

Title: Amendment to the National Minimum Wage Regulations 2019 – increase in National Minimum and National Living Wage rates IA No: BEIS002(F)-19-LM RPC Reference No: RPC-4324(1)-BEIS Lead department or agency: Department for Business, Energy and Industrial Strategy Other departments or agencies: N/A	Impact Assessment (IA)		
	Date: 28/01/2019		
	Stage: Final		
	Source of intervention: Domestic		
	Type of measure: Secondary legislation		
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Summary: Intervention and Options			RPC Opinion: Green

Cost of Preferred (or more likely) Option (in 2016 prices)			
Total Net Present Social Value	Business Net Present Value	Net cost to business per year	Business Impact Target Status Qualifying provision
- £2.8m	- £572.2m	£151.8m	

What is the problem under consideration? Why is government intervention necessary?

The National Minimum Wage (NMW) was introduced in 1999 to protect workers from exploitative wages due to unequal bargaining power, with the aim of increasing the wages of the lowest paid without damaging their employment prospects. The National Living Wage (NLW) was introduced in 2016 and is centred on equity, primarily around reducing wage inequality, with an aim to reach 60% of median earnings by 2020, subject to sustained economic growth. The Low Pay Commission (LPC) has made recommendations to Government on the NLW and NMW rates that should apply from April 2019.

What are the policy objectives and the intended effects?

The objective of the NMW is to maximise the wages of low paid younger workers without damaging their employment prospects by setting it too high, whilst the aim of the NLW is to reach 60% of median earnings by 2020, subject to sustained economic growth. The NMW/NLW set a wage floor below which pay cannot fall ensuring protection for low-paid workers, while also providing incentives to work.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

This impact assessment considers changes to the NLW and NMW that should apply from April 2019. The independent LPC makes recommendations on the NMW to Government, consulting extensively and undertaking substantial analysis. Details are contained in its autumn 2018 report. The Government has considered two options this year:

0. Do nothing - maintain current NMW/NLW rates and system
1. Implement the LPC recommended rate increases (preferred option)

The Government's preferred option is to implement the LPC's recommended rate increases. This is to ensure that the NMW continues to achieve its objective of maximising the wages of the low paid younger workers without damaging their employment prospects, and that the NLW remains on track to reach its target.

Will the policy be reviewed? It will be reviewed by the LPC. **If applicable, set review date:** 11/2019

Does implementation go beyond minimum EU requirements?		N/A		
Is this measure likely to impact on trade and investment?		N/A		
Does this measure comply with our international trade and investment obligations, including those arising under WTO agreements, UK free trade agreements, and UK Investment Treaties?		N/A		
Are any of these organisations in scope?	Micro Yes	Small Yes	Medium Yes	Large Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)		Traded: n/a		Non-traded: n/a

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister, Kelly Tolhurst:  Date: 24/1/2019

Summary: Analysis & Evidence

Policy Option 1

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2018	PV Base Year 2019	Time Period Years 2	Net Benefit (Present Value (PV)) (£m)		
			Low: -2.7	High: -3.1	Best Estimate: -3.1

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	2.7	189.3	380.9
High	3.1	354.6	705.9
Best Estimate	3.1	354.6	709.0

Description and scale of key monetised costs by 'main affected groups'

Our best estimate of the overall impacts of the LPC NMW/NLW rate recommendations is a total cost of £709m. This includes transition costs (£3.1m) and an increased labour cost to employers of £705.9m (£366m direct impacts and £340m indirect impacts). This is a transfer with a neutral net economic impact. It is made up of £585m of increased wages for employees, and £121m of increased non-wage labour costs, which are mainly employer pensions and national insurance contributions.

Other key non-monetised costs by 'main affected groups'

The evidence from the LPC report suggests that the NMW rates recommended by the LPC will not have a negative impact on employment, with negligible impacts on hours worked and training. The NLW may have macroeconomic impacts in the long-run. These are not formally quantified here as they are highly uncertain but could include negative employment impacts (OBR previously estimated 60,000 fewer people in employment by 2020 due to the NLW, however they acknowledge that this has not materialised)

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0	189.3	378.2
High	0	354.6	705.9
Best Estimate	0	354.6	705.9

Description and scale of key monetised benefits by 'main affected groups'

Our best estimate of the overall benefits is for a total benefit to employees and the Exchequer of £705.9m. This is a transfer from employers with a neutral net impact. Employees benefit from £585m of increased wages, while employees and the Exchequer benefit from £121m of non-wage labour benefits, predominantly consisting of pension and National Insurance contributions. Using HMT Green Book methodology for distributional analysis, the total benefit to workers could increase up to £922m

Other key non-monetised benefits by 'main affected groups'

Employers who provide accommodation are expected to benefit from an increased amount that can be offset against NMW/NLW pay. Workers can also benefit as these are often mutually beneficial arrangements. Take up of this is likely to be low. As above, there could also be macroeconomic benefits in the long-run (e.g. improved productivity or increased consumption).

Key assumptions/sensitivities/risks

Discount rate (%)

3.50%

The key assumption is on the counterfactual for how wages would change in the absence of minimum wage rises. Having previously commissioned independent experts (NIESR) to recommend a suitable counterfactual, we engaged with labour market experts to once more test our approach. We proceed to use a counterfactual based on the growth in wages at the 20th percentile of the wage distribution. This is the lowest point in the distribution where we find there to be no ripple effect (indirect impact).

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: 168.4	Benefits: 0	Net: 168.4	
			303.6

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Impact Assessment Scope

1. The Low Pay Commission (LPC) has recommended increases in the National Living Wage (for those aged 25 and over), the National Minimum Wage (for those aged 16-17, 18-20, 21-24, the apprentice rate for those aged under 19 or in the first year of an apprenticeship) and the accommodation offset. The Government has accepted these recommendations¹ in full and they will come into force on 1st April 2019, subject to parliamentary approval.
2. Almost all workers in the UK are eligible to be paid at least the minimum wage. Eligibility for specific rates is determined by a worker's age and, if they are an apprentice, when they started their Apprenticeship.
3. This Impact Assessment (IA) appraises the impacts of uprating the current NLW and NMW rates to the LPC's latest recommendations, as set out in the autumn 2018 report². This IA does not consider a scenario where the NMW/NLW is completely removed as, in the hypothetical absence of an NMW/NLW uprating, the current minimum wage rates would remain legally binding. Therefore, a counterfactual scenario where the wages of the lowest paid are reduced does not apply and is out of scope of this IA
4. This IA is a marginal appraisal, as appropriate for the purpose of this document. The Low Pay Commission continuously evaluate the impact of the NMW/NLW, as summarised in their annual Autumn Reports. Their assessment of the impact of the rates, and the state of the wider economy, are factored into the rates that they then proposed for the following year. This Impact Assessment utilises the findings from their November 2018 report. The LPC will undertake an assessment of the impact of the proposed 2019 minimum wage rates in Autumn 2019, which we welcome as a key contribution to the evidence base, and we will consider any relevant findings from their assessment into future Impact Assessments.

Background to the Impact Assessment

Policy Context

5. The economic rationale for a statutory wage floor is to address the welfare loss caused by unequal bargaining power in the labour market. In a perfectly competitive labour market, equilibrium arises when the wage rate equates the demand for labour – based on the marginal revenue product of labour – with the supply of labour. However, when employers have market power, a socially sub-optimal market outcome can occur with lower wages and lower employment. Annex A further describes the theoretical rationale for intervention.
6. The National Living Wage was introduced in April 2016 and has a specific target to reach 60% of median earnings by 2020, subject to sustained economic growth. By doing this, the NLW seeks to ensure low paid workers over 25 are fairly rewarded for their contribution to the economy. Because the target is a proportion of median earnings rather than a pound value, there is flexibility as the target moves in line with the state of the economy, i.e. if forecast average earnings fall then so will the pound value of the NLW.

¹<https://www.gov.uk/government/publications/national-living-wage-and-national-minimum-wage-government-response-to-the-low-pay-commissions-autumn-2017-report>

²<https://www.gov.uk/government/publications/national-minimum-wage-low-pay-commission-2018-report>

7. The National Minimum Wage was introduced in 1999 to protect low-paid workers from 'extreme low pay'³ whereby certain employers in the absence of government intervention may pay unacceptably low wages. Extreme low pay has now largely been stamped out, but the NMW continues to provide this protection for workers and it also helps to provide a level playing field for firms, preventing them from undercutting competitors with exploitative levels of pay. When updating the NMW, the LPC is asked to recommend the rates such that they do not damage the employment prospects of younger workers.
8. The youth labour market is much more sensitive to economic shocks and young people can be exposed to longer-term scarring effects⁴ from prolonged spells of worklessness, as well as facing a comparative disadvantage when entering the labour market due to a lack of work experience and less knowledge. Consequently, the Government asks the LPC to recommend separate NMW rates by age band (16-17, 18-20 year olds, and 21-24 year olds).
9. The Apprentice National Minimum Wage (ANMW) was introduced in 2010 to ensure Apprentices previously exempt from the NMW received the legal protection of the NMW. It applies to those Apprentices who are aged under 19 or aged 19 or over and in the first year of their Apprenticeship. The level of the ANMW should provide a fair deal for Apprentices, protecting them from exploitation whilst at the same time not deterring businesses from taking them on and providing good quality training.
10. As the decision on the appropriate NMW rates is an empirical one, the LPC report contains a large body of evidence and analysis on the impact to date of the NMW and NLW. The LPC considers the prospects for the UK economy by considering the latest available forecasts for growth, average earnings, inflation, employment and unemployment from the Office for Budget Responsibility and the median of the HM Treasury panel of independent forecasters. They also have an extensive consultation period to include the views and analysis of a number of interested stakeholders. The LPC also commission external research to better inform them of the impacts of minimum wage policy. The evidence, research and data collected and produced by the LPC have been used to inform this IA.
11. The LPC also makes recommendations for the value of the accommodation offset. The accommodation offset was introduced in 1999 and provides a mechanism to offset the cost of providing accommodation for workers against the NMW. Accommodation is the only benefit-in-kind that can count towards the NMW as there are scenarios when the provision of accommodation can be mutually beneficial for both employer and worker. The offset arrangements provide protection to workers and give some recognition of the value of the benefit, but are not intended to reflect the actual costs of provision.

Rationale for continued intervention

12. As alluded to in the previous section, the economy and labour market today are markedly different to that of the late 90's when the NMW was first introduced: It has a higher participation rate, higher employment rates; the demographics of workers have evolved with more diversity in the workplace (for example, employment rate for women and disabled people are at near record highs), lower unionisation (from 30% of employees in unions in 1999 to 23.2% in 2017) and rates of 'extreme low pay' have essentially fallen to zero⁵.

³ Prior to the introduction of the NMW in 1999, a third of low-paid workers were in extreme low pay: [More than a Minimum \(2014\)](#)

⁴ Bell D & Blanchflower D, 2011, Young people and the great recession, Oxford Review of Economic Policy, 27 (2), pp. 241-267

⁵ Resolution Foundation's Low Pay Britain 2016 report (p16). As a result, the Resolution Foundation have stopped calculating this measure for their 2017/2018 reports: <http://www.resolutionfoundation.org/app/uploads/2016/10/Low-Pay-Britain-2016.pdf>

13. These changes to the labour market have occurred in parallel with annual upratings of the NMW and the introduction of the NLW.
14. The economic rationale for continued intervention for the NMW is based on maintaining a wage rate for younger workers that is close to the competitive market equilibrium. The Government seeks to achieve this by giving the LPC a remit to recommend an NMW rate that does not damage the employment prospects of low paid workers.
15. The economic rationale for the NLW is broader, with its purpose centred on equity, primarily around reducing wage inequality and ensuring that low paid workers enjoy the benefits of economic growth. The 60% target for the NLW means that wages of the lowest paid will rise relative to the middle of the wage distribution. This will be the third annual uprating of the NLW to progress towards the 2020 target.

Policy Objective

16. The NMW and NLW set a legal minimum wage floor below which pay should not fall. This ensures protection for low-paid workers, whilst also providing incentives to work and reducing reliance on the State of topping up wages through the benefits system.
17. As mentioned previously, the objective of the NLW is to reach 60% of median earnings in 2020, subject to sustained economic growth. Meanwhile the aim when setting the NMW rates for workers under 25 is to raise the wages of the lowest paid young workers as much as possible, without damaging their employment prospects by setting it too high.

Consultation

18. The NLW and NMW rates are underpinned by extensive consultation, analysis, and evidence-gathering carried out by the LPC. On top of its own expertise and analysis, the LPC consults with a wide range of stakeholders from across civil society. This year the LPC received more than 58 responses to their consultation, with representatives from 36 organisations attending their oral evidence sessions. They also visited employers, workers and others affected by their recommendations, talking to at least 80 organisations, across various low-paying sectors and around the UK. Appendix 1 of their 2018 report provides a list of contributors to their consultation. The LPC makes recommendations on the future rates but the final decision on whether to accept them is made by the Government.
19. In response to previous IAs, the RPC has commented on the suitability of the counterfactual we have used to estimate the direct wage cost to business/benefit to workers as a result of NMW/NLW upratings. Detailed discussion of this can be found in 2017's IA⁶. To address this, in 2017, we commissioned the National Institute of Economic and Social Research (NIESR) to carry out a research project to identify the most appropriate counterfactual for us to employ in this and future impact assessments. We summarise their work in the Counterfactual section of this Impact Assessment, and is discussed in greater detail in our 2018 IA⁷. Their full report⁸ was published alongside our IA last year.
20. The RPC welcomed this work, however did state some concerns with NIESR's findings in their opinion. Following consultation with the RPC, we further scrutinise NIESR's methodology

⁶ [Amendment to the NMW regulations 2017 Impact Assessment](#)

⁷ [Amendment to the NMW regulations 2018 Impact Assessment](#)

⁸ <https://www.niesr.ac.uk/publications/national-minimum-wage-and-national-living-wage-impact-assessment-counterfactual>

through targeted engagement with labour market academics. We sent 26 academics a questionnaire, with 6 providing responses⁹ (found in Annex B, alongside a summary of their responses). Their findings, in addition to the initial NIESR report, inform our analysis throughout this Impact Assessment. Annex H presents a complete list of engagement that we have previously carried out on minimum wage Impact Assessments.

21. The key findings from our consultation are:

- The 'catch-up' concept, whereby we estimate the cost of the uprating by considering the point at which our counterfactual catches up to the minimum wage rate, was agreed to be the most appropriate method to assess the impact of the uprating
- Using the latest ASHE (Annual Survey of Hours and Earnings) wage distribution as the starting point for the counterfactual was agreed by respondents to be appropriate
- Most experts agreed with our approach to use the lowest percentile where there are no spillovers from the NMW/NLW as proxy for counterfactual wage growth of minimum wage workers. However, in light of some responses, we carry out sensitivity analysis on the percentile used.
- All experts agreed with using an average uniform growth rate for all minimum wage workers, with the majority stating that it would be difficult to justify a different assumption
- Most respondents disagreed that wage growth at the bottom of the pay distribution would be at, or close to zero, in the absence of a minimum wage uprating. This was not universal, as theoretical arguments were made regarding some minimum wage workers potentially earning more than their market value. Unfortunately, this assertion has not been further evidenced and neither those responses, nor our subsequent internal deliberations, were able to identify a sufficiently robust method to explore this quantitatively
- There was some discussion regarding base-raising effects from previous upratings. One academic requested simulating wage growth of the lowest paid workers since 1999, when the NMW/NLW was first introduced, to produce pessimistic estimates. They do however acknowledge that this yields "less precise estimates given that the counterfactual is playing out over a longer period". We address this in further detail in Annex D.

22. We are grateful for the academics who responded to our questionnaire on this. The overall sentiment of acknowledging the difficulty in measuring a counterfactual is shown through the comments requesting sensitivity analysis around the spillover assumptions. The consensus for the academics is one of approval for NIESR's approach, however we undertake a variety of sensitivity tests throughout this IA to give context to our best case estimates.

Options Identification

23. This Impact Assessment considers two options which will be assessed against the policy objectives set out above:

⁹ Academics were contacted multiple times, through varying channels, however we do acknowledge that this may be considered a low response rate. We believe that the findings of this questionnaire, from the responses we did receive, in addition to previous work, provides a significant body of evidence from which we can draw conclusions that inform this Impact Assessment.

- Option 0) Do nothing – maintain the existing NLW and NMW rates
- Option 1) Implement the LPC recommended rate recommendations for April 2019

Option 0: Do nothing

24. If the LPC’s rate recommendations are not implemented, then the status quo would prevail and the current NLW and NMW rates would continue to be the statutory pay floor that workers are legally entitled to.
25. This option would not achieve the policy objectives of the NMW and NLW rates. We believe that minimum wage workers over 25 would not see their pay increase relative to the middle of the pay distribution.

Option 1: Implement the LPC recommended rate recommendations

26. The LPC rate recommendations for April 2019, as outlined in their report, are as follows:

Table 1: Low Pay Commission NMW/NLW rate recommendations for April 2019

	Current rate	LPC recommendation	Annual percent increase
National Living Wage rate	£7.83	£8.21	4.9%
21-24 year old rate	£7.38	£7.70	4.3%
18-20 year old rate	£5.90	£6.15	4.2%
16-17 year old rate	£4.20	£4.35	3.6%
Apprentice rate	£3.70	£3.90	5.4%
Accommodation offset	£7.00	£7.55	7.9%

27. The LPC has extensively outlined in their 2018 report¹⁰ the analysis, consultation and subsequent rationale behind its recommendations for the NLW and NMW rates which should apply from April 2019. The Government has considered this and subject to parliamentary approval will implement the LPC’s recommendations in full. Below is a brief summary of the rationale for this. Further detail is available in the LPC’s report. This IA appraises the impacts of the increase in the NLW and NMW from April 2019.

Prospects for the economy

28. As previously mentioned, the state of the economy plays an important role in the LPC’s minimum wage rate recommendations, and the Government’s decision to accept them. The Government published an overview of the economic outlook at Autumn Budget 2018, based on the Office of Budget Responsibility’s latest economic and fiscal outlook¹¹. This short section of the IA summarises the macroeconomic assessment carried out by the LPC.
29. The data available to the LPC at the time of their recommendations led them to conclude that the condition of sustained economic growth was met. The latest Office for National Statistics (ONS) data for Gross Domestic Product (GDP) growth suggest that after slowing in the first quarter of 2018 – which was affected by the severe cold weather conditions – GDP rebounded in the second quarter, growing by an annualised rate of 1.4 per cent. This was weaker than the growth experienced in 2017 – 1.7 per cent – but in line with the GDP growth forecasts (1.4 to 1.6 per cent) they had available from the Bank of England and the HM Treasury Panel of

¹⁰ <https://www.gov.uk/government/publications/national-minimum-wage-low-pay-commission-2018-report>

¹¹ The Autumn Budget 2018 documents are available at: <https://www.gov.uk/government/publications/budget-2018-documents>

Independent Forecasts. The LPC anticipate similar growth in 2019 to that seen in 2017 and 2018, with forecasters expecting GDP growth of around 1.6% to 1.7% (see table 2 below).

30. The LPC concluded that the labour market has continued to perform well. While jobs growth was noted to have slowed in comparison to last year, they highlight the record highs of total employment in both rate and level. Furthermore, they note that the OBR had previously forecasted in 2015 that the UK would generate 1.1 million additional jobs by 2020, however this had already been exceeded by 2017. Employment growth has been relatively flat for low-paying sectors, although this has been offset by an increase in non-low-paying sectors.
31. They also point to faster earnings growth in 2018 (2.9% median hourly pay growth), which was in line with forecasts and higher than last year's growth (2.1%). With inflation falling back, as forecast, the LPC highlighted that the UK has experienced seven continuous months of real average earnings growth
32. The LPC also concluded that, with output having slowed and the labour market continuing to generate jobs, productivity growth measured per worker and per job has also been relatively stagnant. The number of hours worked has increased by less than the increase in employment, leading to productivity per hour performing better than the other measures but only having grown by 1.5 per cent in the last three years.

Table 2: Forecasts of selected economic variables

	2018			2019		
	OBR ^a	BoE ^b	HMT average ^c	OBR	BoE	HMT average
GDP	1.3%	1.5%	1.3%	1.6%	1.8%	1.5%
Employment growth	1.2%	1.3%	1.0%	0.8%	0.5%	0.4%
Unemployment rate	4.0%	4.0%	4.1%	3.7%	3.9%	4.1%
Average earnings	2.6%	2.5%	2.7%	2.5%	3.3%	2.9%
Inflation	2.6%	2.5%	2.4%	2.0%	2.2%	2.1%
<i>Sources</i>	<i>a: OBR EFO, October 2018</i> <i>b: Bank of England August 2018 Inflation Report</i> <i>c: HMT, Average of Independent Forecasts, October 2018 release</i>					

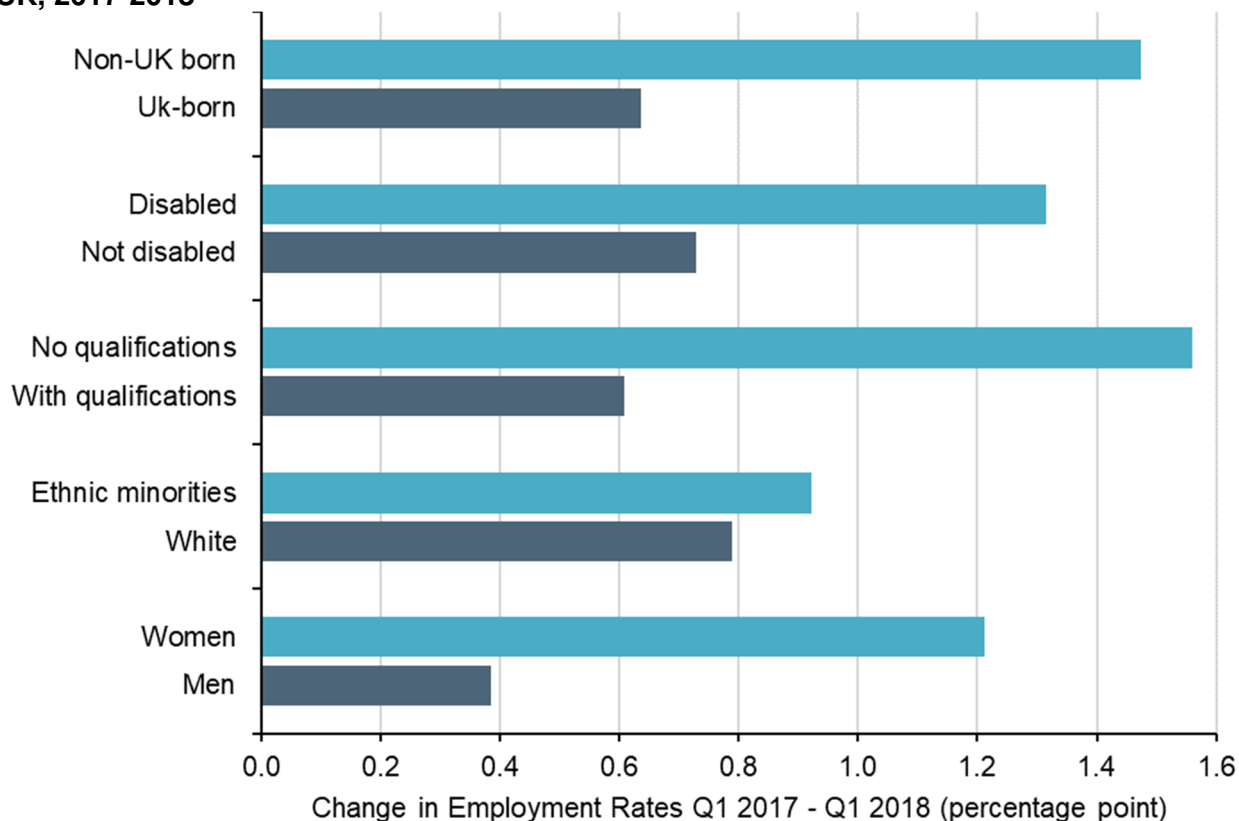
The National Living Wage

33. Influenced by the economic performance summarised above, the LPC has judged that the NLW should remain on the straight-line “bite”¹² path to hit 60% of median earnings in October 2020. As with previous years, the LPC’s engagement with stakeholders suggested that employers have coped better with NLW increases than they originally anticipated, aided in their planning by having sight of indicative future rates for the NLW (possible due to its 60% of median earnings by 2020 target).
34. However, it is important to note that some sectors continue to feel particularly exposed, particularly in the social care, convenience and wholesale sectors. Research commissioned by the LPC, in addition to their extensive stakeholder engagement, found that the NLW does not currently point to significant employment effects. We summarise recent literature on the impacts of the minimum wage in Annex C.
35. The LPC’s analysis shows that the employment rate of workers aged 25+ increased between 2017 and 2018 (0.4ppts for men and 1.2ppts for women), and that in particular, the labour

¹² The “bite” is a term used to represent the minimum wage as a proportion of a chosen point in the wage distribution. This usually corresponds to a percentage of the median and forms the basis of the target for the National Living Wage (60% of median earnings by 2020, subject to sustained earnings).

market performance of workers most likely to be affected by minimum wage increases due to higher coverage (e.g. women, ethnic minorities, low skilled, disabled workers, non-UK born) has also continued to improve (Figure 1 below).

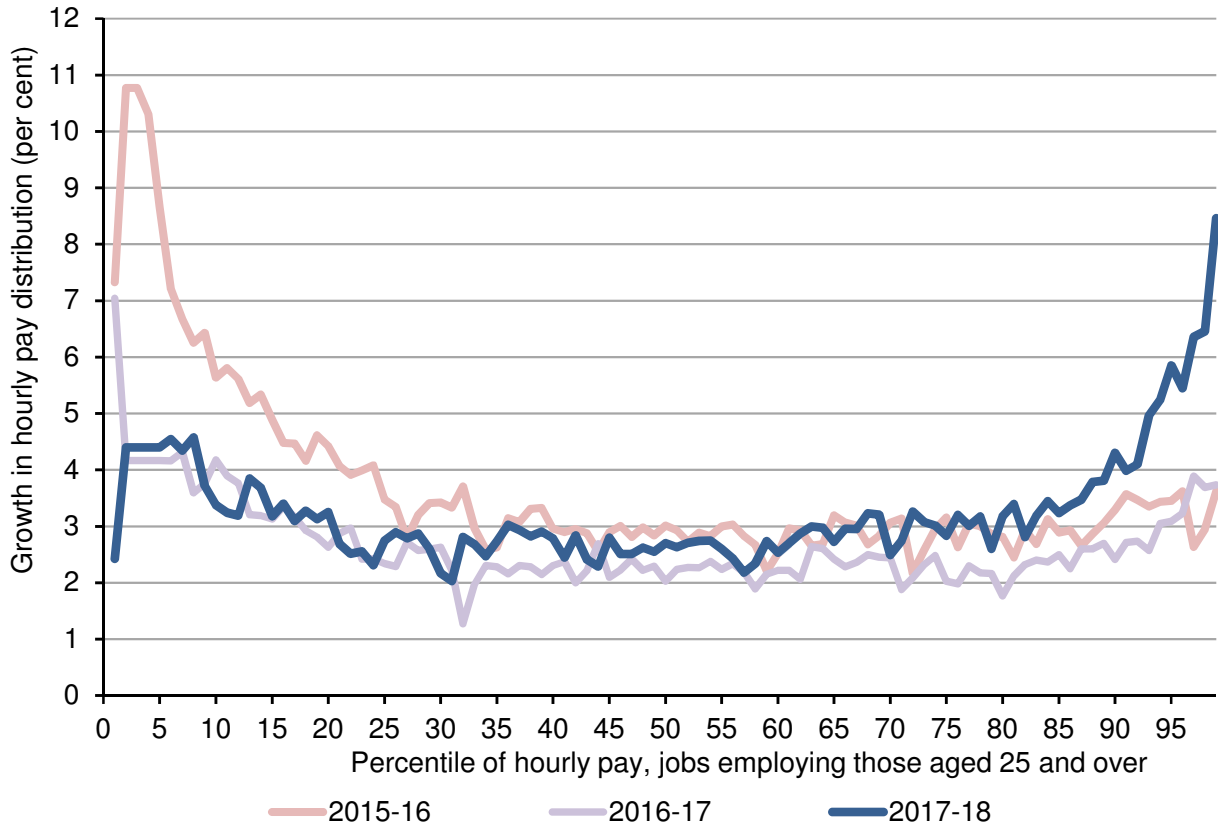
Figure 1: Change in employment rates for those aged 25 and over, by worker characteristics, UK, 2017-2018



Source: LPC estimates using: LFS Microdata, population weights, quarterly, four quarter moving average, UK, Q2 2016 to Q1 2018, UK.

36. Median hourly pay growth for employees aged 25+ and not in the first year of their apprenticeship grew by 2.7% between 2017 and 2018 – a faster increase than seen last year (2.1%). The increase in 2018's NLW (up 4.4% to £7.83) was faster than the increase at the median, therefore raising pay for workers at the bottom end of the hourly pay distribution. Wages at the 10th percentile of the wage distribution grew by 3.4%. Wages at the 25th percentile grew by 2.7%. Figure 2 shown below illustrates hourly wage growth across the wage distribution for workers aged 25 or older.

Figure 2: Percentage growth in hourly pay at percentiles of the wage distribution for workers aged 25 and over, UK, 2015-2018



Source: LPC estimates using ASHE 2010 methodology, standard weights, UK, 2015-2018.

The National Minimum Wage

37. Following the largest increases in the youth rates for a decade, the LPC have adopted a slightly more cautious approach to the NMW rates (however, all the rates will see increases above average earnings growth). Some of their reasons, at the time of their deliberations, for this approach are,:

- Labour market conditions, while still strong, have softened slightly in some areas.
- The employment rate for 18-20 year olds saw a 1.7 percentage point increase between March 2017 and March 2018, however the 21-24 and 16-17 year old employment rates saw decreases over the same time period (-0.1 ppt and -2.0 ppt respectively)
- Unemployment rates and levels for young people were at their lowest recorded level
- The population not in education, employment or training (known as NEET) provided a mixed picture, with improvements for 18-20 year olds, a stable to improving picture for 16-17 year olds and a stable to worsening picture for 21-24 year olds
- Average wage growth for 16-17 year olds was the highest in April 2018 of all the age groups, at 5.4%, followed by 18-20 year olds.
- The bite for 16-17 year olds fell 1.1 percentage points between 2017 and 2018, from 72.3% to 71.2%. Conversely, the bites for 18-20 and 21-24 year olds both rose.
- Less than one in ten young workers were paid at the minimum wage – while the proportion of 18-20 year olds who were paid their age applicable rate fell in 2018, the opposite pattern was seen amongst 16-17 year olds.
- The share of 21-24 year olds paid at their age rate remains low, as many employers choose to pay above this rate

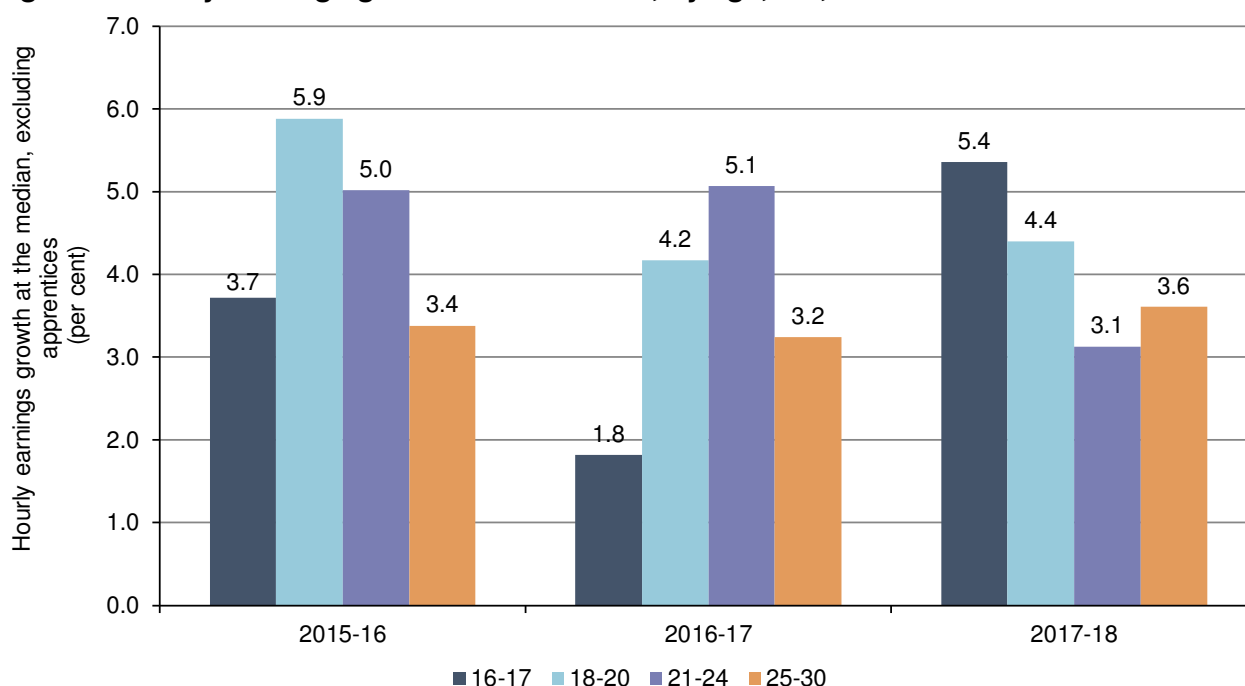
- Finally, underpayment as a proportion of coverage is lower for younger workers. Around 2% of young workers were paid below their age-applicable minimum wage in April 2018, with very little change over the year.

38. For the 21-24 year old rate, the Government is planning to implement the LPC's recommendation of £7.70. This is a 4.3% increase (or 32 pence). This is following the considerations mentioned above, in addition to the unemployment rate for those not in full-time education now being at a historic low.

39. For 18-20 year olds, a weaker earnings picture this year, in contrast to their continued employment growth/unemployment falls, led to the LPC recommendation of an increase of 4.3% (or 25 pence) to £6.15

40. For 16-17 year olds, the LPC recommended a rate of £4.35, which is a 3.6% increase on last year's rate (or 15 pence). The LPC comment that this remains the most vulnerable age group in the labour market due to their relative lack of experience.

Figure 3: Hourly earnings growth at the median, by age, UK, 2015-18



Source: LPC estimates using ASHE, April 2015-18, standard weights, including those not on adult rates of pay, excluding apprentices, UK.

The Apprentice NMW

41. As noted by the LPC in their previous year's report, there have been some substantial changes to Apprenticeship policy in recent years which have a direct bearing on setting the Apprentice NMW. In particular, the introduction of the Apprenticeship Levy from April 2017 and the significant increase to the Apprentice NMW (21%) implemented by the Government in October 2015.

42. In 2017/18, overall Apprenticeship starts fell by over 120,000. This has been across almost all categories, with the largest falls having been in the take-up of Level 2 apprenticeships and in starts by people aged 25 or older. Increases were seen amongst Level 4 or above apprenticeships; however, this is a small proportion of the overall programme. However, the LPC did not get a sense from either worker or employer stakeholders that recent increases in the Apprentice Rate had affected the uptake of apprenticeships.

43. There was a mixed picture on pay growth, with first year apprentices aged 21-24 seeing pay growth of 12% over the past year, while those aged 25 or over saw pay levels fall by 5%. The variation in pay has led to differing bites for different age groups of apprentices, however the overall bite for Apprentices has remained relatively stable since 2016.
44. Consequently, the LPC recommend an increase in the Apprenticeship NMW to £3.90 (a 5.4% increase). It should be noted that the LPC will consider this NMW, alongside the other youth rates, as part of their Youth Rates Review, with findings to be published in Spring 2019.

Accommodation offset

45. The LPC has recommended an increase in the daily accommodation offset to £7.55. This is in line with their long-term objective of equalising the offset to the 21-24 year old NMW rate, which they aim to do next year. They recommend this so that the rate better reflects the cost of providing accommodation – helping the horticulture sector in particular, where employers often provide accommodation for their workers.

Approach to the Appraisal: Wage Bill Impacts

Counterfactual

Finding the counterfactual

46. The core assumption in our analysis is the counterfactual: The profile of the counterfactual is both a function of the wage level low paid workers would receive in the absence of the policy and the wage growth they would have experienced over the course of the minimum wage uprating. The true counterfactual is unobservable and given the NLW and NMW are universally applicable across the UK; there is no pure control group to compare the policy intervention against.
47. There are multiple approaches that have been previously considered to estimate the counterfactual – see Annex H for a list of previous work done on this subject. Because of its intrinsic nature, none can be proven or falsified i.e. we rely on making normative economic statements. Moreover, the actual cost to business/benefit to workers can vary between zero and infinity, whereby the wages of those impacted by the NMW/NLW could alternatively grow at an equal rate to the size of the uprating or experience zero wage growth, respectively.
48. As previously found by NIESR, it is not possible to prove or disprove the choice of counterfactual, as no new information could ever become available on the counterfactual. For this reason, a judgement is required on what is the most suitable counterfactual based on the available evidence. Our choice of this has varied in recent years and the RPC has often commented on the evidence to support our chosen method, although the most recent approach, as suggested by NIESR's research, did receive a 'green' fit-for-purpose rating.

Counterfactual for this IA

49. The counterfactual in this IA continues to be underpinned by research undertaken by NIESR. As described in the "Consultation" part of this Impact Assessment, the findings from this year's engagement with academics has not yielded any specific findings that justify deviating from this core approach. Respondents to our questionnaire agreed that using the latest ASHE wage distribution as the starting point for the counterfactual was appropriate.

Table 3: Options for quarterly nominal wage growth assumptions

<i>Period covered in LFS (Labour Force Survey)</i>	<i>Quarterly growth rate at the 20th percentile (nominal)</i>
2001-2007	1.07%
2010-2017	0.70%
2015-2017	1.04%

50. The most suitable growth rate to use depends on how the economy is expected to perform over the appraisal period. The Government can use the OBR and other independent forecasts as a gauge in future years, albeit there are difficulties in practically predicting this. Refreshing NIESR's previous recommendations, we proceed to use the quarterly growth rate in wages for the period between 2010 and 2017 (i.e. from the post-crisis recovery period to the most recent data point), which is equivalent to 0.70%, as our best-case scenario. We also compare the annualised rate that this growth rate provides (2.8%) against OBR estimates (2.5%) and HMT Panel estimates (2.9%) for average annual earnings growth in 2019. We note that our preferred growth rate falls within the range between these two independent forecasts. While we judge that our chosen rate is appropriate for the business cycle that we are currently in, we undertake sensitivity analysis using growth rates from last year's IA and different time periods – for example, using a six-year period, as done last year, we find average uniform quarterly growth of 0.73% between 2011-2017, resulting in a lower cost to business. Using the growth rate from the 2018 IA's best-case scenario, of 0.68% between 2010-2016, will result in a higher cost.
51. Within our low-cost scenario, we again utilise NIESR's approach and assume that the more recent period 2015-2017's wage growth will continue, using 1.04% as the quarterly uniform growth rate. Since our best-case scenario uses the lowest quarterly growth rate of the three proposed – generating the highest cost – our high cost scenario is equal to our best case.
52. NIESR believe that their recommendation of growth at the lowest percentile where there are no spillovers detected from the minimum wage is the best estimator of the counterfactual growth rate. This is following econometric modelling (found to be valid at the 1% significance level) that identified growth rates of real wages at the 20th percentile being the lowest point at which workers were no longer affected by minimum wage upratings. They do note that a low R² for the model means that their model should not be used to estimate the actual growth rate¹³, hence the empirical approach stated above, in paras 50-51.
53. This approach was agreed to be 'simple and transparent' by some respondents to our questionnaire, with the choice of the 20th percentile 'well justified in the NIESR report'. A proposed alternative was hypothesised, to use an estimated structural model, however the academic who stated this went on to say that was a much worse proposition as they believed that such a model would require arbitrary assumptions, which would be "open to discussion and political manipulation".

¹³ The R² in NIESR's models mean that their models account for a relatively small portion of the variance found in the change in wages at a chosen, specific point of the wage distribution. This will have been due to other, unobserved effects.

54. We also undertake additional sensitivity analysis by adjusting our assumption of where the indirect effects of the minimum wage stop. We acknowledge that the latter sensitivity may not be backed empirically or by theory, (as we use the rate at the point where spillovers from the minimum wage no longer materialise, which the data shows to be the 20th percentile), however does illustrate the potential magnitude of this assumption.
55. NIESR also specifically tested whether wages in low wage occupations which were affected by the NLW's introduction had been growing historically at a slower rate. If this were the case, then applying the average growth of the counterfactual for these groups would result in the counterfactual adjusting to minimum wage upratings too quickly potentially underestimating costs. Their modelling led them to conclude that using an average uniform growth rate is suitable because there was 'no significant evidence for differential growth in the data' (p. 79) across occupations and time. Consequently, we have used average uniform growth rates (as shown in Table 3).
56. Once more, consulted academics agreed with our assumption, with many believing that it would be difficult to justify a different assumption. An alternative proposal from one academic was to use a more sophisticated forecasting model (specifically suggesting an Autoregressive Integrated Moving Average model, or ARIMA). They argued that assuming a constant rate implied that wage growth follows a random walk, which they believed to be unlikely. Once weighed against the other responses, we believe that integrating an ARIMA model for our analysis is not proportionate nor appropriate at this time, hence we continue with NIESR's proposal. We will consider exploring the feasibility of an ARIMA model for future iterations of minimum wage impact assessments.
57. Furthermore, NIESR argue that because of forecasting inaccuracies and bias due to asymmetries arising from forecast errors, they recommend we continue to apply the counterfactual growth rate to the current wage distribution (i.e. the existing minimum wage analogous to what we have done in previous IAs), and that this will result in an unbiased estimator of the cost to business/benefit to workers. This method was endorsed in the responses we received from labour market academics in our questionnaire.
58. Finally, NIESR recommended that BEIS continue to use its current method of re-setting the counterfactual, so as to take the current level of the minimum wage as the starting point for the counterfactual analysis" (p. 59). We therefore maintain this method, applying the uniform counterfactual growth rate to the existing wage distribution. Using past counterfactuals and old data/forecasts will result in forecast accuracy issues (as associated with longer-term forecasts) and potential bias due to asymmetries arising from forecast errors. Pages 50-54 of the NIESR report explains these issues in further detail.
59. To implement NIESR's recommendation we estimate the cost to business/benefit to worker by calculating how long it takes for the counterfactual growth trajectory to 'catch-up' with the proposed NMW and NLW rates. Further detail of the arithmetic calculations on how the 'catch up' is estimated can be found in 2017's IA.
60. The second source of direct cost associated with the NMW/NLW upratings is associated with non-wage labour costs, such as pensions and employer national insurance contributions. Therefore, we have uprated the employer wage bill impacts by 20.66% to account for these additional costs. This figure comes from Eurostat analysis for April 2018. NIESR have previously voiced concerns that it 'is likely to be an overestimate because it does not account for the fact that some workers do not meet the national insurance contribution (NIC) threshold' (p. 50). Conversely, they do note that future auto-enrolment of pensions won't be included in this uplift. While we will continue to review this assumption in the future, we continue to use the

20.66% uplift here, as we assume that any overestimates are likely to be balanced against potential underestimates.

Summary

61. The counterfactual is, by its very nature, unobservable; it is very difficult to identify the shadow wage distribution. Previous findings from NIESR, where they have deployed advanced econometric techniques to attempt to estimate the counterfactual growth rate, found these models to have low predictive power. Since we are in a world of normative economics rather than positive economics, NIESR have had to make a judgement of what the available evidence dictates is the most suitable counterfactual.
62. Of the growth rates presented in Table 3, we have used the lowest growth rate, which is the rationale for why our high scenario equals our best case. Based on the available evidence, NIESR believe this approach of utilising a uniform growth rate is unbiased and representative of the typical minimum wage worker. There is no positive evidence that the counterfactual wage level is different to the existing minimum wage, nor is it falsifiable. Similarly, evidence does not necessarily support a shadow wage curve argument that workers at the bottom of the distribution will experience the lowest wage growth (see Annex D for a fuller description), although as above this cannot be proven or rejected.
63. Annex H lists all the previous work we have done on the counterfactual and, as was done last year, we have implemented the recommendations of independent experts, due to the possible contentious nature of this counterfactual. We acknowledge that alternative approaches may exist (for example, the LPC use median earnings for their counterfactual when estimating future coverage, and RPC's proposed shadow wage curve), indeed previous NMW IAs have used slight variations in the counterfactual but all of these will be beset with similar issues previously outlined; and none have been shown to be more appropriate than the approach used in this impact assessment. As stated by the LPC (para 2.84, Autumn 2018 report), "econometric analysis can better identify a counterfactual... than the approach [the LPC] take". As such, we believe that using NIESR's method is better than using the median earnings growth, hence we continue to utilise NIESR's approach.

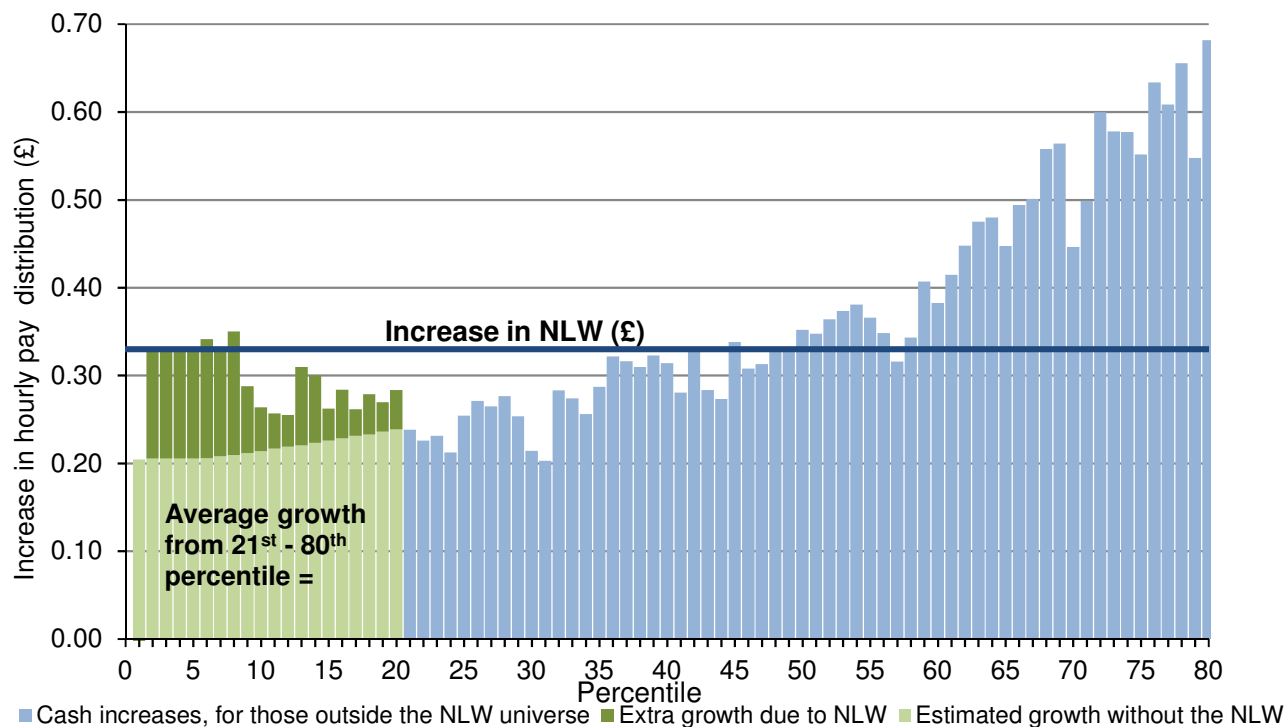
Appraisal period

64. The length of our appraisal period is how long it takes the counterfactual, on average, to catch up with the LPC rate recommendations. As we have a uniform counterfactual growth rate for all rates, which is what NIESR recommend in their report, and the percentage increase in the rates varies across the age bands, the appraisal period differs for each of the NLW and NMW rates.
65. We estimate that it will take the NLW and the 21-24 year old NMW rates seven quarters for our counterfactual to "catch-up" with the corresponding minimum wage. Given the smaller increase in the 18-20 year old and 16-17 year old rates, it will only take 6 quarters for the counterfactual to catch up, whilst the appraisal period for the Apprentice rate is 8 quarters, due to the relatively larger increase to the rate of 5.4%.
66. As part of our sensitivity analysis, our low-cost estimate, whereby the counterfactual growth rate assumption is higher than 0.70%, the catch-up time will be shorter (for example, it takes the NLW five quarters for our counterfactual to "catch-up"). Therefore, the cost will be smaller than in our best-case scenario. This also holds true if we use HMT Panel forecasts as a further sensitivity.

Spillovers

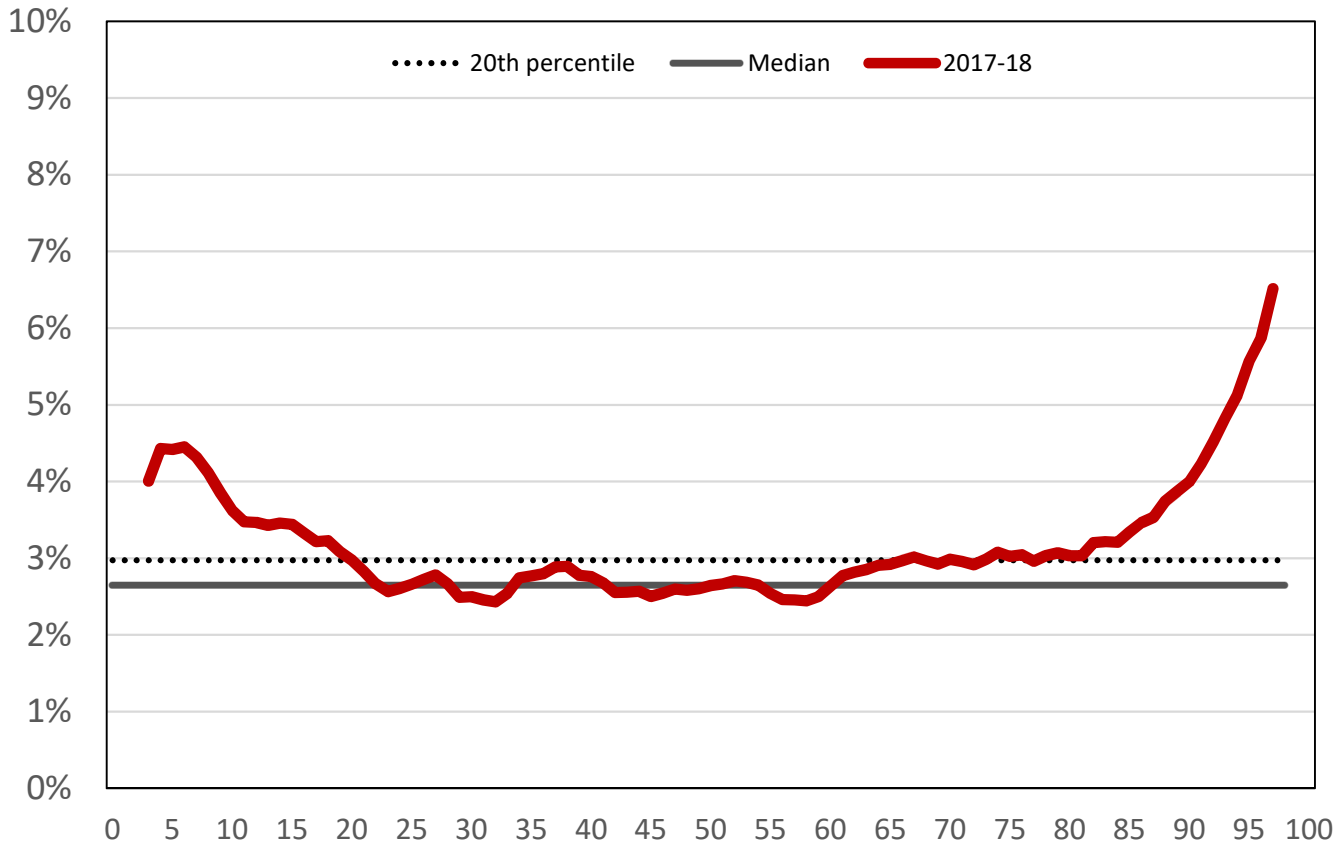
67. As conjectured in previous IAs, we make an assumption that the increase in the minimum wage has an impact on other parts of the wage distribution, not directly impacted by the increase in the NLW and NMW. The rationale for this is that as a higher wage floor is implemented, some employers will choose to either i) give pay rises to those paid above but near the new minimum wage; and/or ii) choose to increase the pay of some workers previously paid below the new minimum to a greater level than just bringing pay into line with the new statutory minimum. Employers do this out of a desire to maintain wage differentials between their employees to recognise different roles and responsibilities.
68. In the past we have assumed spillovers last up until the 25th percentile of the earnings distribution, albeit the effect dissipates from 20% for those earning just above the new minimum wage floor and then linearly reducing in magnitude up until the 25th percentile of the income distribution.
69. Following NIESR's report last year, they found that spillovers could be detected at the 15th percentile of the wage distribution but not at the 20th percentile in 2017. Therefore, we adjusted our spillover assumption from previous years to assume that the 20% impact linearly tapers down until the 20th percentile rather than the 25th. We maintain this assumption. As a sensitivity, we examine the effects to the total cost figure by amending this spillover assumption. In the event that spillovers only reach the 15th percentile, we find that the total cost would decrease by nearly £100 million. Conversely, if spillovers were assumed to reach the 25th percentile, the total cost would increase by £270 million. It should be noted that, as part of their initial spillover identification work, NIESR explored the existence of spillovers at different percentiles (including the 15th and 25th) – they found that spillovers did not extend to the 25th percentile. We find this again holds true in 2018.
70. Previous studies have found no evidence of spillovers in the UK from the NMW, for example Stewart (2012). Although given the date of this study and with the bite increasing to 60%, it is unlikely that this finding will still hold over the appraisal period covered by this IA. Other studies have come to different conclusions on how high up the distribution the NMW reaches.
71. While in the past our spillover assumptions have contrasted with the LPC's findings – notably in 2017's wage distribution (as found in our 2018 IA), where they found that spillovers may have reached the 30th percentile of the wage distribution – they found in their Autumn 2018 report that spillovers had reached lower down the wage distribution, to the 20th percentile as well. This is illustrated below in figure 4 (figure 2.12 in their 2018 report), which shows that, in the absence of the NLW, they may have expected those at the bottom of the wage distribution to have received hourly pay increases of between 20 and 24 pence (light green bars), however they actually received 25 to 35 pence per hour.

Figure 4: Cash growth in the hourly wage distribution including spillovers for workers aged 25 and over, UK, 2017-2018



72. Drawing upon evidence from their consultation, the LPC point to higher average wage growth in 2018 potentially reducing the capacity of employers to provide cash awards to workers paid just above the minimum, in order to maintain differentials.
73. Given the descriptive nature of this element of the LPC’s analysis, we have previously argued that there is some uncertainty in their conclusions. While we both find spillovers up to the 20th percentile, these uncertainties still hold true. We believe that NIESR’s regression-based approach (found to be valid at the 1% significance level) controls for many other explanatory variables such as demographic and firm characteristic variables. For this reason, we will continue to use NIESR’s model when identifying spillover effects from the minimum wage.
74. As a further piece of corroborating evidence, we analyse the percentage increases in nominal pay across the wage distribution (Figure 5). This descriptive method also finds that pay growth is higher than the growth in the NLW up until the 20th percentile, and higher than the median growth in hourly pay up until the 23rd percentile, which may crudely indicate the area of the distribution which is no longer affected by the NLW.

Figure 5: Percentage change in basic hourly pay at each percentile, employees aged 25+, 5 percentile rolling average, UK, 2017-2018



Source: BEIS analysis of ASHE 2018, hourly pay

75. Additionally, the LPC’s consultation provided some evidence that the NLW may have some influences on the wages for workers aged below 25. Giupponi and Machin (2018) find that the introduction of the NLW generated positive spillover effects on the wages of younger cohorts in the social care sector, without negatively affecting their employment. However, this study solely considered the social care sector, and did not look at spillover effects in the wider economy. We have not quantified this effect for this IA as we believe that the impacts remain uncertain across the economy – especially in relation to how trends will develop as the NLW continues to increase. Stakeholders have previously suggested they may use youth rates more to absorb costs of the NLW¹⁴, with the LPC’s Youth Rates Review to consider the differentials between the different age-related rates. We will look to continue to identify how the evidence base builds to understand the feasibility of modelling such an effect in future Impact Assessments.

Direct and indirect effects

76. To estimate the impacts of the NLW and NMW on the earnings distribution, we use the Annual Survey of Hours and Earnings (ASHE), from 2018, to conduct wage distribution analysis for each of the rates.

77. We appraise the direct impact of the NMW/NLW rates as the cost of increasing wages to the new statutory minimum (with the associated non-wage labour costs). We have classified the increase in labour costs caused by the spillover effect up the earnings distribution as an indirect

¹⁴ For example, paragraph 36 of LPC’s 2017 report.

impact. This distinction is appropriate because the only regulatory requirement on employers is to meet the new pay floor. The decision to raise wages of those earning above the new rates in order to maintain pay differentials is at the discretion of employers and not required by the regulation – in fact, some employers may choose to use the squeeze in wage differentials as a way of mitigating the overall labour cost impact of an increase in the NMW/NLW. Previous research conducted by Incomes Data Research, which surveyed 120 medium and large firms across low-paying sectors, found that around half of these had narrowed or removed wage differentials, of which many contributed this to the NLW. This aligns with stakeholder findings, with the BRC reporting that differentials were reduced, and the FSB found that 14% of survey respondents had reduced differentials between the NLW and supervisors (40% kept it at the same level).

78. The RPC have commented in the past that our classification did not capture the possibility that some of the ripple effect may be non-discretionary because pay differentials are written into contracts. As argued in previous IAs, evidence from XpertHR and the LPC found that while the minimum wage has an impact on wider wage setting behaviour, employers tend not to set wages at X% above the rates, indicating that increases in pay differentials between employees is an indirect business response to the change in legislation. This is supported by qualitative evidence gathered by NIESR last year which found that the overall wage budget in large firms is often set at senior/board level which includes considerations about percentage increases in the NMW/NLW. Decisions about allocation to groups of employees and individuals are then made after this. Indeed, the LPC's finding that pay differentials have decreased this year further suggests that the prevalence of a non-discretionary ripple effect is little to none.

Approach to the Appraisal: Non-wage Bill Impacts

Transition costs

79. The concept of annual minimum wage increases are fully embedded in the UK labour market; they have occurred regularly for the last 19 years. Employers, in particular those in low paid sectors, will generally expect the minimum wage to increase, following the trends of the last few years and the general awareness that the NLW has a stated ambition to rise to 60% of median earnings by 2020¹⁵. This awareness is, in part, thanks to extensive communications campaigns in the lead up to past NMW/NLW upratings, which will run once more for the April 2019's rates.
80. Businesses may need to take some time to familiarise themselves with the new rates to ensure they are compliant with this incoming legislation. Therefore, we estimate the opportunity cost of businesses familiarising themselves with the legislation in paragraphs 100-102.

Non-compliance

81. In line with previous Better Regulation guidance¹⁶, 100% compliance is assumed unless there is evidence to the contrary. Consequently, we assume full compliance of the NLW and NMW because we do not have a reliable basis on which to make a robust estimate of the true level of non-compliance for future upratings.

¹⁵ <https://www.gov.uk/government/publications/national-minimum-wage-low-pay-commission-2018-report>

¹⁶ <https://www.gov.uk/government/publications/better-regulation-framework>

82. ASHE data is able to estimate the number of jobs paid on hourly pay rates below the age applicable NMW and NLW. However, both the ONS and BEIS make clear that this should not be considered as a direct measure of NMW/NLW non-compliance as a) there are legitimate reasons for a job to be paid below the NMW (e.g. a deduction can be made for accommodation) and b) some jobs remain out of scope of ASHE e.g. those in the hidden economy.
83. In light of this uncertainty, we assume full compliance with the NMW and NLW. This is a conservative approach because including cases of potential non-compliance in our cost estimate will increase the total estimated direct cost to business as we assume non-compliant employers will increase wages to the new rates to comply with the law. We do not have comprehensive estimates of minimum wage non-compliance. However, to give a sense of scale of this assumption; if we assumed that the number of employees registering pay below minimum wage rates in ASHE 2018 (estimated 437,000 workers) were excluded from our estimates, this would result in a reduction in affected workers of around 20%¹⁷. This would reduce the total cost to £556 million.

Data Quality

84. Our estimates of the impact of rate increases are based on the Annual Survey of Hours and Earnings (ASHE). ASHE is the official source of low pay data.
85. With regards to appraising the Apprentice NMW, ASHE data includes information on apprentices specifically (around 2,000 apprentices surveyed per year). An alternative data source, the Apprentice Pay Survey, has a larger sample of 10,000 apprentices and has more detailed pay information, broken down by bonuses, accommodation offset etc. The Apprenticeship Pay Survey is available for 2016 but (a) the information is reported by apprentices themselves, (b) the survey is not annual and (c) is not directly comparable with ASHE findings used for other employee job groups therefore has not been used here. This is in line with the LPC, when estimating coverage and bite of the NMW/NLW rates.
86. To calculate the quarterly counterfactual growth rate NIESR used the LFS which is a quarterly household survey. As noted by one of the academics who responded to our questionnaire, ASHE provides superior earnings data as it is employer reported rather than household. However, NIESR's preference was LFS as it provides more observations to calculate the mean growth rate. We continue to use the LFS for the specific analysis on the counterfactual growth rate, with some mitigation of this risk provided by using the 'hrrate' variable rather than 'hourpay'¹⁸ - the latter is a derived variable and is considered less reliable.

Appraisal of Impacts: Monetised Impacts

Coverage

87. Coverage of the incoming rates is sensitive to when in the year it is measured and to the forecasted counterfactual. We have ASHE earnings data from April 2018 and we apply our counterfactual growth rate to forecast coverage in April 2019 when the rates will be introduced.

¹⁷ Paragraph 83 states that according to ASHE 2018, 437,000 workers were paid below the relevant NMW/NLW. Given our projected coverage is 2.12 million (table 4), controlling for non-compliance would lower coverage by around 20%.

¹⁸ 'Hourpay' is derived from the individual's reported hours and earnings for all employees. It is considered to be less reliable than 'hrrate', due to greater measurement error in the derived variable.

The nature of our appraisal methodology means that coverage of the rates falls over the course of the appraisal period.

88. We estimate that over 2.1 million workers will be covered by the incoming NMW/NLW rates. This includes private and voluntary sector workers and public sector workers. Table 4 contains our estimates of coverage as well as the LPC’s projections, as set out in their 2018 report¹⁹. Our numbers differ to those presented by the LPC in their report. This is due to the different counterfactuals that we utilise, with the LPC using average earnings growth as the counterfactual. As stated by the LPC (para 2.84, Autumn 2018 report), “econometric analysis can better identify a counterfactual... than the approach [the LPC] take”.
89. The range between our estimates and the LPC’s emphasises the uncertainty associated with projecting coverage of the minimum wage and therefore these figures are only indicative of what true coverage will be. As an example, we can now compare forecasted coverage for 2018’s NLW/NMW uprating (as found in our 2018 IA and those provided by the LPC) against actual coverage found in ASHE 2018. We estimated that 2.01 million people were going to be covered in 2018, while the LPC estimated that 2.52 million people will be on the NMW/NLW in April 2018. However, both of these forecasts differ to the “actual” figure found in ASHE 2018, of 1.96 million workers. This may suggest that our 2018 IA’s total cost estimate was an overestimate for the April 2018 uprating in the minimum wage rates.

Table 4: Breakdown of coverage across different NMW/NLW rates, April 2018

	<i>Proposed rate</i>	<i>BEIS projected coverage (assuming our best estimate for the counterfactual)</i>	<i>LPC projected coverage (assuming average earnings growth)</i>
NLW (25+)	£8.21	1,762,000	2,396,000
21-24 NMW	£7.70	165,000	229,000
18-20 NMW	£6.15	104,000	147,000
16-17 NMW	£4.35	38,000	41,000
Apprentice NMW	£3.90	34,000	36,000
Total		2,102,000	2,849,000

Best and high estimate: labour costs

90. As discussed previously, our best/high cost estimate is based on a quarterly counterfactual growth rate of 0.70%. In this scenario the total cost to employers from implementing the LPC rate recommendations, and thus complying with the incoming legislation, is **£705.9 million**. This is a transfer from firms to workers, with some benefits for the exchequer (e.g. employer NICs) and therefore has a net neutral economic impact. It is made up of £585 million in increased wages and £121 million in additional employer NICs and pension contributions. (Numbers may not sum due to rounding). Tables 5,6 and 7 provide a further breakdown, in constant prices.
91. The total benefits to workers and the exchequer are estimated to be **£705.9 million** – the same value as the total labour costs.
92. HMT Green Book states that “when assessing costs and benefits of different options, it may be necessary or desirable to “weight” these costs and benefits, depending on which groups in

¹⁹ <https://www.gov.uk/government/publications/national-minimum-wage-low-pay-commission-2018-report>

society they fall on”. This is based on the principle of the diminishing marginal utility of income, whereby the value on an additional pound of income is higher for a low-income recipient and lower for a high-income recipient.

93. If we were to crudely apply Green Book’s estimate of the marginal utility of income (1.3, based on a review of international evidence), this would suggest that the benefits would be £922 million. However, we acknowledge that this marginal utility factor may not be applicable to the group that we believe will benefit from the proposed uprating, with different segments of this group likely to have varying marginal utilities. Furthermore, the uplift factor is the marginal utility of income for the median person/household. We believe that this would be a conservative estimate, as beneficiaries from the upratings will be in the bottom half of the distribution. We will look to see how better to estimate marginal utilities that would be applicable for our future analysis.

Table 5: Total labour costs in the best/high estimate:

High Cost	Year 1			Year 2			Total
	Wage and Non-wage Impacts (£m)			Wage and Non-wage Impacts (£m)			
	Wage Costs	Non-wage Labour Costs	Total	Wage Costs	Non-wage Labour Costs	Total	
NLW (25+)	£460.63	£95.17	£555.79	£77.20	£15.95	£93.16	£648.95
Main (21 - 24)	£27.27	£5.63	£32.91	£3.20	£0.66	£3.86	£36.77
Development (18 - 20)	£11.07	£2.29	£13.35	£1.23	£0.25	£1.48	£14.83
Youth (16 - 17)	£0.94	£0.19	£1.14	£0.05	£0.01	£0.06	£1.20
Apprentice	£5.39	£1.11	£6.50	£0.83	£0.17	£1.00	£7.50
Total	£505.30	£104.39	£609.69	£82.51	£17.05	£99.56	£709.25

Table 6: Direct labour costs in the best/high estimate:

High Cost	Year 1			Year 2			Total
	Wage and Non-wage Impacts (£m)			Wage and Non-wage Impacts (£m)			
	Wage Costs	Non-wage Labour Costs	Total	Wage Costs	Non-wage Labour Costs	Total	
NLW (25+)	£249.18	£51.48	£300.66	£24.98	£5.16	£30.14	£330.80
Main (21 - 24)	£16.90	£3.49	£20.40	£1.43	£0.30	£1.73	£22.13
Development (18 - 20)	£6.44	£1.33	£7.77	£0.49	£0.10	£0.60	£8.36
Youth (16 - 17)	£0.37	£0.08	£0.45	£0.01	£0.00	£0.02	£0.47
Apprentice	£4.14	£0.86	£5.00	£0.42	£0.09	£0.50	£5.50
Total	£277.04	£57.24	£334.28	£27.34	£5.65	£32.99	£367.26

Table 7: Indirect labour costs in the best/high estimate:

High Cost	Year 1			Year 2			Total
	Wage and Non-wage Impacts (£m)			Wage and Non-wage Impacts (£m)			
	Wage Costs	Non-wage Labour Costs	Total	Wage Costs	Non-wage Labour Costs	Total	
NLW (25+)	£211.45	£43.69	£255.13	£52.22	£10.79	£63.01	£318.15
Main (21 - 24)	£10.37	£2.14	£12.51	£1.77	£0.37	£2.13	£14.64
Development (18 - 20)	£4.63	£0.96	£5.59	£0.73	£0.15	£0.88	£6.47
Youth (16 - 17)	£0.57	£0.12	£0.69	£0.04	£0.01	£0.05	£0.73
Apprentice	£1.24	£0.26	£1.50	£0.41	£0.08	£0.49	£1.99
Total	£228.26	£47.16	£275.42	£55.17	£11.40	£66.57	£341.99

Low cost estimate: labour costs

94. We reproduce the analysis with a different counterfactual growth rate for our low cost scenario. Here, we assume that growth will continue at the same level between 2015 and 2017. The quarterly counterfactual growth rate corresponding to this is 1.04%. Given the counterfactual 'catches up' quicker than in our central estimate the cost to business and benefit to workers is lower than our best-case scenario above.

95. Overall our low cost estimate of the total labour costs is **£378.2 million**. This is split into wage bill impacts of £313m and non-wage impacts of £65m (numbers may not sum due to rounding). Tables 8,9 and 10 provide a further breakdown, in constant prices.

96. As a sensitivity, we have explored using different quarterly counterfactual growth rates. This includes long-run wage growth (from 2001-2017, shown in table 3), which decreases the total cost, and OBR median earnings growth, which increases the total cost²⁰. However we believe that using such rates would not be appropriate – as outlined in NIESR's report and last year, the former rate would not appropriately reflect the business cycle that the economy currently is in, while the OBR forecast considers earnings growth at the median, which would include individuals not affected by the uprating (hence the overestimate).

Table 8: Total labour costs in the low-cost estimate:

Low Cost	Year 1			Year 2			Total
	Wage and Non-wage Impacts (£m)			Wage and Non-wage Impacts (£m)			
	Wage Costs	Non-wage Labour Costs	Total	Wage Costs	Non-wage Labour Costs	Total	
NLW (25+)	£277.50	£57.33	£334.84	£11.50	£2.38	£13.87	£348.71
Main (21 - 24)	£15.09	£3.12	£18.21	£0.15	£0.03	£0.18	£18.38
Development (18 - 20)	£6.22	£1.29	£7.51	£0.01	£0.00	£0.02	£7.52
Youth (16 - 17)	£0.56	£0.12	£0.67	£0.00	£0.00	£0.00	£0.67
Apprentice	£2.66	£0.55	£3.21	£0.16	£0.03	£0.19	£3.39
Total	£302.03	£62.40	£364.43	£11.81	£2.44	£14.25	£378.68

²⁰ We estimate that using OBR's forecast growth rates for 2019 and 2020 would result in a total cost of £732 million.

Table 9: Direct labour costs in the low-cost estimate:

Low Cost	Year 1			Year 2			Total
	Wage and Non-wage Impacts (£m)			Wage and Non-wage Impacts (£m)			
	Wage Costs	Non-wage Labour Costs	Total	Wage Costs	Non-wage Labour Costs	Total	
NLW (25+)	£106.67	£22.04	£128.70	£3.44	£0.71	£4.15	£132.85
Main (21 - 24)	£7.29	£1.51	£8.80	£0.06	£0.01	£0.08	£8.87
Development (18 - 20)	£2.67	£0.55	£3.22	£0.01	£0.00	£0.01	£3.22
Youth (16 - 17)	£0.12	£0.02	£0.14	£0.00	£0.00	£0.00	£0.14
Apprentice	£1.70	£0.35	£2.05	£0.08	£0.02	£0.09	£2.15
Total	£118.44	£24.47	£142.91	£3.58	£0.74	£4.32	£147.23

Table 10: Indirect labour costs in the low-cost estimate:

Low Cost	Year 1			Year 2			Total
	Wage and Non-wage Impacts (£m)			Wage and Non-wage Impacts (£m)			
	Wage Costs	Non-wage Labour Costs	Total	Wage Costs	Non-wage Labour Costs	Total	
NLW (25+)	£170.84	£35.29	£206.13	£8.06	£1.67	£9.73	£215.86
Main (21 - 24)	£7.80	£1.61	£9.41	£0.08	£0.02	£0.10	£9.51
Development (18 - 20)	£3.56	£0.73	£4.29	£0.01	£0.00	£0.01	£4.30
Youth (16 - 17)	£0.44	£0.09	£0.53	£0.00	£0.00	£0.00	£0.53
Apprentice	£0.96	£0.20	£1.15	£0.08	£0.02	£0.09	£1.25
Total	£183.59	£37.93	£221.52	£8.23	£1.70	£9.93	£231.45

Transition costs

97. There are no official statistics that provide estimates of the number of businesses which are covered by the NMW and NLW increases examined in this IA. However, a number of surveys run by stakeholders provide some evidence. A CIPD survey of its members found that 51% are affected by the NMW/NLW. This is similar to that found by the Federation of Small Businesses (48% - 52%). Moreover BEIS' Small Business Survey 2016²¹ (page 105) found that 54% of SME employers to be unaffected by the NLW, even if it rises to £9 an hour by 2020, meaning 46% are affected (=100%-54%).

98. Naturally coverage will vary across sectors, and some representative organisations representing employers in specific low paid sectors found higher proportions. These latest surveys are in line with estimates used in last year's IA (43% - 54%).

99. Consequently, in this IA we take a range between 46% and 52% of employers who are affected by the proposed increase in the NMW/NLW. Using the 2018 Business Population Estimates

²¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/624580/small-business-survey-2016-sme-employers.pdf

(BPE)²², we estimate that between 1,082,000 and 1,270,000 employers will be affected by the changes to the minimum wage.

Familiarisation costs

100. As the IA is assessing only the marginal costs of implementing new NLW and NMW rates, it is relatively straightforward for an employer to familiarise themselves with this change. It will involve either checking Gov.uk or calling the Acas helpline – traffic through these routes tend to increase around the implementation of new rates, as supported by evidence in last year's IA. Additionally, employers may also hear about the rates via official Government communications or through third party channels, such as the news. After the Government's communications campaign for the introduction of the NLW, 48% of those aware of the NLW reported that the source of their awareness was a TV programme or news, 22% cited TV advertising, 13% mentioned their accountant and 13% mentioned national newspaper advertisements.
101. We assume it will take employers 5 minutes to establish what the new rates are – which includes some time finding the right place to look for information. This assumption is based on the average duration of visits to the National Minimum Wage landing page on Gov.uk (~ 4 minutes) and the length of calls that Acas received regarding NMW/NLW issues (~ 5 minutes).
102. To calculate the burden we estimate the opportunity cost of a HR Manager/ Director's²³ time by using the median hourly pay from ASHE 2018, uplifted for non-wage labour costs of 20.66%. Applying this to our estimate of businesses affected equates to a **one-off familiarisation cost of between £2.7m and £3.1m**. The former is our low-cost estimate, whilst the latter is our best/high cost estimate. This estimate has not been adjusted to take into account the familiarisation cost to the public sector, which would be negligible considering that there are only 12,535 enterprises in this sector in the UK (according to a snapshot of the Inter Departmental Business Register taken by the ONS in March 2017), and it constitutes a small proportion of total costs incurred by businesses.

Implementation costs

103. In April 2017 the NMW cycle was aligned with the NLW and future upratings of the NMW would take place in April rather than October. Given this structural change in the regulations we decided to estimate implementation costs in that year's impact assessment.
104. However, evidence from the Bank of England Wage Dynamics Survey²⁴ and the Workplace Employment Relation Study 2011²⁵ both state that the median frequency at which firms conduct pay reviews was once a year. Moreover, qualitative evidence uncovered last year by NIESR found 'pay rounds themselves were reported to now largely take place in April to correspond with increases in the minimum wage. Adjustments to comply with these rates therefore had minimal implications for administrative resources because pay was adjusted annually in any case' (p. 37).
105. This evidence suggests that firms generally review pay on an annual basis, and that many firms in low paying industries in particular have moved this review to April. This year, following engagement with the LPC, we find little evidence to suggest that this practice has changed for

²² <https://www.gov.uk/government/statistics/business-population-estimates-2017>

²³ <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupation4digitsoc2010ashtable14> (Table 14.5a, SOC 1135)

²⁴ <http://www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp568.pdf>

²⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/336651/bis-14-1008-WERS-first-findings-report-fourth-edition-july-2014.pdf

the majority of firms, and therefore no reason to believe that our assumption no longer holds. Consequently, we believe that there is a negligible, if any, additional burden as a result of the changes to this legislation. Even so, firms that do have to implement the changes out of sync from their usual pay review processes, do not highlight a burden - NIESR have previously referenced a brewery chain who make their 'general pay increases in January, finding that applying the NLW increases to relevant staff in April was little additional work'.

106. In light of this evidence we do not monetise implementation costs as a result of uprating the NMW/NLW as we expect them to be either equal to or near zero for businesses.

Net cost to business

107. We separate the impact on the private, public and voluntary sectors in order to calculate the EANDCB for our best estimate. We do this by calculating what proportion of workers eligible for each rate are in the private and voluntary sectors, and then we multiply this by the overall cost and coverage estimates above. A full breakdown is provided in Annex E.
108. Using the IA Calculator, we estimate that the equivalent annual direct impact on business is net £151.8 million (over maximum appraisal period of two years). These are based on our best case/high cost scenario. As of this year's Impact Assessment, the amendment to the National Minimum Wage Act will be a qualifying regulatory provision, thus will count towards the Business Impact Target.

Appraisal of Impacts: Non-monetised Impacts

109. Thus far we have monetised the direct and indirect impacts caused by an increase in the NMW/NLW. These have been a cost to business/benefit to workers as a result of an increase in employers wage bill. However there are non-monetised impacts that may arise as a result of accepting the LPC rate recommendations, such as broader impacts on the macroeconomy and potential fiscal implications.

Macroeconomic Impacts

110. As part of their evaluation of the impact of the NMW/NLW, the LPC state the impact of the previous uprating to the NLW/NMW (chapters 2 and 3). Below we summarise this and supporting evidence that identifies broader second/third-order impacts that the proposed 2019 uprating may have. We have also summarised the most recent academic literature on possible impacts of the minimum wages in Annex C.

Employment

111. Economic theory dictates that the most prominent macroeconomic impact resulting from an increase in the minimum wage is higher unemployment if the minimum wage rate is set above the competitive market equilibrium.
112. Due to the LPC's remit, we do not expect there to be any adverse employment effects as a result of the proposed NMW increases that are the purpose of this IA. They fulfil this remit by consulting broadly and analysing a thorough body of evidence. Moreover, LPC evaluations on the impact of the NMW (and it is one of the most evaluated policy interventions) have found no evidence that it has led to significant impacts on employment. Therefore we believe our assumption here is justified.

113. As discussed in the LPC report, preliminary findings indicate there has been little evidence of any negative employment effects arising from the NLW, and the LPC highlight that businesses have generally coped better than they had expected when the policy was first announced. Additionally, the LPC note that, while stakeholders recognise the presence of underemployment, they have received little evidence that the NLW had led to an increase in underemployment.
114. In their March 2015 EFO²⁶, prior to the introduction of the NLW, the OBR revised up their forecast unemployment rate by 0.2 percentage points (table B.1, pp.205), and as the NLW continues to rise to 60% of median earnings there is the possibility that unemployment may rise, with the OBR stating that:

“the planned increase in the National Living Wage (NLW) to 60 per cent of median hourly earnings by 2020 will [unemployment] a little between now and 2020”

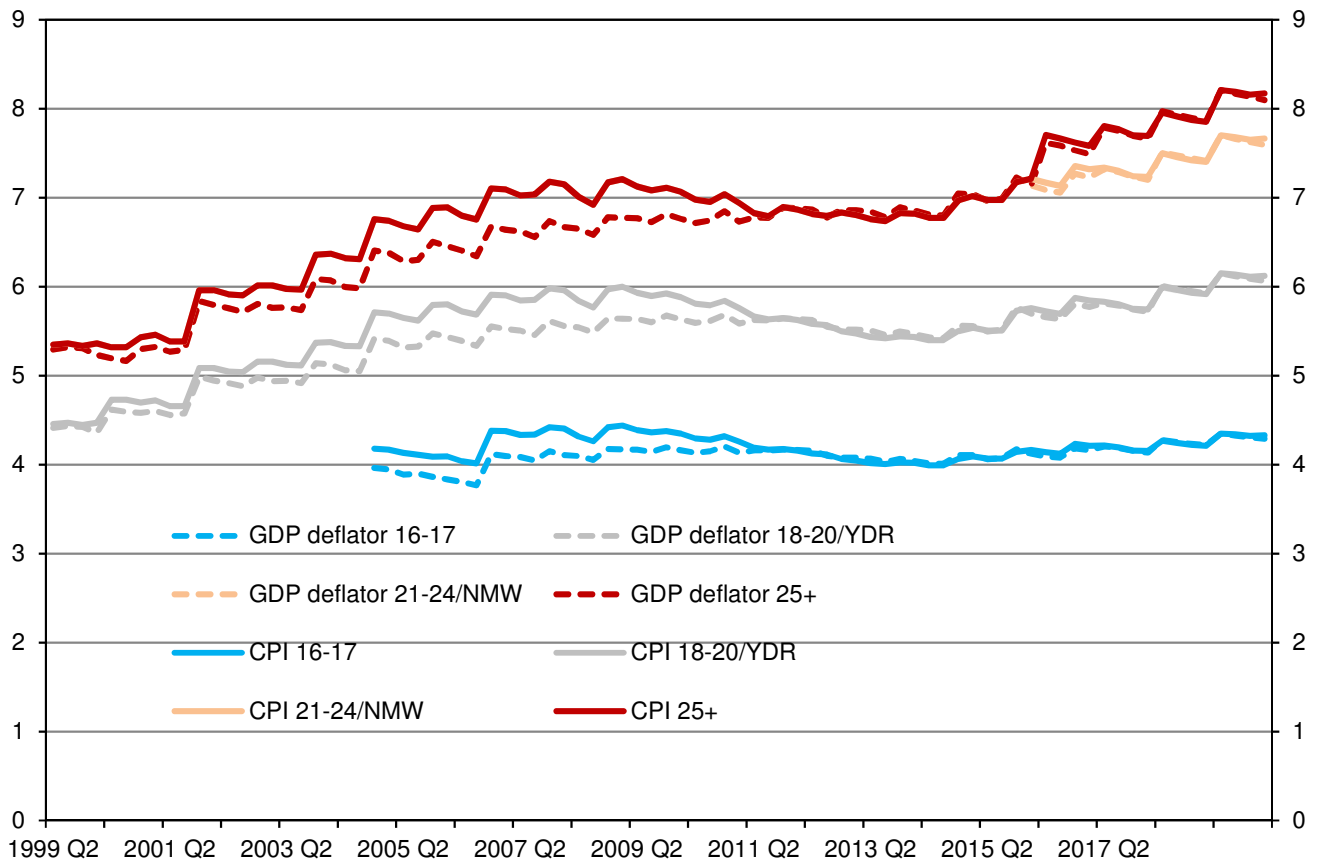
115. They go on to state in their October 2018 EFO that they expect the equilibrium unemployment rate to increase slightly over the forecast, reaching 4% in the medium term, due to the increase in the NLW. They do note that there is limited evidence that previous increases in the NMW and NLW have had a significant impact on employment. They postulate that this is because some low-wage workers have little choice who to work for and their employers can exploit their market power to keep wages low. However, there appears to be some inconsistency in this particular argument, as the policy intervention aims to tackle this market power at the very bottom.

Prices

116. Evidence from stakeholders suggests their preferential mechanisms to cope with the increased wage bill are to raise prices or absorb the higher costs by lowering profits, although survey data does not allow quantification of these impacts and there is no conclusive evidence in the official data. As identified by the LPC (figure 2.27 of their 2018 report), there is some evidence of a small ‘spike’ in inflation in low-paying sectors around the introduction of the NLW in Q2 2016. However, there has been little evidence in the data to suggest price rises have coincided with NLW upratings since then.
117. Many stakeholders note to the LPC that raising prices is not always possible in price-taking or highly competitive sectors. For example, the National Hairdressers’ Federation (NHF) have stated that hair and beauty businesses have raised prices where possible, but are constrained by competition and price-sensitive consumers
118. The 4.9% nominal increase in the NLW in Q2 2019 is expected to be around 3.2% when adjusted for CPI and 3.0% when adjusted for the GDP deflator. Compared with the introduction of the NMW in Q2 1999, the NLW is expected to be around 50% higher in real terms according to both deflators.
119. Figure 6 shows the real value of the minimum wage and average earnings over time deflating by CPI and the GDP deflator. This is indicative of the consumption and production value of these wages respectively.

²⁶ http://budgetresponsibility.org.uk/docs/dlm_uploads/July-2015-EFO-234224.pdf

Figure 6: Real value of the minimum wage, Q2 1999 – Q1 2019



Source: BEIS calculations based on ONS data, CPI (D7BT) and GDP deflator (L8GG). OBR forecasts used from Q4 2018

120. Theoretically, as outlined in box 1 of our 2015 IA, and in our 2018 IA, the real product wage is perhaps more relevant to employers as it is the wage relative to the price of the products they sell. This should also encompass all elements of labour costs such as NICs and other non-wage labour costs. In contrast, the real consumption wage is perhaps more relevant to workers. It is the level of wages relative to the price of goods and services they wish to consume. In theory, this should include the impacts of income tax and NICs, as well as other non-wage benefits.

Productivity

121. The increase in the NMW/NLW is universal for all workers of the same age and workers cannot be paid below the pay floor that the NMW/NLW provides. It may be argued that it is unlikely that increases to the NLW would give rise to a widespread increase in labour productivity, as might be predicted by the efficiency wage theory at an individual firm level.

122. However, increasing productivity is possible with the NLW (and to an extent NMW) as employers seek to increase the marginal product that each unit of labour produces in order to offset the increased labour cost. Firms could do this by increasing capital investment which can often complement labour rather than substitute for it. Alternatively, firms could invest in human capital to raise worker's skills, which may also improve motivation and retention both of which increase labour productivity.

123. Evidence from the CIPD's 2018 Labour Market Outlook suggests that 26% of firms respond to the NLW by improving productivity. However, their survey found that work intensification was the main change to improve productivity (27% of those affected by the NLW required staff to

take on additional tasks). As noted in the LPC report, the FSB found that productivity increases were less likely amongst small businesses as 11% of firms affected by the NLW had increased productivity (primarily through job redesign)

124. There is some anecdotal evidence that large employers are turning to automation, however attributing this to the NLW is not immediately obvious, and the consequence for jobs is unclear. Evidence provided to the LPC suggests that the move to automation varies by sector, with some being much further away from utilising it than others.

125. The LPC note the difficulty in assessing the impact of the NLW on productivity – while productivity has grown faster than the whole economy average in the two largest low-paying sectors (retail; and accommodation and food services), it is difficult to attribute this to the NLW. Previously commissioned econometric evidence from the LPC suggests there may be a positive link between NMW increases and productivity²⁷. The OBR increased their hourly productivity forecast by 0.3 percentage points in their March 2015 EFO in response to the NLW being introduced (table B.1, p. 205). This is supported by research carried out by Incomes Data Research for the LPC which found:

“Many employers have implemented productivity changes since the NLW was introduced and the most common approaches are to reorganise roles and responsibilities (50%), provide staff with extra training (45%) and upskill staff (44%).” (p. 9)²⁸ and (p. 212) of LPC’s 2017 report²⁹.

Other macroeconomic impacts

126. Other potential macroeconomic impacts include increased consumption as low paid workers have higher levels of disposable income. This will depend on individual household preferences and their marginal propensity to save. In the short term if consumption increases it will lead to increased aggregate demand, whereas in the longer-term output may increase if individuals choose to save their increased income.

127. All of the macroeconomic impacts mentioned here would not be first round effects, in some cases they would be third or fourth round as a result of the direct impact from uprating the NMW/NLW. Therefore, we do not quantify or monetise these impacts in this impact assessment, although as mentioned above the OBR have in the past sought to model the impacts of the NLW on employment and productivity. Academic literature has also attempted to do this, which we summarise in Annex C.

Fiscal impacts

128. In 2015 the OBR estimated that the total effect on net borrowing of introducing the NLW would be -£0.2 billion in 2019-20, with reductions in tax credits and housing benefits being offset by forecasted higher unemployment and lower profits. Their estimates are shown below in Table 11 (as taken from Table B.3 of the OBR’s July 2015 EFO)

²⁷ See for example: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/520387/Bernini_and_Riley_Report_2016.pdf

²⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/660565/IDR_Employer_research_FINAL_2017_Report.pdf

²⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/661195/Low_Pay_Commission_2017_report.pdf

Table 11: OBR estimates of the effects on net borrowing from introducing the NLW, July 2015

	£ billion				
	Forecast				
	2016-17	2017-18	2018-19	2019-20	2020-21
Average earnings of which:	-0.2	-0.3	-0.4	-0.5	-0.6
<i>Tax credits and housing benefit</i>	-0.2	-0.3	-0.5	-0.7	-0.8
<i>Income tax and NICs</i>	0.0	0.0	0.0	-0.1	-0.1
<i>Pension upratings</i>	0.0	0.1	0.2	0.2	0.3
Employment welfare	0.1	0.1	0.2	0.2	0.3
Inflation: upratings and debt interest	0.1	0.1	0.2	0.2	0.3
Profits: corporation tax	0.0	0.1	0.1	0.1	0.1
Consumption: VAT	0.0	-0.1	-0.1	-0.1	-0.2
Other economy effects	0.0	0.0	0.0	0.0	0.0
Total effect on net borrowing	0.0	-0.1	-0.1	-0.2	-0.2

Source: OBR *Economic and Fiscal Outlook July 2015*, table B.3 (pp.209)³⁰

129. The OBR note significant modelling uncertainties regarding these estimates. In particular, a series of challenging assumptions were made over how workers and wages react to minimum wages, including judgements over the extent to which firms absorb the costs through changing employment, or prices and profits. These assumptions are outlined in full in Annex B of the July 2015 Economic and Fiscal Outlook.

130. The OBR made their own assumption of an appropriate counterfactual of what minimum wages would have been in the absence of the NLW. The complexities of this led the OBR to assume that minimum wages would have risen in line with the average hourly earnings forecast and that the NLW would rise in a straight line, year-on-year, to the 2020 target of 60% of median earnings. This simpler counterfactual is similar to the counterfactual we used in 2017's IA, as well as that used by the LPC and the Resolution Foundation.

131. In terms of exchequer impacts, the OBR set out a number of channels through which public finances would be affected, including:

- Increases in income tax and NICs;
- Reduced income-related benefit spending, particularly tax credits and housing benefit;
- Changes to the price level will affect the uprating of tax thresholds and benefits, and payments on index-linked gilts;
- Higher average earnings growth will feed through to the basic state pension via the triple lock on uprating, with a smaller effect on pension credit;
- Higher unemployment will lead to higher spending on Jobseeker's Allowance and associated housing benefit;
- Increased VAT and excise duties receipts through higher household consumption;
- Changes in profits and investment would feed through to corporation tax receipts

There may also be other indirect effects on the economy that go on to affect receipts and spending (for example through house prices).

132. The OBR have now revised their NLW forecasts through to 2020. The cash amount of the NLW, and the baseline counterfactual wage, have both decreased compared to 2015

³⁰ http://budgetresponsibility.org.uk/docs/dlm_uploads/July-2015-EFO-234224.pdf

estimates, due to lower average hourly earnings. Despite these decreases, we still expect the OBR's work to be a good guide to the broad scale and nature of the exchequer impacts.

133. We have not estimated the net fiscal impacts in more detail than this because of the uncertainty associated with estimating the potential impacts listed above and stated in the OBR's report – some of which will be third or fourth round effects of the direct impact of the proposed increases in the NMW/NLW.
134. However, while our estimates of non-wage labour costs used in this IA (on both direct and indirect wage impacts) include a range of costs, they are largely made up of employer NICs, which will go to the exchequer in the first instance. Indirectly these exchequer benefits are also for employees - a proportion of NIC receipts are paid in to the National Insurance Fund and go towards the state pension.
135. Moreover, we have estimated the wage costs on public sector employers. A fuller depiction of this is provided in Annex E, but in summary 10% of the total cost in this IA is estimated to be borne by public sector employers; in present value terms, this is equivalent to £74.4m over the appraisal period in our best case scenario, however only £38.2m is a direct cost as a result of the proposed NMW/NLW rates. The remaining £36.2m is an indirect cost and will depend on behavioural responses of public sector employers. Increases to the NLW and NMW rates are expected to be met from within departments' existing budgets.

Enforcement

136. Her Majesty's Revenue and Customs (HMRC) enforce the NLW/NMW on behalf of the Government. HMRC responds to 100% of worker complaints and also conducts proactive, targeted enforcement of at-risk employers. HMRC also carry out awareness-raising activity to prevent non-compliance in the first place and therefore reduce the need for enforcement action. If HMRC investigate an employer that is breaking the NMW law and issues a Notice of Underpayment (NoU) containing details of the underpayments, the period to which they relate and the workers affected. Once issued with an NoU, the employer will have to pay back the arrears owed to workers, face a financial penalty, and can be publicly named and shamed under the NMW Naming scheme, unless it successfully appeals against the NoU. Generally, a broad base of analysis suggests that non-compliance is mostly through mistake, not malice.
137. In April 2018, ASHE estimates there were 437,000 jobs with pay less than the NMW/NLW rates held by employees aged 16 and over. This constitutes 1.6% of all 16+ UK employee jobs. This represents an increase from 341,000 jobs (1.4%) in 2017.
138. It is possible that as the NLW continues on its path of 60% of median earnings by 2020, the incidence of non-compliance will increase due to the associated increase in coverage of jobs paid near the statutory wage floor. This potentially creates a larger number of instances where non-compliance could occur; however, this is highly uncertain. Furthermore, weighting issues identified by the ONS in ASHE has led to a revision of 2017 estimates for those being underpaid the NMW/NLW. We therefore do not feel making such assumptions at this time would be sensible.
139. It should be noted that the Government continues to work with employers and workers to support compliance and tackles any underpayment through strengthened enforcement action. For example, in 2017/18 the Government has:
- Increased the enforcement budget to £26.3 million in 2017/18 up from £25.3 million in 2016/17, and twice as much as 2015/16's budget (£13 million).

- Undertaken a £1.48 million communications campaign to encourage workers to check their pay and to educate employers on the ways in which they can be found to be non-compliant.
- Through HMRC, utilised sector specific guidance and innovative techniques to nudge employers towards compliance, with over 3 million text messages sent to “at-risk groups”
- Identified a record £15.6 million of minimum wage arrears, benefitting over 200,000 workers (double the number of workers identified in 2016/17)

140. The additional Exchequer expenditure on enforcement is not a direct result of the LPC recommendations for the April 2019 rates which are the focus of this IA, therefore we have assumed there is no change in the cost to the Exchequer of enforcement from the NMW/NLW upratings.

Small and Micro Business Assessment

Impact on small and micro businesses

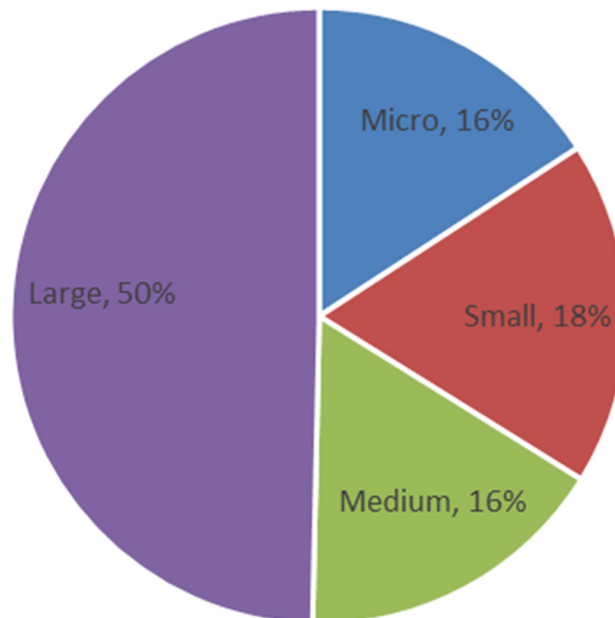
141. Table 12 contains our estimates of projected coverage of workers on the NMW/NLW at the start of our appraisal period (April 2019) and our best estimate of the total costs corresponding to each business size, over the course of the appraisal period.

Table 12: Coverage of NMW/NLW workers by business size, Q2 2019

Business size	Micro		Small		Medium		Large	
	Coverage	Total Cost	Coverage	Total Cost	Coverage	Total Cost	Coverage	Total Cost
NLW (25+)	343,000	£82.2	333,000	£93.6	265,000	£89.2	822,000	£273.5
Main (21 - 24)	26,000	£5.1	39,000	£6.6	23,000	£4.8	84,000	£13.6
Others	42,000	£5.6	58,000	£6.0	31,000	£2.9	60,000	£5.0
Total	412,000	£93.0	430,000	£106.2	319,000	£96.9	965,000	£292.0

Source: BEIS calculations using ASHE 2018. Note: Coverage and cost estimates by business size may not match total costs and coverage exactly due to rounding and sampling error when data is disaggregated

Figure 7: Total Cost by business size pie chart



142. As the pie chart above shows, we expect 34% of the costs of this policy to be borne by small and micro businesses. According to ASHE 2018, 22% of workers are employed in small and micro businesses. Therefore the burden is expected to fall slightly more on small and micro businesses compared to larger firms, although we do not expect them to be significantly disproportionately affected by the changes to this legislation. Paragraphs 130-131 explain why it is not feasible to exempt these businesses.

The possibility of exempting small and micro businesses

143. There are both equity and economic reasons why small and micro businesses are not exempt from the NMW/NLW. Firstly, an exemption would undermine the objectives of the policy because a significant proportion of NMW/NLW workers work in small and micro businesses and so an exemption would significantly undermine the ability of the minimum wage to address the possibility of employers exploiting the vulnerability of certain workers to pay them

unacceptably low wages and undercut their competitors. Moreover, the cost imposed on small and micro businesses is equal to the benefits that the workers receive. Consequently, exempting small and micro firms would mean a significant proportion of the expected benefits from this proposal would not be realised.

144. There are also economic reasons against an exemption. Exempting small and micro businesses would enable them to avoid the increase in labour costs associated with raising the wages of the lowest paid. This would create economic inefficiencies through three effects. Firstly, it would create a distortion in the market by distorting cost-competitiveness at the expense of medium and large businesses which would undermine competition. Secondly, it would create a disincentive for businesses to grow – if they were to expand sufficiently to be classified as a medium sized business, they would be obliged to raise wages for all their employees to meet the NLW/NMW rates, thereby introducing a significant cost of expansion at the threshold between small and medium sized businesses.

145. The annual NMW/NLW increases are fully embedded in the UK labour market and this will be the 19th annual increase. The majority of employers are aware of the increasing minimum wage, in particular the NLW: Following a Government communication campaign, 92% of employers were aware of the NLW (a figure that was 70% before the campaign). Given the success of previous communications campaigns, there will be employer targeted communications activity and guidance to ensure small and micro businesses are aware of the NMW/NLW changes. Moreover we pre-announced the rates in October 2018 – before the legislation has gone through Parliament – to maximise adjustment time for businesses. This combined with the communications campaigns will seek to mitigate the burden placed on small and micro businesses.

Specific Impact Tests

Equalities impact and Family Test

146. Section 149 of the Equality Act 2010 requires BEIS to have due regard to promoting equality of opportunity, eliminating discrimination, and fostering good relations between groups. The impact of the NLW and NMW increases on equalities considerations is considered in full in Annex G. In summary, the evidence suggests that there will be disproportionate positive wage impacts on protected groups as a result of the proposed increase in NMW/NLW, and we have found no evidence of the potential for any negative impacts.

Sector impact

147. Low-pay sectors will be impacted disproportionately by the NMW/NLW rate increases. Annex E provides a detailed estimate of the coverage of the NLW and NMW rates for a range of low-pay sectors, as defined by the LPC such as social care, retail, and hospitality. A sector breakdown for some individual rates is not provided because of sample size issues.

Implementation

148. The changes to the NMW and NLW regulations will be made through secondary legislation and will come into force on 1st April 2019.

Monitoring and evaluation

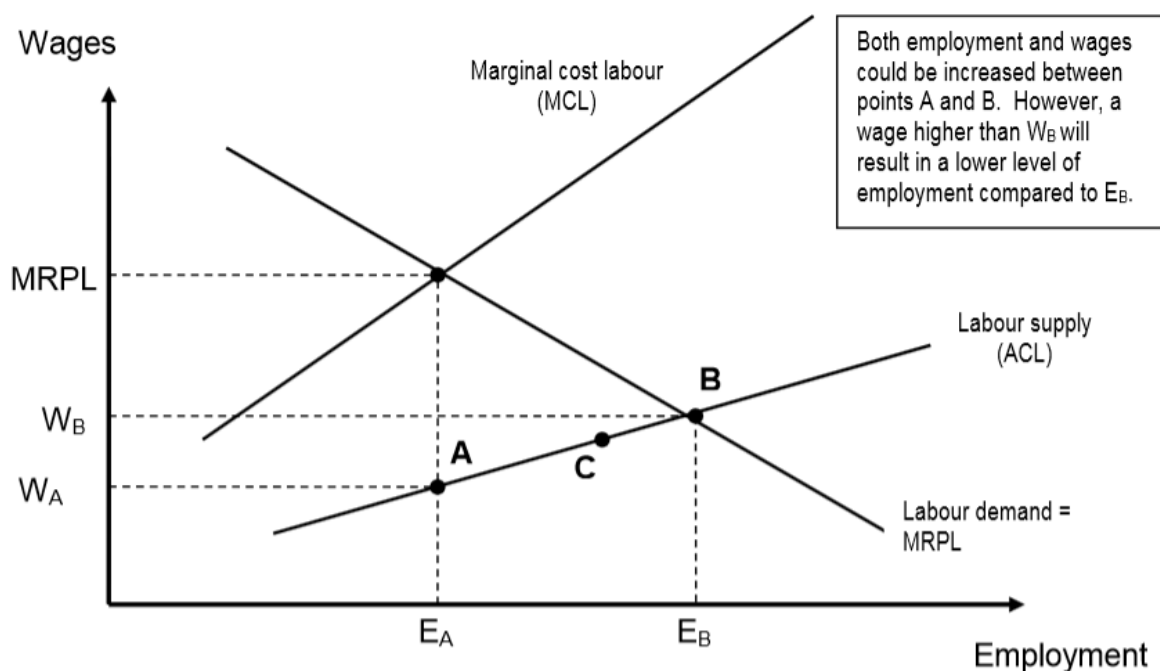
149. The remit for the LPC will continue to include the requirement to monitor, evaluate and review the levels of the different minimum wage rates. Historically, the LPC's report has included extensive discussion of the impacts of the NMW rates on a range of considerations, and this year's report builds upon the evidence base on the impact of the introduction of the NLW. In making future recommendations for NMW rate increases, the LPC will carry out extensive monitoring and evaluation of the current rates. The LPC will be carrying out a Youth Rates Review, to report in Spring 2019, that will investigate the impact and suitability of the rates structure. Furthermore, we anticipate that the LPC will assess the impact of the NLW once it reaches its target of 60% of median earnings.

Annex A: Theoretical Rationale for Intervention

150. To illustrate the implications of imperfect labour markets where employers have market power, consider a stylised example of a monopsonist where workers have homogenous skills. The monopsonist will initially hire the cheapest workers first. In order to attract new workers, it must raise the marginal wage, but it must pay this new, higher wage to all its employees. Consequently, the marginal cost of labour is greater than the average cost, as captured by the labour supply curve.

151. The employer will maximise profits when the marginal cost of labour equals the marginal revenue product. This is illustrated by point A in the diagram below: This equilibrium has lower wages and lower employment than the perfectly competitive equilibrium at point B. A statutory wage floor can address this market power and bring the market equilibrium closer to the efficient, perfectly competitive outcome – such as point C.

Figure 8: A labour market characterised by market power for low paid workers



152. In practice, evidence suggested to the LPC and that found by NIESR previously indicates that it is unlikely that this stylised pure market structure is representative of competition in low paying sectors today. Certain sectors and locations may share features of a monopsonistic market, in the sense that there are many workers but few employers; however, there is an excess supply of labour resulting in weak bargaining power for employees in low paid sectors. As mentioned in paragraph 4, unequal bargaining power can result in sub-optimal outcomes, and therefore part of the rationale of the NMW/NLW is to correct this market failure and ensure that weak bargaining power does not lead to exploitative wages.

153. Conversely, some low paid sectors may also demonstrate features of a perfectly competitive market. The NIESR report describes how many of the employers interviewed take appreciation for – or at least consider – their competitors pay when it comes to making pay decisions.

Annex B: Academic Engagement 2018

142. Continuing our engagement with the RPC on this particular, BEIS officials met with RPC Commissioners and the Secretariat to discuss the RPC's previous opinion. We proposed to circulate a questionnaire to academics, to further test NIESR's analysis. The questionnaire was circulated to the RPC for comments, prior to being sent to academics. We thank RPC Commissioner, Jonathan Cave, for suggesting academics who would be best placed to comment on our questionnaire.
143. We contacted a total of 26 academics, with six responding, which has formed the basis of findings alluded to in the main body of this assessment. We thank the various academics who took time to engage with this. This includes:
- Sarah Brown
 - Richard Dickens
 - Matt Dickson
 - Scott French
 - Kerry Papps
 - Thijs van Rens
144. These experts were largely supportive of BEIS's approach to the counterfactual, although some of them expressed disagreement with certain choices. We summarise their comments on each question below.

Do you agree that the 'catch-up' concept for estimating the impact of the NMW/NLW uprating is the most appropriate methodology to appraise the minimum wage? Why? If you disagree, what do you believe is a more appropriate methodology?

145. Most experts agreed that the 'catch-up' model was the most appropriate to assess the impact of the minimum wage. They described it as 'sensible', 'intuitively straightforward' and 'entirely appropriate' to evaluate the uprating. Nevertheless, one academic pointed out that the marginal nature of the appraisal (i.e. the fact that it focuses on the proposed uprating for the upcoming year, ignoring the target for the NLW to reach 60% of median earnings by 2020, subject to sustained economic growth) risked underestimating the effects of the uprating. Indeed, according to this academic, firms 'may have in mind reaching an endpoint rather than focusing on just the current uprating', which may impact both direct wage effects and spillovers. Moreover, they state that wages move around such that there may be 'large estimates of costs in some years and low estimates of costs in others' and that a catch-up approach may miss this – in particular using the example that, following the increase from £7.20 to £7.50, many workers were shifted directly to £8 an hour. It is important to note, that through our spillover assumption, we aim to capture any increases in wages that could be attributed to the minimum wage.
146. Another expert agreed that the 'catch-up' model was a reasonably good way of estimating costs to employers but added that it failed to capture costs to some low-wage workers. Firstly, 'there may be significant disemployment effects on some subgroups, for example part-time women'; secondly, there is 'evidence that fewer low-wage workers were able to enter employment when the minimum wage was raised'. As a consequence, according to this expert, our approach 'ignores the possibility that the minimum wage might lengthen the time currently-unemployed workers take to reach a given wage, even if it reduces the time taken for currently-employed workers to reach that wage'. We do not tend to agree with this first assertion. Employment rates have increased and unemployment and inactivity rates have decreased for nearly all subgroups associated with a higher NLW coverage, which suggests no obvious

adverse impacts from the NLW. As far as part-time female workers are concerned, the LPC cited a study by Aitken, Dolton and Riley (2018) which finds 'weak' evidence of a negative impact on hours worked using one specification and 'some' evidence of a reduction in employment retention using another specification on ASHE data but not on LFS data. We will continue to monitor this trend, however believe that further robust evidence is needed to identify any adverse effects on part-time female workers.

147. In summary, as articulated by another academic who agrees with the 'catch-up' model, 'there are pros and cons of all approaches and the assumptions made with each approach can always be challenged'. This academic therefore suggests that BEIS 'explore how sensitive the estimates are to looking at counterfactual wage growth at percentiles neighbouring the 20th percentile'. Consequently, we carried out such sensitivity analysis and found that using wage growth at lower and higher percentiles than the 20th percentile of the wage distribution as a proxy for wage growth of workers on the minimum wage in the counterfactual scenario does affect the total cost. However, as articulated in paragraph 54, there is no empirical or theoretical backing to justify deviating from the 20th percentile.

We use the latest ASHE wage distribution as the starting point for the counterfactual. Do you agree with this approach? Why? If you disagree, what counterfactual 'wage distribution' do you believe is most suitable to use as a starting point, and how do you suggest we measure this?

148. Respondents agreed with our approach. One academic thought that resetting the counterfactual wage distribution every year to the current data ignored past costs 'inherent to the current increase', but he noted the arguments for doing so made by the NIESR study commissioned by BEIS, namely the uncertainties and inaccuracies arising from forecasting over a longer time period. However, this academic did suggest considering the costs associated with the target for the NLW to reach 60% of median earnings by 2020. Through the LPC, the NLW's impact is considered on an annual basis. Furthermore, we estimate only the costs of the Regulations laid before Parliament (carrying out a marginal appraisal) and not the costs of a target which is subject to sustained economic growth (and therefore may not be reached if the LPC believe that this is at risk). Evaluating the 2020 target would require us to make an assumption about the future path of the NLW, pre-empting the LPC's recommendations.

We use the lowest percentile in the wage distribution where there are no spillovers from NMW/NLW as a proxy for counterfactual wage growth of minimum wage workers. Do you agree with this approach? Why? If you disagree, what do you believe is a more suitable proxy for counterfactual wage growth?

149. Most experts agreed with our approach. According to two of them, it is 'simple and transparent' and the choice of the 20th percentile is 'well justified in the NIESR report'. 'The alternative would be to use an estimated structural model, which is much worse. Any structural model requires assumptions, which are to some extent arbitrary and therefore open to discussion and political manipulation.'
150. As suggested above (paragraph 147), several academics also suggested that BEIS carry out sensitivity analysis by testing different percentiles' wage growth rates as a proxy for counterfactual wage growth. One of them argued that the percentile from which there are no more spillovers might have moved up in the wage distribution since the introduction of the NLW (however, as previously stated, this theory is at odds with both our findings and those of the LPC). Other academics thought that spillovers were likely to be dynamic, initially affecting only the lowest percentiles of the wage distribution and propagating to higher percentiles over time.

151. Two respondents provided contrary views to our assumption. The first one invited BEIS to check whether wage growth at the 20th percentile was similar to wage growth of workers at the bottom percentiles in the past. As stated in last year's IA and in NIESR's report, the changes in the labour market over the past twenty years does not make such findings accurate - the experts consulted by NIESR 'were not convinced that looking at UK wage growth for the pre-1999 period was very useful, as too much had changed in the intervening two decades' (page 47 of their report). For example, 'wage growth followed a very different trajectory before and after the financial crisis of 2008' (page 56). Finally, in their own analysis, NIESR 'found no conclusive and consistent evidence that the 20th percentile wage growth rate systematically overestimates nominal wage growth at the bottom of the distribution' (page 71).

152. The second one argued that structural and cyclical factors observed since the 2008 crisis (e.g. development of the gig economy, low inflation) would prevent wages at the lowest percentiles from increasing as rapidly as wages at the 20th percentile in the absence of an uprating, but this assertion was not evidenced.

Are you familiar with the regression model used by Butcher et al. (2012) to evaluate the impact of the NMW at different points of the earnings distribution? If so, do you believe NIESR's application of the model to identify where spillovers are present in the wage distribution is a suitable way to detect where the 'ripple effect' from the NMW/NLW stops? If no, why do you say that?

153. All respondents who were familiar with the model thought that NIESR's application was suitable. One academic wrote: 'Alternatives are to impose a greater functional form on the spillovers like in the Lee model but the drawback of this is that it specifies a very particular form of the spillovers'. However, this academic did caution that the identification of spillover effects by NIESR relied on a model based on local areas and that spillover effects at this level did not necessarily match those at the aggregate level.

NIESR recommended an average uniform growth rate (i.e. the same in every quarter) for all minimum wage workers. Do you believe this is a sensible approach for estimating the impact of NMW/NLW upratings? Why? If not, what approach do you believe would be more suitable? For example, would a business cycle approach be appropriate?

154. All experts agreed with our assumption and many of them thought that it would be difficult to justify a different assumption. Nevertheless, as mentioned above, one academic thought that wages could increase in jumps and to round numbers (i.e. not by a constant rate, contrary to our assumption) and therefore recommended exploring the sensitivity of our estimates to these jumps. Similarly, some academics suggested testing a business cycle approach whereby the wage growth rate would fluctuate over time. They argued that assuming a constant rate implied that wage growth follows a random walk, which seems unlikely to them, and recommended using a slightly more sophisticated forecasting model (e.g. an ARIMA – Autoregressive Integrated Moving Average – model). We are of the opinion that, although ARIMA models are widely used for short-term forecasting, they require a degree of judgement to fit the model (to identify the appropriate number of lags) and a choice of non-linear estimation method (different methods will give different results). In other words, they are more an art than a science and, moreover, it may be difficult for them to beat random walk models out of sample. As such, we do not believe that it would be appropriate, nor proportionate to utilise an ARIMA model for the analysis here.

155. Finally, a relatively minor suggestion was made to use a wage growth assumption derived from the ASHE (Annual Survey of Hours and Earnings) data instead of the LFS (Labour Force Survey). As discussed in paragraph 85 the use of the LFS is due to a greater number of

observations, so while we acknowledge the robustness of ASHE (hence why we use ASHE data for the majority of our analysis in this IA), we will continue to follow NIESR's recommendation here.

To what extent do you agree with the statement that 'in the absence of a minimum wage uprating, wage growth at the bottom of the pay distribution would be at, or close to zero'? Why?

156. Most academics disagreed with the statement. In an analysis of the effects of the NMW on wage growth, one of them found that these effects were often larger than expected, which suggests that 'estimates were partly capturing wage growth among low-wage workers that would have occurred anyway'. Another academic, who also disagreed with the statement, thought that it was difficult to argue that there would be significant wage growth at the bottom of the wage distribution in the absence of an uprating' but that 'labour shortages in some sectors and regions might eventually lead to some wage growth'.

157. Some respondents agreed with the statement. As mentioned above, one of them argued that structural and cyclical factors observed since the 2008 crisis (e.g. development of the gig economy, low inflation) would prevent wages at the lowest percentiles from increasing as rapidly as wages at the 20th percentile in the absence of an uprating; however, this assertion was not evidenced. According to others, some workers on the current minimum wage are likely to earn more than their market value and would have earned less than the minimum wage if there had not been an uprating in the previous year. As a result, even if their market value increases, they could experience a lower wage growth than that experienced by others in the counterfactual scenario. In other words, although average wage growth at the bottom of the distribution can be as high as at higher percentiles, wage growth is not necessarily equally distributed among low-wage workers.

In the absence of the NMW/NLW, what in your view would be the biggest factor firms would anchor pay to? In other words, what would be the strongest determinant of the wage rate for the lowest paid workers in the absence of a UK minimum wage?

158. Most experts thought that this was difficult to judge. However, some mentioned the following factors: immigration; historical wage settlements and inflation; labour shortages at a local level; fairness considerations; unionisation; market imperfections; and the balance between affordability and competition (competitors' rates of pay). According to two academics, the main determinants of wages in general are workers' job opportunities outside the firm where they are employed and other employed workers' wages at different firms. However, we conclude that there was little in their responses to provide an alternative postulation of what firms would anchor to pay to.

Do you have any other comments regarding NIESR's approach and minimum wage counterfactual more broadly? In particular, any thoughts on estimating long-run impacts from previous years' upratings would be welcome.

159. To account for 'base-raising' effects and estimate the long-run impacts of previous upratings, one expert suggested simulating wage growth of the lowest paid workers from the introduction of the NMW/NLW onwards, taking into account the business cycle and specific wage dynamics at the lowest part of the wage distribution (for example, allowing for lower wage growth in periods of austerity and low inflation). However, according to this expert, such an approach inevitably yields 'less precise estimates given that the counterfactual is playing out over a longer period'.

160. Finally, according to another academic who analysed the effects of past upratings on workers' long-run wage growth, the NMW 'may affect wage growth in the long term for some young workers by lowering their training levels'.

Annex C: Recent Literature

161. We believe the minimum wage to be one of the most studied policies across the world, with much of the UK literature used to inform the findings outlined throughout both this Impact Assessment and previous iterations. Following discussions with the RPC, we include this annex, which summarises recent studies commissioned by the LPC³¹. We have used both our and the LPC's judgement in taking relevant findings from these studies. An alternative summary of the wider literature can be found in NIESR's 2017 report and is not replicated here.

NIESR (2017/2018) – Aitken et al.

162. This study involved an econometric analysis of ASHE and LFS data, using a difference-in-difference method (i.e. identifies a group directly affected by the NLW and compares effects against a group of workers with similar characteristics that was not affected by the NLW). Aitken et al. (2017) use identify that the introduction of the NLW in April 2016 led to large increases in real wages for NLW workers. Their initial results did not provide conclusive evidence of employment effects as a result of the NLW.

163. Their final report (2018) again did not find conclusive evidence of significant employment (or hours worked) impacts as a consequence of the NLW. They did find that may be some negative effects for workers in the retail sector and for women working part-time, however these findings are sensitive to the specification of models used. They also found that real hourly wages for NLW workers grew by around 4-7 percentage points more than they otherwise would have done, at the time of the NLW's introduction. This effect held true across all regions, and low-paying industries/occupations. They conclude that the NLW has had little adverse impact on overall employment retention so far.

Dickens and Lind (2018)

164. This study involved analysing ASHE and LFS data to consider geographic variation in wages and the impact of the NLW on employment (again through a difference-in-difference method). They found a strong impact on wages, especially at the bottom of the wage distribution, and for women. They found a modest negative effect on employment in 2017 (reflected by an increase in economic inactivity rather than unemployment). The authors do confess that further work is needed to address concerns about the robustness of these findings.

Lordan (2018)

165. This study uses ASHE data to identify the impact of the minimum wage on the shares of automatable employment. The author finds some evidence of significant negative employment effects, predominantly in manufacturing industries. The study also looks at the effects on offshorable jobs, however finds insignificant effects. These findings are in line with Lordan's earlier studies, which found that minimum wage increases were followed by modest falls in the employment share of automatable jobs

Giupponi, Machin (2018)³²

166. This study involved analysing a unique dataset on the social care sector. They find that the NLW significantly affected wages but had little adverse effects on employment in this industry,

³¹ Unless stated separately, the studies listed in this annex can be found at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/660515/LPC_research_summary_2017.PDF or in Appendix 2 of the LPC's 2018 report

³² "Changing the Structure of Minimum Wages: Firm Adjustment and Wage Spillovers", with S. J. Machin, G. Giupponi.

or on firm closures. They do find that firms offset the increased labour cost by reducing the quality of care services. Additionally, they found strong evidence of wage spillovers for younger workers, who saw no negative effects on employment but did experience higher wages in tandem with the higher adult minimum wage increasing. They suggest that this may be due to an employer preference for fairness.

McGuinness, McVicar, Park (2017)

167. This study examines Northern Ireland only, using a difference-in-difference approach (comparing workers in Northern Ireland with those in the Republic of Ireland, who aren't covered by the UK's minimum wages). When looking at the NLW, they find no evidence of an impact on employment in Northern Ireland – however a six percent increase in Ireland's minimum wage may have offset any employment impacts seen in Northern Ireland.

Incomes Data Research (2017)

168. This study involved surveying 120 firms across low-paying sectors. By analysing the impact of minimum wage increases in April 2017, they found that the NLW was having a significant impact on pay structures, resulting in a merging of pay grades and a greater use of age-related pay. The majority of firms they surveyed had narrowed pay differentials (potentially suggesting a lower spillover effect), however the study found little evidence of large-scale reductions in other aspects of pay as a consequence of the NLW. They also found that firms looked to increase productivity or raise prices as a means to absorb NLW increases. While they found some evidence of reduced hours worked, they found no change in employment.

Butcher, Dickens, Manning (2012)³³

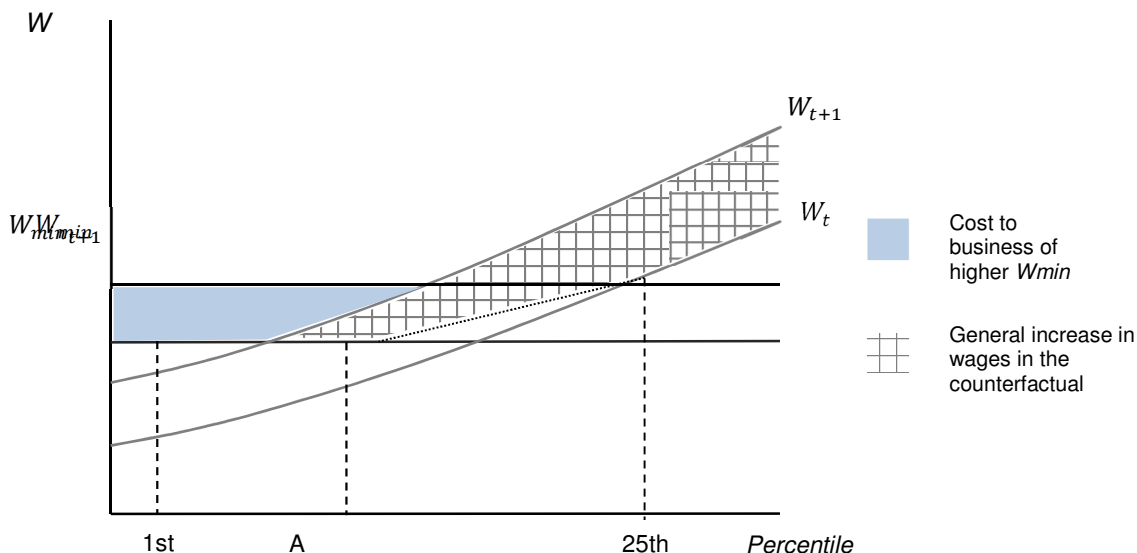
169. This study involved using ASHE data (and its predecessor dataset) to explore the impact of the NMW introduction in 1999. This study found some spillover effects onto higher wage groups. Specifically they found that those earning up to the 25th percentile of the wage distribution (40% above the level of the minimum wage in 2010) experience an indirect impact from the minimum wage. This finding directly influences the OBR analysis described in paragraph 114 of this IA, and is also considered within NIESR's work on the counterfactual that informs our approach.

³³ <http://cep.lse.ac.uk/pubs/download/dp1177.pdf>

Annex D: Shadow wage curve in RPC's proposed counterfactual

170. The RPC have previously proposed a framework whereby a significant proportion of workers at the very bottom of the wage distribution would likely experience zero wage growth in the counterfactual in the absence of an NMW/NLW uprating due to the cumulative effects of minimum wage increases over time. This is based on figure 9 below.

Figure 9: A labour market characterised by market power for low paid workers



171. Figure 9 shows the people earning the current minimum wage, W_{\min} . The 'shadow wage curve', W_t , shows what people would have been earning in the absence of the NMW policy and that there would be some workers earning less than the minimum wage (along W_t beneath W_{\min}). The following year, the NMW increases to $W_{\min(t+1)}$, and the whole distribution also experiences wage growth to the new theoretical shadow wage curve W_{t+1} .

172. Under this wage growth assumption (roughly uniform across the shadow distribution in the diagram above), it is suggested that some workers earning the NMW would have counterfactual wage growth of zero (e.g. those at the 1st percentile) in the absence of an uprating, before later catching up with the new rate. This is because W_{\min} still lies above the shadow wage curve, W_{t+1} , at this point. However, people at point A for instance, who were previously on W_{\min} will see an increase in their wages from W_{\min} to W_{t+1} . This increase will be less than for the distribution to the right of point A, but more than those who remain on W_{\min} .

173. In summary, the framework postulates that if the minimum wage had never been implemented, the wage distribution in present time would extend below the current value of the minimum wage (i.e. some workers would be earning less than the minimum wage) – referred to as the 'shadow wage curve/distribution'.

174. This cannot be observed because compliance with minimum wage legislation is high. The existence of a shadow wage curve extending below the current minimum wage level cannot be falsified because the counterfactual is unobservable. However, on the balance of evidence provided in previous IAs (which we have used to inform this year's IA), NIESR concluded in their report last year that the counterfactual may not extend below the current minimum wage and that 'resetting' the counterfactual is the most suitable method to appraise the impacts of NMW/NLW upratings.

175. Furthermore, the majority of academics we questioned this year disagreed with the statement that 'in the absence of a minimum wage uprating, wage growth at the bottom of the

pay distribution would be at, or close to zero'. While noting it to be 'incredibly hard to judge' one respondent stated that 'wage growth now is unlikely to be at zero for the low paid'. Below we highlight two contrary responses.

176. One response to our questionnaire did highlight that some NMW/NLW workers are likely to earn more than their market value and therefore earn less than the minimum wage if there had not been an uprating in the previous year. They state that, while average wage growth at the bottom of the distribution can be as high as at higher percentiles, wage growth is not necessarily equally distributed among low-wage workers. This theoretical postulation is consistent with previous comments from the RPC. However, we would assume the majority of those receiving the NMW/NLW to experience some wage growth. For the purposes of a quantitative appraisal we must use an assumption that, on balance, reflects the average position – while acknowledging that there will be dispersion around the mean.
177. Additionally, one academic noted sympathy to RPC's previous critique that the approach used in this IA does not take into account the base-raising effect of previous years' NMW uprating...[which would be needed] to answer the broader, longer-term question of the impact/cost of successive upratings relative to a counterfactual in which NMW rises did not happen' (they acknowledged that this is not the purpose of our Impact Assessment). He consequently did ask that, to err on the pessimistic side, to consider what a model where the wage growth at the lowest part of the distribution is assumed to be zero.
178. We have not seen any evidence that would suggest zero wage growth. As the NLW continues to increase we will need to remain vigilant for new evidence that could impact our modelling approach, for example robust evidence of negative employment effects may be an indicator we should monitor to inform the validity and extent of this approach.
179. However, following the suggestion provided by one respondent to our questionnaire (paragraph 166), and in line with analysis undertaken in last year's IA, we consider one rudimentary way of practically representing the shadow wage curve framework. NIESR's evidence does not necessarily suggest the theory holds in practice, nor does it suggest that the counterfactual wage level is different from what is observed in the wage data. Moreover, the empirical evidence does not suggest that those at the bottom of the wage distribution would necessarily see the lowest wage growth in the absence of the NLW/NLW uprating (see Box 2, page 71 of NIESR's report). **Therefore, the estimates provided here are illustrative only.**

Constructing a 'shadow wage distribution'

180. Given that the minimum wage has been in force since 1999 we cannot observe the shadow wage distribution. We would expect that all points on the shadow wage distribution would see some change over time, reflecting underlying trends in wage inequality which in turn would be driven by labour market and exogenous factors (for example technological progress and underlying labour market trends). The profile of the counterfactual will be a function of the shape of the shadow wage distribution and the wage growth that would tend to happen at each point of its distribution.
181. Under this framework, for jobs on the shadow wage distribution hypothetically paid below the current minimum wage rate, the current rate is theoretically still 'binding' on these jobs. And as long as the current rate remains binding, the additional wage costs/benefits would be counted as direct costs/benefits under the better regulation framework. With respect to a minimum wage uprating; all else equal (specifically wage growth), jobs on the shadow wage distribution below the current minimum wage will take more time to grow sufficiently to equal

the incoming rate and therefore for these jobs the costs and benefits will endure for a longer period of time.

Challenges

182. Applying this framework means overcoming several significant analytical challenges, given that the shadow wage distribution can never be observed. In order to estimate a shadow wage distribution, some base wage distribution must be used. Any effects from the minimum wage will be present in any wage distribution from 1999 onwards. One option is to use pre-minimum wage data. However, there are several reasons why this may not be appropriate. These are discussed in NIESR's counterfactual research report (p. 11). In summary:

- There is significant uncertainty over whether a wage distribution from 20 years ago is an appropriate input to a model seeking to estimate impacts for 2019 onwards.
- There are significant reasons to believe that the shape and evolution of the (shadow) wage distribution would have been considerably different to trends observed pre-1999. Specifically:
 - Considerable changes to the population and labour supply (number and composition).
 - Considerable changes to labour market institutions, including trends in unionisation and individual employment rights. Many of these would have impacted on participation and wage setting.
 - Wider structural economic changes, for example significant innovations (e.g. process automation) which would affect how labour and capital are substituted.
 - Societal changes, for example consumer transparency which would increase societal pressure to increase wages (the voluntary 'Living Wage' campaign for example).
- Projecting a wage distribution from 1998 would require forecasting over a long time-horizon. NIESR explain in their report (pp. 56-57) how the uncertainty associated with forecasting is magnified as the time horizon grows – almost 20 years in this instance.
- Furthermore, NIESR find that the impact of forecast errors is asymmetric – estimates of counterfactual wage growth that are too low lead to larger overestimates of the costs to business than vice versa, as the period it would take for the counterfactual to catch up to incoming levels would be prolonged (with the RPC's proposed method exacerbate the issue to a greater extent than if the counterfactual is reset each year)

Approach

183. Despite the limitations outlined above, below we undertake calculations to suggest the order of magnitude of costs and benefits if an approach to model a shadow wage distribution were based on pre-minimum wage data. To do this we have taken the April 1998 distribution of hourly earnings excluding overtime for workers aged 25+ and projected this forward using the percentage increase at the 20th percentile in each year between 1998 and 2018. To forecast beyond 2018, we have applied the growth rate used as our best estimate in this IA (average quarterly growth at the 20th percentile between 2012 and 2017). It is important to note that this growth rate is lower than that which NMW/NLW workers actually experienced due to the minimum wage upratings. This methodology is consistent with that used in last year's IA (specifically 2018's Annex B)

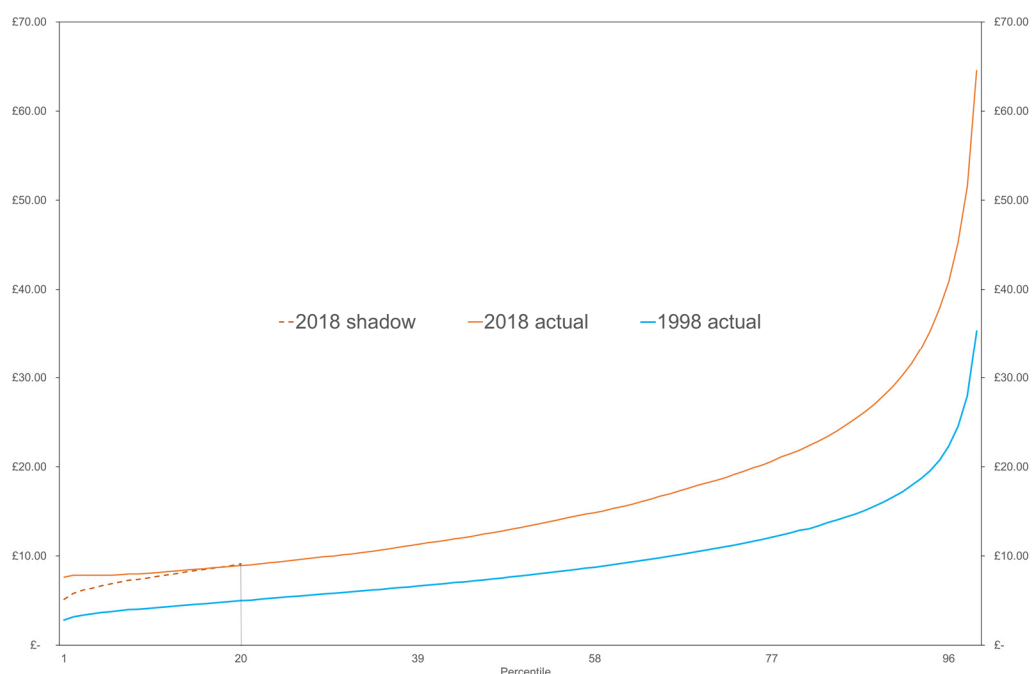
Box 2: Inputs and assumptions

- For the approach below we have used the 1998 wage distribution from ASHE/NES. This is the most recent year of data from before the introduction of the minimum wage in 1999. It is possible that employers may have sought to pre-empt the introduction of the minimum wage by increasing wages of the lowest paid in 1998. It is not possible to adjust for this potential anticipation effect.
- Our key assumption is that percentiles 1 to 19 of the wage distribution would grow at the same rate as the 20th percentile.
- In theory, we should estimate the point of the distribution at which the ‘ripple effect’ of the minimum wage stops for each year and use growth of the percentile just above. However, we do not have estimates of this for every minimum wage uprating.
- NIESR’s analysis suggests that growth at the 20th percentile is an unbiased proxy for growth experienced by the lowest paid segment of the wage distribution. In particular, “the estimated counterfactual sometimes implies higher and sometimes lower wage growth rates than at the 20th percentile” (p. 83).

Results

184. Figure 10 shows the outcome of the approach described above and compares the resulting shadow wage distribution with the original 1998 distribution and the actual 2018 distribution. From the 20th percentile upwards the 2018 shadow and actual distributions are identical by design. For reference, the 2018 £7.83 NLW rate cuts in around the 10th percentile of the 2018 shadow wage distribution. In the actual 2018 distribution the NLW hits at around the 5th percentile.

Figure 10: distribution of hourly earnings (exc. Overtime), 1998, 2018 and estimated ‘shadow wage distribution’



Source: BEIS analysis of Annual Survey of Hours and Earnings and New Earnings Survey. Hourly earnings excluding over time (HEXO)

185. As outlined above, in order for the above distribution to be an accurate reflection of the *true* shadow wage distribution there would have had to have been no significant changes to

underlying wage inequality over the previous 20 years. This is unlikely given some of the significant shifts in the labour market in the last 20 years (population changes, automation and technology, changes to employment law, improved transparency on business practices etc.)

186. Projecting the shadow wage distribution forwards gives an indication of when, in the future, percentiles of the distribution below the current minimum wage level might 'catch-up' with that level based on our assumed growth rate under this framework.

Potential application

187. Our main IA wage cost/benefit model applies a uniform counterfactual growth rate applied to the most recent wage distribution to produce a counterfactual wage distribution. The direct wage costs are then the sum of the difference between the value of the incoming minimum wage level and the wage levels in the counterfactual wage distribution which are below the incoming rate. As mentioned elsewhere in this IA, we conduct marginal appraisals of minimum wage upratings and under this approach no worker can earn less than the current minimum wage for the purposes of the appraisal. However, under the framework mentioned above, if the shadow wage *level* for some jobs is below the current minimum wage, this could potentially lower the *growth* they would experience in the counterfactual (i.e. a lower level may influence the growth rate).

188. In terms of practically estimating costs /benefits, some percentiles of the segment of the wage distribution affected by the incoming minimum wage rate would grow at zero percent for some period of time, before growing above zero percent until they 'caught up' with the current minimum wage rate before then growing to meet the incoming rate.

189. On the balance of evidence, both the NIESR report and the majority of academics that we have consulted believe that the approach to modelling the wage costs of the NLW/NMW implemented in this IA is an appropriate and unbiased method for appraising the impact of the NMW/NLW uprating. However, one way of applying the analysis discussed in this annex is to:

a) take the average length of time taken for those earning below the proposed minimum wage (£7.83) in the shadow wage distribution (estimated to be those up to the 11th percentile) to catch up to £7.83 [we estimate this to be 5.8 years for the NLW, however this will vary across other rates]

b) apply this length of time to a portion of the percentiles affected by the incoming minimum wage rate in the actual 2018 wage distribution.

190. We use this to suggest a time period over which the lowest paid would experience zero wage growth. We crudely estimate a cost to business by taking the number of people affected by the NLW increase (1.7m in our best case scenario shown in the main body of this IA) and multiply this by the minimum wage uplift (£8.21 - £7.83 = 38p) over the course of the 5.8 years.

191. Following the 5.8 years, those workers would then experience wage growth, to catch-up with the minimum wage. We therefore add the cost estimated in our best-case scenario to provide an estimated cost to business of £5.9 billion³⁴. Testing this same approach using lower percentiles of the wage distribution (i.e. assuming that the minimum wage ripple effect was lower) gives lower estimates.

³⁴ This cost is not directly comparable to those estimated in Annex B in last year's IA, as we have amended assumption regarding the number of people affected under the shadow wage counterfactual, to simplify this illustrative example.

192. This example illustrates the maximum cost that this methodology would estimate – as suggested above, even in the event that some workers would experience zero wage growth in the absence of a minimum wage, it is highly unlikely for a fifth of the wage distribution to experience zero wage growth.
193. It's important to stress that we do not believe this approach will accurately estimate the true cost to business/benefit to workers for the reasons outlined above and explained by NIESR in their report (section 4.3) and boxes 1 and 2 in their report provide evidence why the shadow wage curve framework may not necessarily hold. Specifically, whilst the framework cannot be falsified, NIESR's research did not uncover positive evidence supporting this approach.

Annex E: Public/Private/Voluntary sector cost breakdown

194. This annex breaks down our best and low cost scenario estimates of costs by public, private and voluntary sectors. We have done this by estimating the proportion of public, private and voluntary sector workers who are projected to be affected by each of the rates in April 2019, using ASHE 2018, and then applied these proportions to the total costs estimated previously in the impact assessment.

195. When calculating the EANDCB we combine the private and voluntary sectors. The proportion of workers who we expect to be affected in these sectors for the NLW is 89%, whilst for the 21-24, 18-20, 16-17 and Apprentices NMW rates the proportions are 97%, 98%, 96% and 90% respectively. Please note that these values are presented in constant prices, with figures rounded to two decimal places.

Public sector (£m)

Best estimate	Direct		Indirect		Total
	Wage Costs	Non-wage Labour Costs	Wage Costs	Non-wage Labour Costs	
NLW (25+)	£30.52	£6.30	£29.35	£6.06	£72.23
Main (21-24)	£1.42	£0.29	£0.94	£0.19	£2.86
Development (18 - 20)	£0.12	£0.03	£0.09	£0.02	£0.26
Youth (16 - 17)	£0.01	£0.00	£0.02	£0.00	£0.04
Apprentice	£0.47	£0.10	£0.17	£0.03	£0.76
Total	£32.54	£6.72	£30.58	£6.32	£76.16

Low estimate	Direct		Indirect		Total
	Wage Costs	Non-wage Labour Costs	Wage Costs	Non-wage Labour Costs	
NLW (25+)	12.26	2.53	19.91	4.11	£38.81
Main (21-24)	0.57	0.12	0.61	0.13	£1.43
Development (18 - 20)	0.05	0.01	0.06	0.01	£0.13
Youth (16 - 17)	0.00	0.00	0.02	0.00	£0.02
Apprentice	0.18	0.04	0.11	0.02	£0.35
Total	13.06	2.70	20.71	4.28	£40.75

Private sector (£m)

Best estimate	Direct		Indirect		Total
	Wage Costs	Non-wage Labour Costs	Wage Costs	Non-wage Labour Costs	
NLW (25+)	£227.12	£46.92	£218.43	£45.13	£537.59
Main (21-24)	£16.63	£3.44	£11.01	£2.27	£33.35
Development (18 - 20)	£6.55	£1.35	£5.07	£1.05	£14.02
Youth (16 - 17)	£0.37	£0.08	£0.58	£0.12	£1.15
Apprentice	£3.93	£0.81	£1.42	£0.29	£6.46
Total	£254.60	£52.60	£236.51	£48.86	£592.58

Low estimate	Direct		Indirect		Total
	Wage Costs	Non-wage Labour Costs	Wage Costs	Non-wage Labour Costs	
NLW (25+)	91.21	18.84	148.20	30.62	£288.87
Main (21-24)	6.67	1.38	7.15	1.48	£16.67
Development (18 - 20)	2.53	0.52	3.37	0.70	£7.11
Youth (16 - 17)	0.11	0.02	0.42	0.09	£0.64
Apprentice	1.53	0.32	0.89	0.18	£2.93
Total	102.05	21.08	160.03	33.06	£316.23

Voluntary sector (£m)

Best estimate	Direct		Indirect		Total
	Wage Costs	Non-wage Labour Costs	Wage Costs	Non-wage Labour Costs	
NLW (25+)	£16.53	£3.41	£15.90	£3.28	£39.12
Main (21-24)	£0.28	£0.06	£0.19	£0.04	£0.56
Development (18 - 20)	£0.26	£0.05	£0.20	£0.04	£0.55
Youth (16 - 17)	£0.00	£0.00	£0.00	£0.00	£0.01
Apprentice	£0.16	£0.03	£0.06	£0.01	£0.27
Total	£17.23	£3.56	£16.35	£3.38	£40.52

Low estimate	Direct		Indirect		Total
	Wage Costs	Non-wage Labour Costs	Wage Costs	Non-wage Labour Costs	
NLW (25+)	6.64	1.37	10.79	2.23	£21.02
Main (21-24)	0.11	0.02	0.12	0.03	£0.28
Development (18 - 20)	0.10	0.02	0.13	0.03	£0.28
Youth (16 - 17)	0.00	0.00	0.00	0.00	£0.00
Apprentice	0.06	0.01	0.04	0.01	£0.12
Total	6.91	1.43	11.08	2.29	£21.71

Annex F: Coverage of the NMW/NLW (April 2018) by low paying sector and region

196. The tables below list coverage of the NLW and the NMW rates by region and low paying sector, as defined by the RPC. As mentioned in the Counterfactual section, the choice of counterfactual assumption is crucial for determining coverage in April 2019, hence they may differ to the LPC's estimates. The figures below are based on our central scenario of 0.70% quarterly counterfactual wage growth. Using our high and low scenario assumptions will result in significantly different coverage estimates. Note figures may not sum due to sampling variability and rounding.

	<i>Coverage of all NLW and NMW rates - projected number of workers paid at or below in April 2019</i>	
	NLW	NMW rates
North East	88,000	19,000
North West	222,000	46,000
Yorkshire & Humber	172,000	37,000
East Midlands	157,000	36,000
West Midlands	181,000	33,000
South West	138,000	30,000
East	151,000	26,000
London	167,000	17,000
South East	188,000	31,000
Wales	95,000	19,000
Scotland	128,000	31,000
Northern Ireland	75,000	20,000
Total	1,762,000	341,000

	Coverage of all NLW and NMW rates - projected number of workers paid at or below in April 2019	
	NLW	NMW rates
Agriculture	19,000	3,000
Food processing	63,000	4,000
Textiles	8,000	-
Retail	343,000	86,000
Hospitality	246,000	101,000
Security and enforcement	17,000	1,000
Cleaning and maintenance	255,000	6,000
Social care	105,000	9,000
Childcare	58,000	15,000
Leisure	24,000	12,000
Hair & beauty	25,000	14,000
Office work	47,000	9,000
Non-food processing	58,000	9,000
Storage	65,000	7,000
Transport	69,000	7,000
Call centres	7,000	1,000
Non-low paying sectors	351,000	56,000
Total	1,762,000	341,000

Annex G: Specific Impact tests

Equality Analysis

197. Under the Equality Act 2010 the Department for Business, Energy and Industrial Strategy, as a public authority, is legally obligated to have due regard to equality issues when making policy decisions. Specifically the Public Sector Equality Duty (PSED) sets out:
- Eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Act;
 - Advance equality of opportunity between people who share a protected characteristic and those who do not; and
 - Foster good relations between people who share a protected characteristic and those who do not.
198. The protected characteristics consist of nine groups: age, race, gender, disability, religion or belief, sexual orientation, gender reassignment, pregnancy and maternity, marriage and civil partnership.
199. This Equality Analysis considers the potential equality impacts of the National Minimum Wage and National Living Wage upratings.
200. The increase in the NMW and NLW have universal coverage for workers aged 16 and over working in all sectors and regions of the United Kingdom. The policy aims to protect workers and all employers are legally obliged to pay at least the statutory minimum hourly rate.

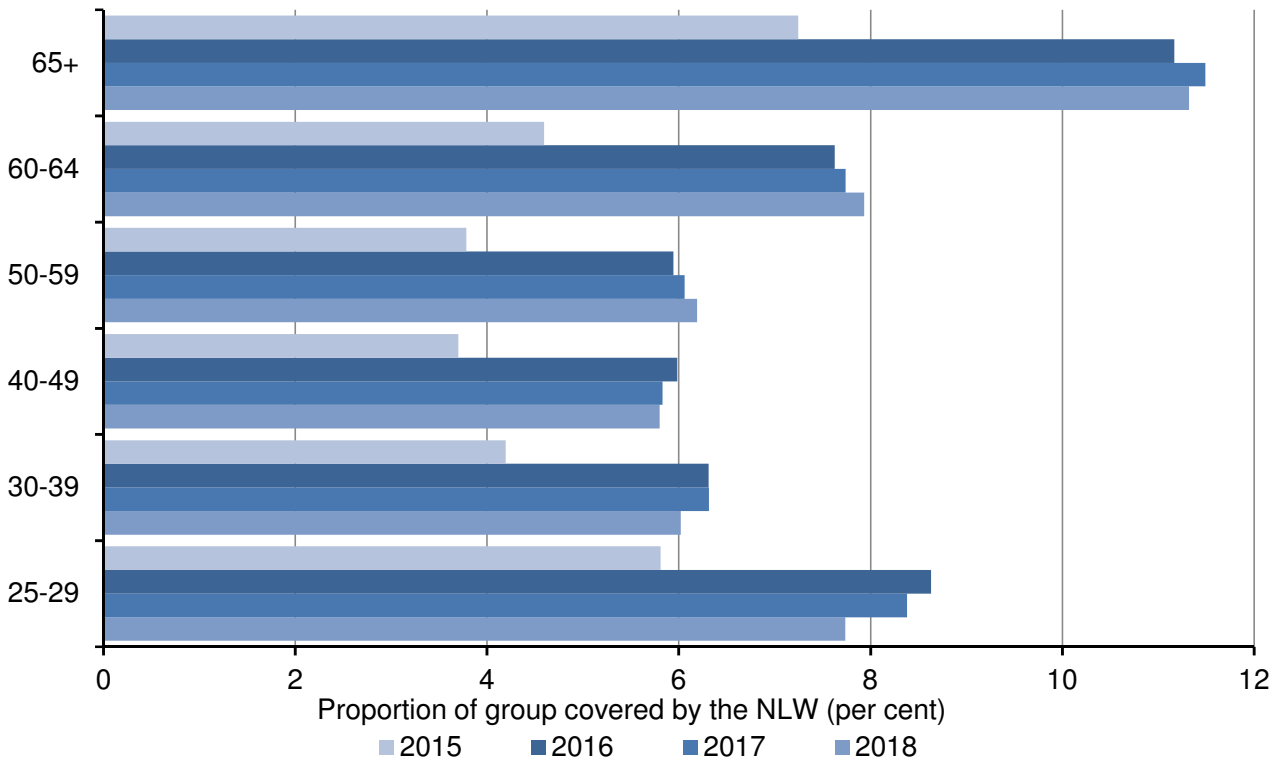
Estimating pay rates by personal characteristics

201. Our statistical information is sourced from Annual Survey of Hours and Earnings (ASHE) and Labour Force Survey (LFS) data from the Office for National Statistics (ONS). There are two key challenges when analysing the effects of the rate increases on protected groups in the labour market.
- Firstly, ASHE does not include data that enables us to analyse earnings by ethnicity, religion, disability status, marital status, sexual orientation, gender reassignment or pregnancy and maternity.
 - Secondly as set out previously in this IA, pay variables in LFS are less robust than ASHE.
202. The Labour Force Survey does, however, provide information relating to ethnicity, nationality and disability status and earnings. Using an imputation method to boost responses, ONS are able to more accurately report earnings data by personal characteristics. We have replicated their findings for the latest quarter of available data and present the findings below.

Age

203. Figure 11 shows the estimated coverage of the NMW/NLW in 2015, 2016, 2017, and 2018 by age. The LPC estimate that coverage is highest for older workers, with 11.3 per cent of those aged 65 and over paid at the NLW. Coverage for those aged 25-29 (7.7%) has fallen behind coverage of those aged 60-64 (7.9%) for the first time since the introduction of the NLW as a result of increasing coverage for 60-64 year olds and falling coverage for 25-29 year olds. The share of workers between 30 and 59 years of age is lower by comparison, however because of the volume of workers in this age range, they account for most of the individuals paid at the minimum wage.

Figure 11: Coverage of the NMW/NLW by age, UK 2015-2020



Source: LPC estimates using ASHE 2010 methodology, low pay weights, UK, April 2015-18.
Data excludes first year apprentices

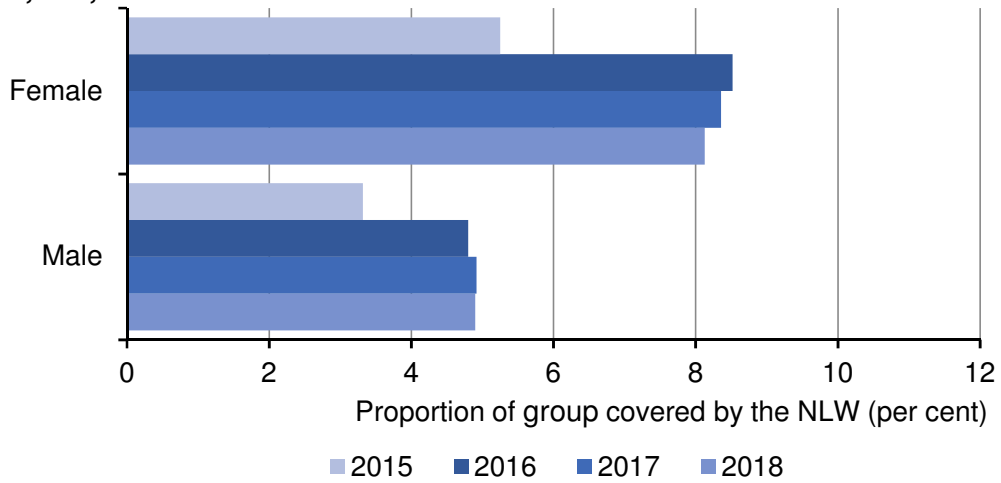
Gender

204. Figure 12 estimates the gender composition of the coverage of the NMW/NLW over time. Coverage of the NMW/NLW is higher for females (8.1%) than for males (4.9%), this disparity is largely due to women being more likely to work in low-paid roles and part-time³⁵.

205. LPC estimates suggest that over three-fifths of all NLW jobs are held by women, compared with around half of all jobs. These findings show that a higher proportion of women than men are expected to benefit from the increases in the NMW/NLW rates, indicating there may be disproportionate positive impacts felt as a result. We have also found no evidence that increases in NMW/NLW rates cause gendered effects on employment; figure 4 shows that between Q1 2017 and Q1 2018 employment increased at a faster rate for women (1.2%) than for men (0.4%)

³⁵ ONS (2017) *How do the jobs men and women do affect the gender pay gap?*, Office for National Statistics
<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/howdothejobsmenandwomendoaffectthegenderpaygap/2017-10-06>

Figure 12: Coverage of the NMW/NLW for workers aged 25 and over, by worker and job characteristics, UK, 2015-18



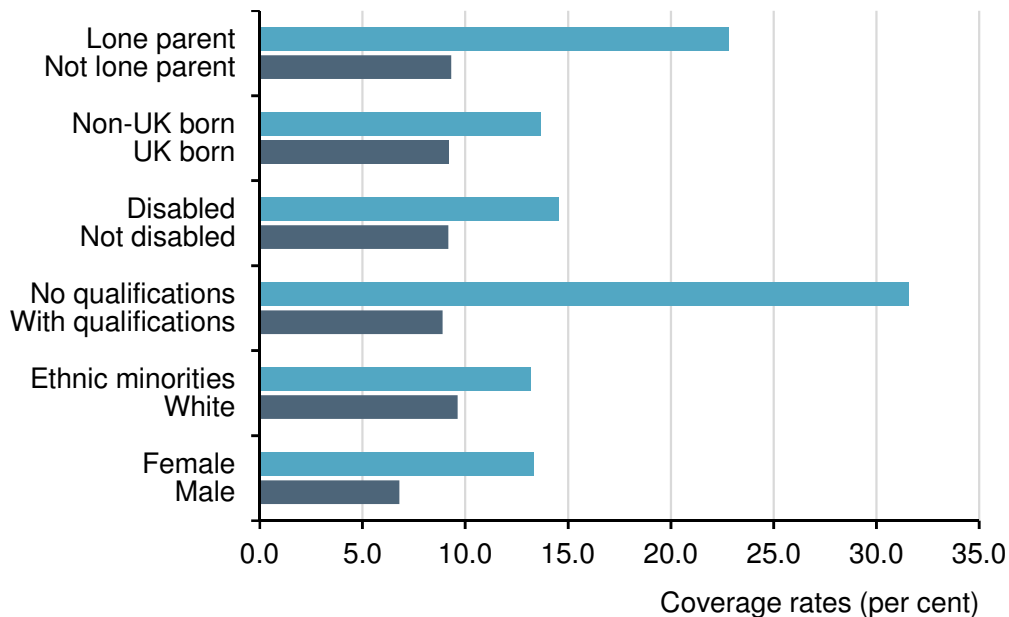
Source: LPC estimates using ASHE 2010 methodology, low pay weights, UK, April 2015-18. Data exclude first year apprentices.

Disability

206. Further supporting analysis by the LPC shows a greater proportion of employees with a disability (14.6%) were in jobs covered by the NMW/NLW compared to those without a disability (9.2%). There is also no evidence of NMW/NLW rates reducing employment for these groups, Figure 13 shows that between Q1 2017 and Q1 2018 the employment rate has risen at a faster rate for those with a disability (1.3%) than for those without (0.7%).

207. These findings suggest that there are no adverse effects of last year’s increases in the NMW/NLW rates on individuals with this protected characteristic. If the proposed increases are implemented, there are likely to be disproportionate positive impacts felt among employees with a disability as a result of the increase in rates.

Figure 13: Coverage of the NMW/NLW for workers, by personal characteristics, UK, 2017-18

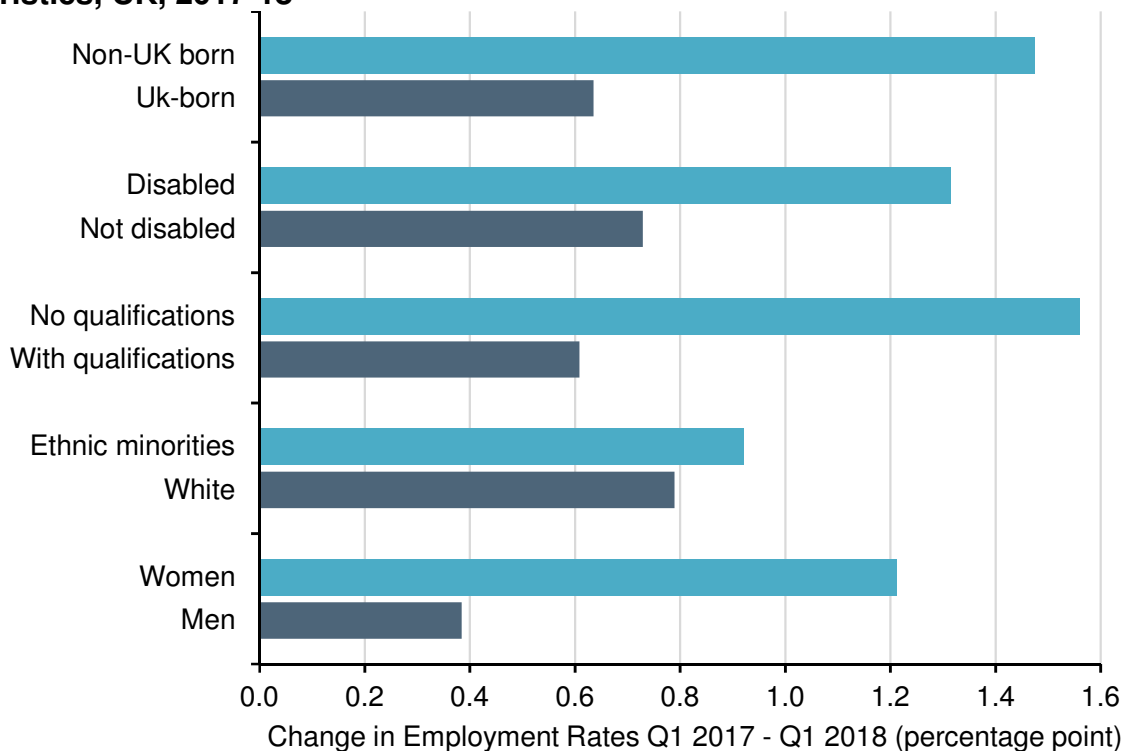


Source: LPC estimates using: LFS microdata, income weights, quarterly, imputed wages, not seasonally adjusted, UK, Q2 2016-Q1 2018.

Ethnicity

208. Figure 13 shows that, between Q2 2017 and Q1 2018, a greater proportion of employees who identified with an ethnic minority group (13.2%) were employed in jobs paid less than or close to the NMW/NLW compared with white employees (9.6%). It is important to remember that the aggregation of these figures mask the variability within this group, which is made up of many diverse ethnicities, but unfortunately data limitations do not allow us to do more detailed comparisons. Additionally, those born outside of the UK (13.7%) were more likely than those born in the UK (9.2%) to be in jobs paid less than or close to the NMW/NLW in the fourth quarter of 2016.
209. Figure 14 estimates that, despite coverage of the NMW/NLW being greater for these groups, between 2017 and 2018 employment has risen at faster rates for ethnic minority groups (0.9%) and those born outside of the UK (1.5%) than for white people (0.8%) and those born in the UK (0.6%).
210. These findings suggest that there are no adverse effects of past increases in NMW/NLW rates on individuals with this protected characteristic, although we cannot do more detailed comparisons within protected characteristics due to data limitations. We consider the impacts of increases in NMW/NLW rates in relation to this protected characteristic are likely to be disproportionately positive.

Figure 14: Change in employment rates for those aged 25 and over, by personal characteristics, UK, 2017-18



Source: LPC estimates using LFS Microdata, population weights, quarterly, four quarter moving average, UK, Q2 2016-Q1 2018.

211. In summary, the evidence suggests that there will be disproportionate positive wage impacts on protected groups as a result of the proposed increase in NMW/NLW, and we have found no evidence of the potential for any negative impacts.

212. The public sector Equality Duty (PSED) requires the Department to have due regard to the need to advance equality of opportunity between people who share a protected characteristic and those who do not.
213. The NMW and NLW policy is designed to have a positive impact on all workers in low paid sectors regardless of their personal characteristics. The NLW is expected to protect the equality of opportunity of those aged under 25. While their opportunity may be impacted by not receiving the new statutory pay floor that over 25's receive, this is balanced by (i) protecting the employment prospects of younger workers given their tougher labour market conditions and the importance of skills and experience; and (ii) possibly improving the attractiveness of younger workers for employers.

Eliminating discrimination and other prohibited conduct

214. The PSED requires BEIS to have due regard to the need to eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Act. The design of the NMW reflects provisions in the Act allowing the rates to vary up to age 25. There is the potential risk of a substitution towards recruitment of workers under the age of 25, however the LPC report states 'there was little evidence of any substitution between older and younger workers and no evidence that hours have changed in response to the NLW' (pp.95). Furthermore, some firms do not use pay structures based on age-related rates, negating risks of increased discriminatory recruitment policies.

Fostering good relations

215. The PSED requires to have due regard to the need to foster good relations between people who share a protected characteristic and those who do not. The NMW/NLW has national coverage, paid to all workers of any social characteristic. This should retain the diversity in the workforce; from skills to ethnicity to social background. Workplace relations should remain positive with workers benefiting from a higher wage floor.

Family test

216. We consider the increase in the NMW/NLW rates will provide a net benefit to families, by making work pay. This policy results in a transfer from employers to employees, increasing the wage of the lowest paid.
217. The 4.9% increase in April 2019 from the current NLW of £7.83 to £8.21 will mean a full time minimum wage worker aged over 25 will earn £690 more over the course of the year compared to the current year.
218. Figure 13 above shows that coverage of the NMW/NLW is far higher for single parents (22.8%) than for those who aren't (9.3%). The effect of the proposed increases in the NMW/NLW rates is therefore likely to have a disproportionately positive effect on this group.
219. Additional analysis done by the IFS estimates similar gains for families with and without children. This policy will positively impact a range of family dynamics at different scales and time periods. Moreover, analysis conducted by Brewer and De Agostini (2017) shows that

forecast increases in the NMW and the NLW by 2020-21 will increase net real incomes of minimum wage families by, on average, about 1.5 per cent.³⁶

220. Finally, the LPC provide some analysis in Chapter 6 of their 2018 report, highlighting how a married couple household, with two children and only one working parent, would see their weekly income rise in cash terms by more than the £11.40 increase in weekly pay due to the NLW (assumes 30 hours worked a week). Once adjusting for tax and benefits, assuming the household is in receipt of Universal Credit, the LPC estimate that their net annual household income would increase by £907. They also find that similar hypothetical households on the 21-24 year old NMW rate would benefit from the proposed uprating.

³⁶ Brewer, M., P. De Agostini (2017) *The National Minimum Wage, the National Living Wage and the Tax and Benefit System*. Research report for the LPC, Institute for Social and Economic Research:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/661867/BrewerEdAgostiniISERNLWtaxandbenefits_FINAL_2017_Report.pdf

Annex H: Past analysis on the counterfactual

221. The Department has undertaken a range of research and analysis to inform its judgement on the counterfactual and appraisal approach over the last few years. This is listed below and can be found in detail in previous impact assessments. The RPC has also fed in at various points including commenting on discussion materials and on the research specification:

- Engagement with labour market experts seeking views on how to model an appropriate counterfactual, including whether assumptions of zero wage growth were appropriate.
- Discussions with business representative organisation exploring how the wages of the lowest paid may develop in the absence of a minimum wage uprating.
- Analysis of economy, labour market and wage data to examine underlying trends.
- Descriptive analysis of ASHE microdata to explore different percentiles of the wage distribution as appropriate control groups.
- Longitudinal analysis of ASHE, supplemented by evidence from the Bank of England's Wage Dynamics Survey to explore the wage dynamics of low paid workers between years.
- Examined historic wage distributions to identify trends from before the NMW was introduced.
- Explored the literature, including previous LPC reports.
- Explored sensitivities, including CPI inflation and average earnings growth as a counterfactual, with zero wage growth scenarios considered as a single year.
- Made changes to the approach to determining the appraisal period and revisited previous appraisals to align our approach to this revised methodology.
- Commissioned NIESR to independently recommend an appropriate counterfactual (latest). This included an extensive literature review, consultation with labour market and regulatory experts and structured in-depth qualitative interviews with employers, employer trade bodies and trade union representatives. Their full report can be found at: <https://www.gov.uk/government/publications/national-minimum-wage-evaluation-counterfactual-research>
- Questionnaire to labour market academic experts on NIESR's findings – further details of this can be found in Annex B and throughout this IA.