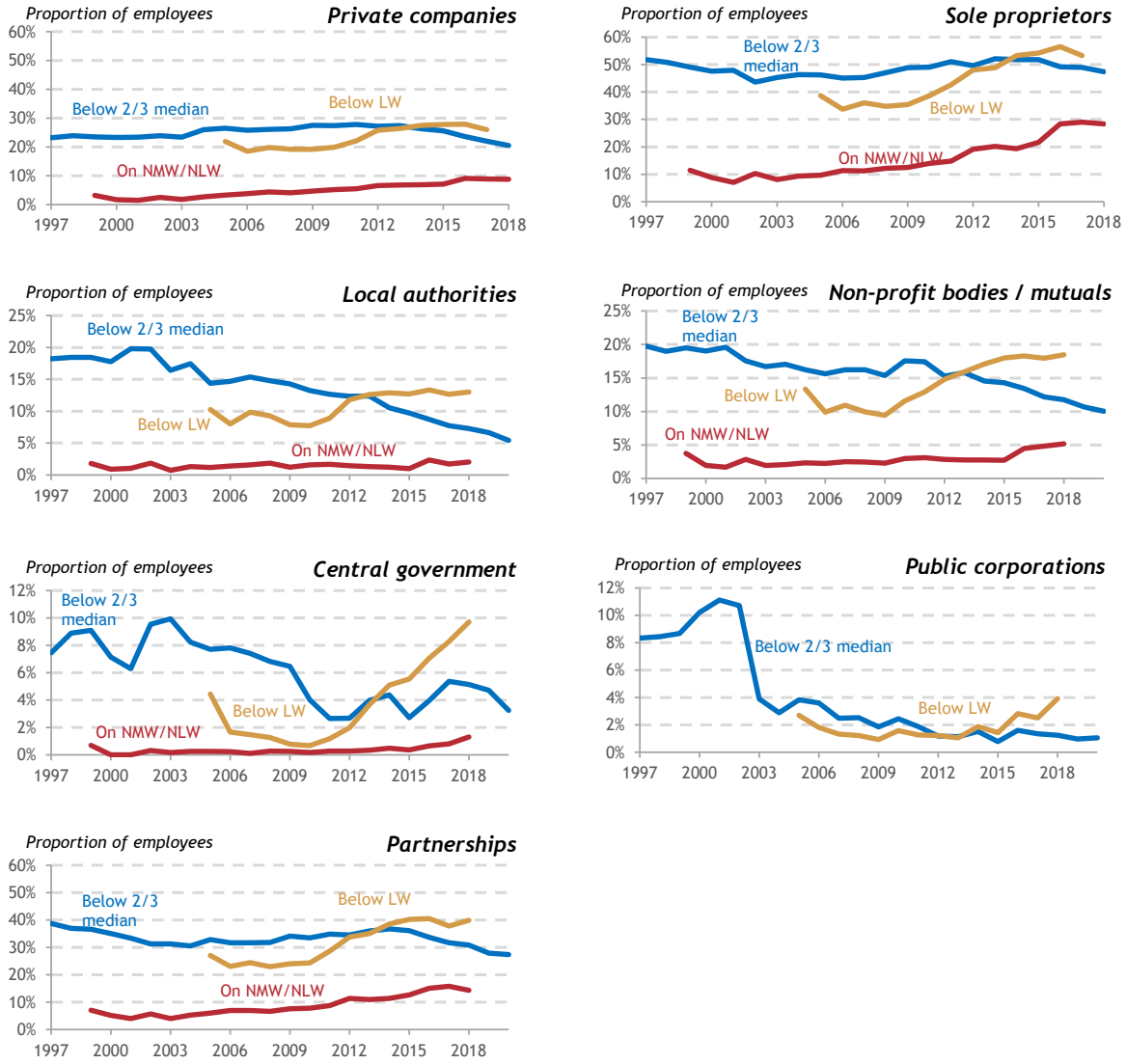
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

Figure 32: Proportion of employees below selected low pay thresholds by industrial sector: 1997-2018



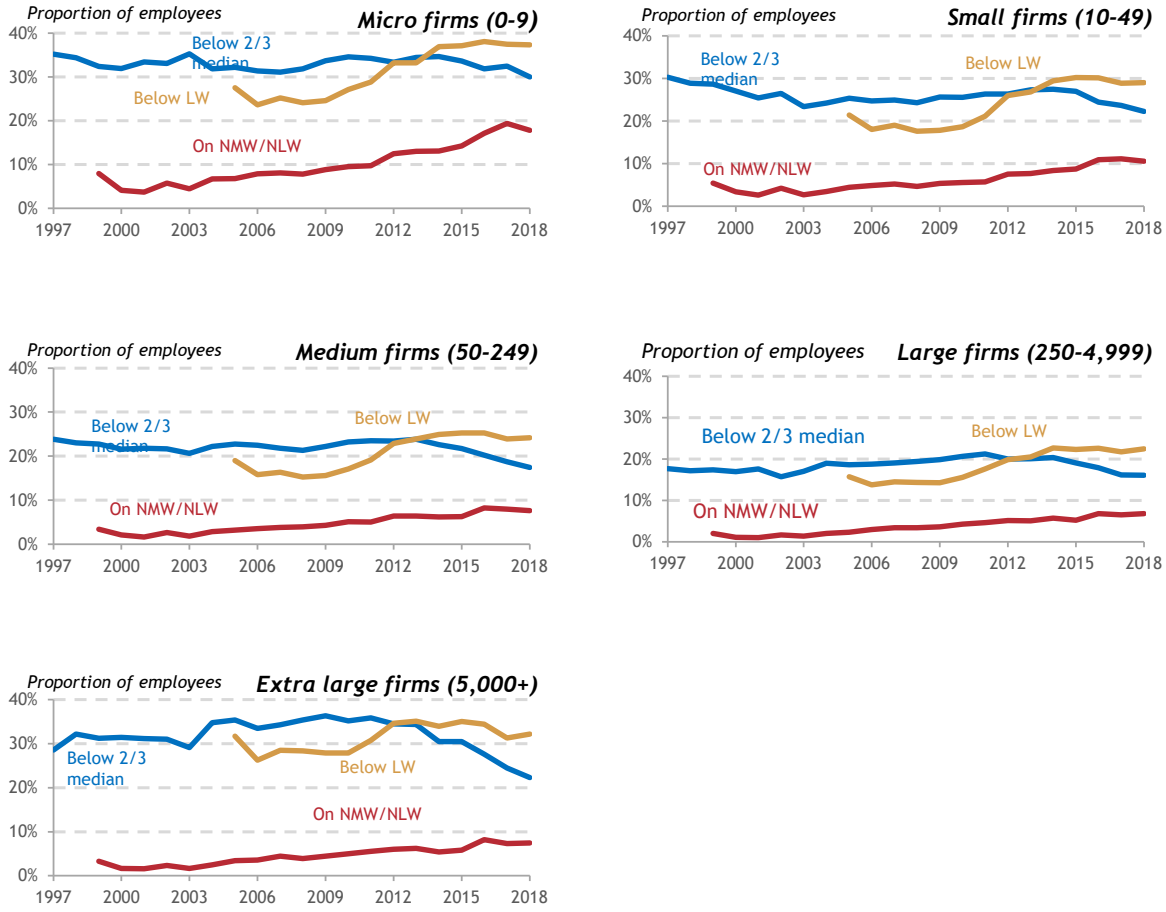
Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

Figure 33: Proportion of employees below selected low pay thresholds by firm structure: 1997-2018



Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

Figure 34: Proportion of employees below selected low pay thresholds by firm size: 1997-2018



Source: RF analysis of ONS, *Annual Survey of Hours and Earnings* (1997-2018)

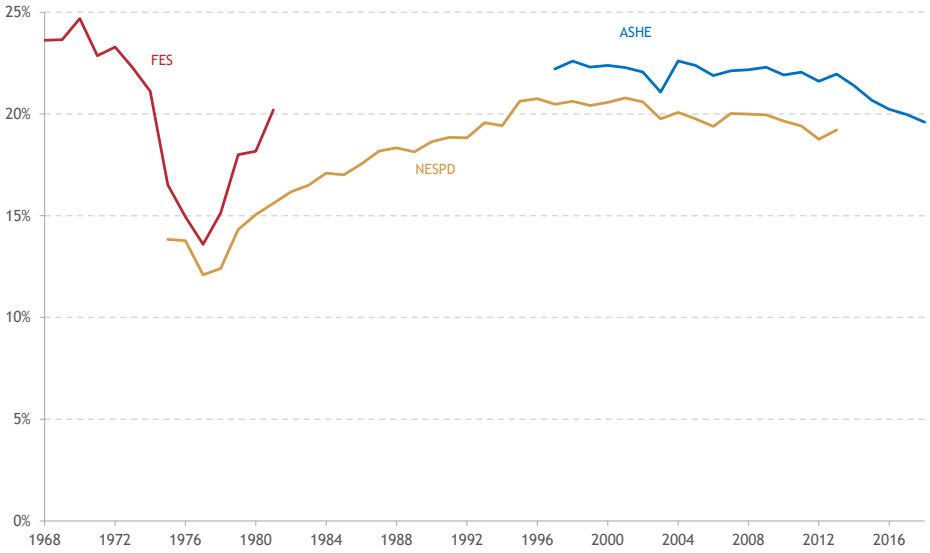
Annex 1

Combining different datasets to track low pay over time

As detailed in the main report, where we present time series stretching back before 1997, the figures are drawn from multiple sources. We use hourly pay data across full-time and part-time employees from three sources: the Family Expenditure Survey (FES) covering 1968 to 1981; the New Earnings Survey Panel Data (NESPD) between 1975 and 2013; and the Annual Survey of Hours and Earnings (ASHE) for the period between 1997 and 2018.

As the largest of the three surveys, ASHE provides the greatest level of accuracy. The FES data in particular should be treated with caution, with its derivation depending on the self-recording of 'normal weekly pay' and 'normal weekly hours worked'. In order to provide a consistent basis for our time series, we have adjusted both the FES and NESPD data to bring them into line with the ASHE figures. To do this, we consider the size of the gap between the various sources in the years in which they overlap and inflate or deflate over the remaining period accordingly. Figure 36 presents figures from the three sources in their raw form.

Figure 35: Proportion of all employees below selected two-thirds median hourly pay in different data sources: GB, 1968-2018



Notes: Family Expenditure Survey data is based on the derived hourly normal pay figure (code: p011) for all adults aged 18 and over. New Earnings Survey Panel Data and Annual Survey of Hours and Earnings data refer to hourly earnings excluding overtime and shift and premium payments and cover all employees aged 16 and over who report a valid work office region and who have not had their pay affected by absence in the time covered.
Source: RF analysis of DWP, *Family Expenditure Survey* (1968-1981); ONS, *New Earnings Survey Panel Data* (1975-2013); and ONS, *Annual Survey of Hours and Earnings* (1997-2018)

Annex 2

Measuring low pay in ASHE

The data cleaning processes and assumptions we apply to ASHE microdata are similar to those used by the ONS. We use an hourly pay variable that excludes overtime and shift premia and we exclude jobs in which pay has been affected by absence from our analysis. In addition, we exclude jobs with missing or zero hourly pay data when calculating the prevalence of low pay, but then use a specific low pay weight included in ASHE in order to report the number of low paid people taking account of those missing wage information. While ASHE statistics published by the ONS cover the UK as a whole, the microdata available to researchers is for Great Britain only, therefore the majority of the analysis in this report excludes Northern Ireland.

To calculate the number and proportion of employees 'on' the National Minimum Wage (and National Living Wage) we capture employees earning up to 1 per cent above their age-specific NMW/NLW rate (i.e. this measure includes those earning below the NMW due to non-compliance). The 1 per cent buffer is applied due to uncertainty in the hourly wage data and because many employees are paid a few pence above the rate itself in order that their employers not be considered 'minimum wage businesses'. However, in practice, their wages are strongly determined by the rate of the NMW, not least because the NMW has grown by at least 1 per cent each year since 2001, meaning that those up to 1 per cent above it are likely guaranteed a pay increase. Apprentices paid more than their legal minimum (£3.70 in April 2017) but less than the usual minimum for their age group are nonetheless counted as 'on' the NMW/NLW.

Defining city regions

For our analysis comparing different city regions in the UK, the city regions and the local authorities they encompass are set out in Table 8 of S Clarke, City living: devolution and the living standards challenge, Resolution Foundation, October 2016.

Resolution Foundation

The 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.

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