Appendix 2

Research summary for the 2017 Report

1. Since the Low Pay Commission (LPC) was established in 1997, research has played a vital role in informing Commissioners about the impact of the National Minimum Wage (NMW). In both its commissioned research and that conducted independently, the Commission has sought to use the findings to better understand the impact of the NMW and how it might affect the labour market and economy more generally. This continues to be the case. Indeed, the importance of research has been given an added boost with the introduction of the National Living Wage (NLW) – a step change in the value of the minimum wage for those aged 25 and over, as well as a stated commitment to increase it significantly above average earnings growth over the next three years.

2. When the NMW was first introduced in 1999, there was limited official data on pay and employment to conduct detailed and robust econometric studies to assess its impact. Instead, emphasis was placed on surveys of employers, case studies of particular sectors and firms, and focus groups. The more detailed econometric studies came later and indeed did not become the dominant research type until the Fourth Report in 2003.

3. For this report, we commissioned a comprehensive programme of ten research projects. Only a couple of these used econometric methodologies, the others made use of surveys, case studies and simulations. Eight of these projects have reported in full and covered the following areas:

- an assessment of the impact of the NLW on businesses, especially on pay structures;
- a complementary study of low-paying sector pay settlements and pay review dates;
- an exploratory look at the impact of the UK minimum wage on employment and hours exploiting the border between Northern Ireland and the Republic of Ireland;
- an investigation of small migrant-owned firms to further understand non-compliance;
- a related study on non-compliance and the workings of the minimum wage in New Zealand;
- an exploration of the impact of the NLW on non-standard employment arrangements, including zero hours contracts, minimum hours contracts, agency work and dependent self-employment;
- an assessment of the interaction between the National Minimum Wage and the National Living Wage, and the tax and benefit system; and
- an investigation into the impact of the large Apprentice Rate increase in October 2015.

4. There are two ongoing research projects:

- an investigation of the impact of the NLW on employment and hours; and
- an assessment of the impact of the UK minimum wage on automation and offshoring.

5. The investigation into the impact of the NLW on employment and hours is not due to report in full until October 2018, however, an interim report of preliminary findings has been produced. The research on automation and offshoring has been extended to enable analysis of an additional data set. An interim report, based on the Labour Force Survey, has been written. The findings to date of these two ongoing projects have been incorporated into the summaries that follow, with the final findings informing our 2018 deliberations and report.

6. We start our summary by considering the impact of the National Living Wage on businesses in general before focusing on pay, employment and hours. The role of minimum wages in advancing automation and offshoring is then considered. Non-compliance among firms in the UK and New Zealand is discussed followed by the role of non-standard employment arrangements and the interaction of the minimum wage with the tax and benefit system. We conclude by looking at apprentices.

7. Last year, Incomes Data Research (2016) had found that most firms had implemented the NLW without trouble although some, particularly in childcare, had found it difficult. Most firms were looking to cope by raising prices and productivity or by accepting reduced profits. Firms were more likely to change grade structure and premia payments than to reduce hours or cut jobs. Incomes Data Research (2017a) built on that research by examining the impact of the increases in the NLW and NMW in April 2017 on 120 mostly medium-sized and large firms across the low-paying sectors. It also conducted more detailed case studies with 10 of those firms.

8. It found that the NLW was having a significant impact on pay structures leading to: the merging of pay grades at the bottom of the scale; the removal of separate starter rates; and making greater use of age-related pay. Around half of the surveyed firms had narrowed or removed differentials, with many of those contributing this to the NLW. Retail and hospitality was most affected as their main grade wage rates were already at or close to the NLW. Most retailers had removed their starter rates for induction or training periods. In the other low-paying sectors surveyed, typical main grade wage rates were significantly above the NLW. While some employers had reduced or removed the scope of age-related pay, more had expanded or introduced them. Indeed, the survey found the majority of respondent firms paying adult rates at 25. Two years ago that would have been at age 21. However, the large supermarkets – the largest employers in this sector – do not use the youth rates and pay adult rates from the age of 18.

9. In its panel of 31 retail and catering/hospitality organisations, the gap between the median for the adult rate at the main grade and the statutory minimum wage had reduced from 4.5 per cent in 2012 to just 2.1 per cent in 2016, after the NLW had been introduced.

10. The study found little evidence of large-scale reductions in other aspects of pay or benefits to fund the increases in the NLW. The researchers attributed this to the fact that many additional parts of the reward package had already been eroded or removed over the last decade, especially overtime premia and unsocial hours payments. Thus reducing the scope to reduce these further. In addition, most work benefits were relatively low cost and their reduction or ending would save

employers little. Despite that, around 1 in 8 surveyed employers had reduced overtime or unsocial hours payments. There had been reductions in weekend pay and bank holiday enhancements along with a narrowing of the night premium window reducing the number of applicable hours.

11. Although the study found an increase in the use of zero hours contracts compared with last year, the researchers thought that it might be a sampling issue: there was no such increase when comparing the same firms across the two surveys. More firms had reduced hours for individual staff than had increased them, with most citing the NLW as a factor for reducing hours. The NLW appeared to have been the major factor for the 10 per cent of firms that had increased hours to staff on youth rates.

12. Firms had again looked to increase productivity or raise prices, as a way of absorbing NLW increases. Compared with last year, more firms had increased prices (55 per cent against 33 per cent). The NLW was an important factor for those price rises, particularly for firms in the childcare and social care sectors. Retailers generally found it more difficult to raise prices. Many employers had introduced productivity-related changes – reorganising job roles, extra training, and upskilling staff – but only a quarter had linked these to the NLW. Some firms did cite the NLW as a rationale for investment into automation. The evidence on profits was mixed but for those firms that had not increased profits, the uplift in the NLW was a factor albeit combined with other increased input costs.

13. In general, as many businesses, in the low-paying sectors covered, were expanding as were reducing their workforces, although this pattern varied by sector. While hospitality was expanding, headcount reductions were most common among retailers and in the public/not-for-profit sector. Overall, over a third had reduced staffing (38 per cent) with over 40 per cent of them citing the NLW as a factor in that decision. There was some tentative evidence of an impact of the NLW on the age profiles of the workforce, with a shift towards younger workers in some cases. However, others that had reduced youth employment had also cited the NLW as a factor.

14. Responses to concerns about future rates were similar to the survey a year ago with just over a half expecting future increases to be difficult to manage.

15. Incomes Data Research (2017a) concluded that the NLW had affected pay structures and led to increases in prices. There was also some evidence of a reduction in individual hours. However, there was limited evidence of effects on headcount. There were also some useful insights into how firms were adapting to the new age structure of the minimum wage. These will be important when we review the youth rates in future.

16. In additional research, Incomes Data Research (2017b) looked at the level, distribution and timing of pay settlements in the low-paying sectors compared with the rest of the economy. The analysis was based on a total of 1,496 pay settlements between 1 January 2015 and 31 July 2017, around a quarter of which were in low-paying sectors. For much of this period, the median of pay settlements was 2 per cent for the whole economy, the private sector and the low-paying sectors. There was limited evidence of an impact of the NLW on introduction, however, pay settlements have generally been slightly above those in the rest of the economy since October 2016, when the youth rates of NMW were uprated. There was some evidence that pay awards in childcare had been greater than in other low-paying sectors.

17. Looking at the distribution of pay awards since 2015, there have generally been more higher pay awards (3 per cent or more) in the low-paying sectors than in the rest of the economy. This has been particularly marked at the times of minimum wage upratings – October 2015, April 2016, October 2016 and April 2017. Surprisingly, perhaps, there were also a large number of freezes in the low-paying sectors in April 2016. Although 38 per cent of low-paying sector pay awards were above 3 per cent, 14 per cent were freezes. That compared with just 3 per cent that were freezes for the rest of the economy and 8 per cent that were higher than 3 per cent.

18. The change in the cycle of minimum wage upratings appears to have had a significant effect on the timing of pay awards in the low-paying sectors, with the proportion of pay reviews in October declining sharply (from 23 per cent in 2015 to 13 per cent in 2016) and the proportion in April increasing (from 31 per cent in 2015 to 48 per cent in 2016). There was little change in the timing of pay reviews across the rest of the economy, although the proportion in April had increased slightly, mainly at the expense of those in January. The research concluded by looking at the impact of inflation on pay settlements. It did not find any strong evidence that recent increases in inflation had fed through into increases in pay settlements.

19. We commissioned the National Institute of Economic and Social Research to conduct an econometric analysis of the impact of the National Living Wage on employment and hours. Recognising the limited data available, this research was commissioned over a longer time period than usual with interim findings delivered this autumn in time for this report. The final report with an additional year's data is expected in the autumn of 2018. In the interim report, Aitken, Dolton, Ebell and Riley (2017) used the Annual Survey of Hours and Earnings (ASHE) up to 2016 and the quarterly Labour Force Survey (LFS) up to the second quarter of 2017. They found that the introduction of the National Living Wage in April 2016 had led to large increases in real wages for NLW workers, particularly for those that had previously been paid the National Minimum Wage. There was evidence of spillover effects: these real wage increases were larger than for those workers paid just above the NLW who in turn received larger increases in real wages than those further up the earnings distribution. Having established an impact on wages, they then investigated the impact on employment and hours.

20. They used two methods to investigate the impact of the NLW: differences-in-differences (DiD), which compares a treatment group (those directly affected by the NLW) with a control group (those earning just a little more than those directly affected); and differences-in-differences-in-differences (DDD), which additionally makes comparisons with the younger age group (those aged 21-24) who were not entitled to the NLW. They investigated the impact by gender and hours of work (full-time or part-time) using both ASHE and the LFS. Further analysis is planned before it reports in full in October 2018.

21. At this stage, they found no conclusive evidence of a negative impact on employment retention. Although, they did find some weakly significant negative effects on employment in some specifications, these were not robust to placebo tests. Conducting differences-in-differences-in-differences analysis using ASHE, they found large negative but only marginally significant employment effects for full-time male employees, but again these were not robust to placebo tests. No negative and significant effects were found for part-time workers – the group that might be expected to have been most affected.

22. Using difference-in-difference analysis, they again found some negative employment effects but only for women. Once again, however, these effects were not robust to placebo effects. Repeating these analyses using the LFS, they found no evidence of negative effects on employment retention from the introduction of the NLW.

23. Using ASHE data, the researchers found mixed evidence on the impact of the introduction of the NLW on hours worked for those workers who retained their jobs. There was some evidence from the differences-in-differences specification that hours worked may have declined by about one hour a week, but only for women working part-time. However, the differences-in-differences-in-differences specification shows a marginally significant positive impact on hours worked, but only for full-time men, and no statistically significant impact on the hours of part-time women. The difference-in-difference analysis using LFS also found significant and slightly larger negative hours effects for females working part-time. The evidence on hours is therefore mixed.

24. Overall, their preliminary findings point to no robust impact on employment from the introduction of the NLW. The evidence on hours is mixed. We again emphasise the preliminary nature of this research, as it is based on a limited time frame including only one year of data after the introduction of the NLW.

25. McGuinness, McVicar and Park (2017) also used econometric methods to investigate the impact of the introduction of the NLW on employment and hours. Their analysis, however, focused on Northern Ireland and also looked at the impact of the introduction of the National Minimum Wage. As well as having wages that are generally lower than in much of the rest of the United Kingdom, Northern Ireland is also the only part of the UK with a land border – that with the Republic of Ireland. Additionally, workers are free to live and work either side of that border. Using quarterly LFS data for Northern Ireland and the Irish Quarterly National Household Survey (QNHS), the researchers estimated the impacts of the National Minimum Wage and the National Living Wage by comparing changes to employment and hours either side of the border around the times of the introduction of the NMW (April 1999) and the NLW (April 2016). At the time that the NMW was introduced, the Republic did not have a minimum wage. It introduced one in July 2000. The introduction of the NLW meant that the UK minimum wage increased by 10.8 per cent over the year to April 2016. By comparison, the Irish National Minimum Wage had increased by 5.8 per cent in January 2016 with another 1.0 per cent in January 2017.

26. In common with research in the US, such as Card and Krueger (1994), which looks at differences across states, they used a difference-in-difference approach – utilising individuals in the Republic as the control group and those in Northern Ireland as the treatment group. They found a small but significant decrease in employment of up to 2 percentage points for working age people aged 22 and over in Northern Ireland in the year following the introduction of the National Minimum Wage. This estimate is of similar magnitude to the fall in employment retention of part-time female workers in the whole of the UK, following the introduction of the NMW, reported by Dickens, Riley and Wilkinson (2012 and 2015). Their finding corresponds to employment in Northern Ireland being around 20,000 less than it would otherwise have been (in a workforce of around 825,000 people). This finding was generally robust to various sensitivity checks. However, this analysis did not fully take account of the appreciation of sterling against the Irish pound in 1999 and 2000 or the faster economic growth in the Republic compared with Northern Ireland at that time. The authors concede that these factors could explain the finding.

27. In contrast, they found no evidence of any impact of the introduction of the NLW on employment in Northern Ireland. However, the depreciation of sterling amid concerns about Brexit and the increase in the Irish minimum wage of nearly 6 per cent may have offset the employment impacts of the large increase in the NLW.

28. In addition, they found no evidence of any impact of the introductions of either the NMW or NLW on weekly hours worked in Northern Ireland. This finding was consistent across various model specifications. In all cases the estimates tended to be small in magnitude and were statistically insignificant.

29. They concluded that the research adds to the small body of evidence that had found negative employment effects of the introduction of the NMW. However, those negative employment effects had not been repeated in 2016 on the introduction of the NLW, despite Northern Ireland remaining one of the lowest-paying areas of the UK.

30. Lordan (2017) built on recent US studies to investigate the impact of minimum wage increases in the UK on automatable jobs and extended the analysis to cover those jobs also more susceptible to offshoring. Taking account of the definitions used previously in the US but utilising the UK Skills and Employment Survey series, she distinguished occupations that were automatable (and those that were not) and those that were offshorable (and those that were not). Before discussing her findings, we give a brief summary of the findings from those US studies.

31. Lordan and Neumark (2017) investigated the impact of minimum wages on automatable jobs – those that employers find easier to substitute with machines – in the United States over the period 1980-2015. Using pooled monthly samples from the Current Population Survey (CPS) and matching them to monthly state-level data on minimum wages, they found that minimum wage increases significantly decreased the share of automatable employment held by low-skilled workers and increased the likelihood of unemployment for those low-skilled workers in automatable jobs. The effects were larger for older, low-skilled workers in manufacturing.

32. In complementary work, Aaronson and Phelan (2017) – again using the CPS – also analysed the impact of minimum wage hikes on the susceptibility of low-wage employment to technological substitution. They found evidence that minimum wage increases led to reductions in employment of cognitively routine tasks but found no evidence of reductions in manually-routine or non-routine low-wage occupations. The effects appeared small due to concurrent growth in other low-wage jobs but workers previously employed in cognitively routine jobs did experience relative wage losses.

33. Using quarterly Labour Force Survey data from 1997-2017, Lordan (2017) calculated employment shares for automatable and offshorable jobs. She then used individual-level data to estimate whether increases in the minimum wage increased the likelihood of those in automatable or offshorable employment losing their jobs in the next period. She also considered the impact on hours.

34. She found that minimum wage increases had been followed by falls in the employment shares of automatable or offshorable jobs but that, in aggregate, these effects were modest. They were larger for manufacturing, particularly for automation, but remained modest. Larger effects were also found for low-skilled males, older workers and Black low-skilled workers.

35. In her analysis at the individual level she found that, following a minimum wage increase, low-skilled workers in automatable or offshorable employment were less likely to keep their jobs in the next period than those in non-automatable or non-offshorable jobs. They also worked fewer hours. Again the effects were modest, but they were greater for manufacturing, males and older workers.

36. Following a minimum wage increase, those in automatable or offshorable employment were also more likely to switch jobs to non-automatable or non-offshorable jobs in the next period. In aggregate, these effects were again small.

37. Significant but modest effects were also found when using shares of hours in automatable or offshorable employment. These were again larger for males, older workers and Black workers.

38. She also speculated about the future of automatable and offshorable jobs. She thought that the classification of offshorable jobs was unlikely to change in the short to medium term but considered that the definition of automatable jobs was evolving. She identified three classifications of low-skilled jobs that were useful in thinking about the future. First, those where the jobs were unlikely to be fully automatable as they required some human interaction, such as childcare and hairdressing. Second, those where human interactions are not always required but where they may be preferred, such as waiting and bar staff. These jobs are to some extent automatable and it is likely that there will be some polarisation in these occupations between robots and humans. Third, there are those jobs where customers do not care whether the service is delivered by a human or a robot, and where innovation has been advancing. These are jobs that have a high risk of disappearing completely and might include drivers, delivery jobs and security. She summarised this section by noting that jobs would be lost to automation but that new jobs would be created that require different skills. In the past, the jobs lost had been more than replaced by new jobs. However, that did not mean that would happen in the future and we needed to be prepared.

39. She concluded her econometric analysis by noting that the effects she had found in the UK so far were smaller than those found in the US. Over the next few months, this research will be extended to incorporate additional analysis using the Annual Survey of Hours and Earnings.

40. In our report on non-compliance (LPC, 2017), we set out our evidence on non-compliance and the enforcement of the National Living Wage and the National Minimum Wage. This highlighted some concerns particularly around certain sectors and across some sizes of firm. Previous research (for example, Edwards, Jones and Ram, 2004 and Edwards, Ram, Jones and Doldor, 2016) had found that informality was embedded in the day-to-day operations of many small firms. There was considerable ambiguity over whether the minimum wage was being paid: the employment of family and friends; whether someone was a worker or not; what constituted the hourly wage; imprecise recording of hours; and discretionary approaches to pay and reward.

41. That informality may enable firms to absorb some of the costs of the NLW but there had been little evidence in the past of labour-saving innovation or long-term strategic cost reductions. Edwards, Meardi and Ram (2017) and their research team – Doldor, Jones, Kispeter and Vilares – provided additional insights into this area of compliance with the NLW by focusing on ethnic minority and migrant-owned businesses.

42. They conducted a total of 24 case studies of small businesses and their workers to investigate how firms operate in respect of non-compliance with the minimum wage and other employment legislation. Detailed qualitative interviews were conducted with the owner and a worker in each firm. Twelve case studies looked at the behaviour of long-established firms drawn from clothing, food processing and restaurants, while the other twelve cases studied new migrant business owners and workers.

43. Among the long-established firms, five had also been investigated in previous studies by the research team. Of the twelve case study firms, only four were compliant – the other eight were not. The firms in the second part of the study had previously been investigated in 2010 as part of a broader project of business practices of newly arrived migrant employers (Edwards, Ram, Jones and Doldor, 2016). At that time, all twelve of the firms were non-compliant with the NMW. This new study found three were now compliant with the NLW.

44. Although firms were still grappling with the implications of the NLW for their businesses amid concerns about Brexit, three broad responses to the NLW had emerged. First, firms that had complied with the NMW continued to comply with the NLW. Compliance was seen as necessary to operate in their markets. These employers were also generally pursuing growth strategies rather than concentrating on survival. However, these firms did appear to be finding the NLW more challenging than the NMW – the large sustained increases in the NLW adding to the difficult competitive environment.

45. Second, firms that were struggling to comply were uncertain how they would absorb future upratings of the NLW. They had already sought savings elsewhere by reducing staff, removing overtime payments, and cutting training budgets. These employers saw few benefits of the NLW.

46. Third, many firms in the study did not comply with the NLW but the boundary between compliance and non-compliance was blurred. There was uncertainty about the status of workers with some being paid the NLW while others, in the same firm, were treated as casual labour or helpers and paid less, even though they were integral to the successful running of the business. Most employers in these firms were unaware of recent measures to strengthen the compliance regime by HMRC. They regarded the risks of being caught and punished as low. They also had little fear of complaints from workers. Workers often had strong personal ties to the employer and were reluctant to report non-compliance. Further, there continued to be a ready supply of illegal and undocumented workers.

47. They concluded that their findings confirmed the conclusions of previous research, particularly the self-perpetuating inertia of the informal labour process. As long as businesses operate in sectors of intense competition and there is a willing supply of labour, employment practices on the borders of legality will continue to exist. The three broad themes are not coincidental but rooted in the form of management and how firms had developed their business models. These had hardly ever changed over time and, in the absence of external shocks, were unlikely to do so in the future. However, the NLW and Brexit offered that possibility. Firms were still working out their coping strategies for the NLW amid the uncertainty of Brexit and its implications, particularly for migrant labour.

48. In complementary research in New Zealand, de Vries (2017) examined how small and medium-sized firms in New Zealand administered the minimum wage and how they were responding to calls for a National Living Wage (NLW). He examined the issue of compliance among businesses in low-paying sectors (food, hospitality and clothing) and assessed whether businesses could afford a NLW. As background, in 1894, New Zealand became the first country in the world to adopt a minimum wage, and its minimum wage is one of the highest in the OECD when compared against the average wage. New Zealand is a small open economy with sizable manufacturing and service industries complementing a highly efficient export-oriented agricultural sector.

49. Owner-operator participants in the study all stated that they paid at least the minimum wage and this was confirmed by employees in those firms. Within his sample of small firms, those in food manufacture generally competed on price while those in hospitality and clothing mainly competed through differentiation and niche products. The clothing employers were not aware of non-compliant businesses. However, those employers in hospitality and food were concerned about being undercut by non-compliant competitors exploiting vulnerable workers, usually immigrants working within their own ethnic communities. Despite that, employers were concerned about the administrative costs of compliance for compliant businesses and that these regulatory burdens did not help identify non-compliant firms or enable them to be penalised.

50. There was common agreement that productivity, investment and skills needed to be improved to support a move to a higher minimum wage in New Zealand. Although employers thought that increasing the minimum wage would attract higher quality staff, they were not convinced that it would automatically lead to better service or higher productivity. They argued that there needed to be financial incentives that allowed for a rising pay scale that was affordable. They were concerned that raising the minimum wage would squeeze differentials and reduce those financial incentives. However, employers were also concerned about staff quality and retention. Most minimum wage workers regarded their jobs as stop-gaps to earn money and not as a career option.

51. He concluded that there were many historic barriers in New Zealand that prevented the lowest wages from rising to the level of a NLW and that a transition (rather than a step change) may be the only scenario that small business would accept and that would sustain viable sub-sectors within food, clothing and hospitality.

52. The relationship between the National Living Wage and non-standard work arrangements in the UK was explored by Antunes, Moore, Newsome, Tailby and White (2017). Their report addresses a number of the issues raised by the Taylor Review (2017). They carried out a qualitative study, using in-depth interviews, to illuminate the lived experiences of 36 workers from six low-paying industries. It highlighted the relationship between non-standard contractual arrangements (zero hours contracts, minimum hours contracts, agency work and dependent self-employment) and pay and work conditions. These contractual forms often meant that workers received variable pay from week to week.

53. The case studies explored: the voluntary or involuntary nature of contractual status; the organisation of working time; the notion of unsocial hours; elements of unpaid working time; the work-effort bargain; and whether these workers were paid at least the NLW once these considerations had been taken into account. The impact of the NLW on contractual arrangements and pay structures was also investigated.

54. The study revealed considerable uncertainty about contractual status and whether those on zero or minimum hours contracts, with variability in hours, were permanent workers or not. Many of those on such contracts were required to be available by employers and felt they were continually on-call. Contracted hours often bore little resemblance to actual hours worked. Workers could be sent home when there was insufficient work or be asked to work extra hours in busy times or to cover staff shortages. There were also issues of waiting around between visits or shifts for workers in homecare and hotels. The scheduling of hours and days of week varied from week to week with notification of shifts or changes often at short notice. While some employees (often students, pensioners, and those with other jobs) might welcome this flexibility, many others did not (especially those with family or regular financial commitments, particularly rental costs). They wanted more predictable hours. Many thought that they would be disadvantaged by employers if they took sick leave or did not accept the hours offered. Those on zero hours contracts were particularly insecure, concerned that they could be effectively dismissed through the employer not offering them any hours. Guaranteed hours contracts were dependent upon workers being available for extra hours and thus did not offer predictability. The case studies also highlighted the dependent nature of many of the self-employed – with limited control over working time.

55. With regards to being paid the NLW, there were issues concerning: redefining elements of the working day as unproductive and therefore unpaid; travel time in homecare paid at less than the NLW; unpaid overtime in hotels, for example, bar staff waiting for guests to go to bed; and the difficulty of measuring hours. Although not entitled to the NLW, some of the self-employed may have been paid less than it when costs and unpaid hours are taken into account.

56. They found some evidence that the NLW had led to employers making adjustments to terms and conditions, primarily through cuts to hours and some premia. The concept of 'unsocial hours' was increasingly being redefined: the night shift premia window narrowing; and Sunday and bank holiday working becoming part of the normal working week. There were also instances of work being reconstructed – moving to shifts of less than six hours – in order to avoid having to provide (20 minute) breaks, and some instances where employers had increased their use of young workers.

57. The case studies showed that workers were experiencing the intensification of work, particularly where there were staff shortages. The episodic nature of working time did not encourage training and development. This was further discouraged by the squeezing of differentials leaving little financial incentive to take on supervisory and managerial roles.

58. They concluded by emphasising the difficulty that variable hours posed to household budgeting. Variable incomes not only affected the ability to pay bills but also had consequences for benefit entitlement, where complying with hours thresholds was a particular concern.

59. Brewer and De Agostini (2017) looked at the interaction of the National Minimum Wage/ National Living Wage with the tax and benefit system. Their work complemented research previously undertaken for the Commission by the Bushe, Kenway, MacInnes, Tinson and Withers (2015), Brewer and De Agostini (2013), Brewer, May and Phillips (2009) and the Institute for Fiscal Studies (2003).

60. The research had several aims: to identify where minimum wage families are in the income distribution; to assess the importance of minimum wages to family incomes; to assess how minimum wage families are affected by increases in the NLW taking account of tax and benefit changes; to assess the financial incentives minimum wage workers face when increasing hours; and to quantify the number of minimum wage workers that will be covered by in-work conditionality.

61. The researchers used information about minimum wage workers and families from the Family Resources Survey (FRS) and the LFS to inform its simulation of the tax and benefit system. Using the UK part of EUROMOD, the European tax and benefit microsimulation model, they assessed the impact of tax and benefit changes on minimum wage families (those with at least one worker on the NMW or the NLW). Taking the circumstances of minimum wage families observed in 2014/15, they then use projections to model family income and the tax and benefit system in 2017/18 and in 2020/21, and make comparisons between these two scenarios. They do not try to predict actual incomes in 2017/18 and 2020/21 or take account of employment and demographic changes.

62. They found that NMW workers are more likely to be single than NLW workers as they are under the age of 25. As such, they contribute more to their families' income than do NLW workers. They are also more likely to be found in the bottom half of the working-age family income distribution, and particularly in the poorest decile of families. NLW workers are more evenly distributed across the family income distribution, and are most likely to be found in the third decile. The contribution of NMW and NLW earnings to minimum wage families' net income falls as total family income rises. NLW workers in families in the third and fourth deciles contributed, on average, just over a half of their families' net income. NLW families tend to be better off than NMW families because they are paid more per hour, and they are more likely to live with a working partner.

63. 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. Within these families, low-income minimum wage families will gain by slightly more than high-income minimum wage families, except for the poorest decile group, which contains very few NLW recipients. The poorest decile is composed mainly of benefit recipients who are out of work.

64. Announced but not yet implemented tax and benefit changes will have small effects on minimum wage families, but the roll-out of Universal Credit (UC) could lead to considerable income gains for minimum wage families in the bottom two income decile groups. This mainly benefits families not currently entitled to or receiving legacy benefits or tax credits, particularly those aged under 25 and without children, and those working fewer than 30 hours per week. Combined with the planned increases in the NLW, minimum wage families in the bottom two income decile groups could gain over 8 per cent of net income by 2020-21. This is a remarkably different prospect from previous years, where the impact of welfare cuts would have dominated any projection of the incomes of NMW families.

65. The weakest financial incentives to work – those with the highest marginal effective tax rates (METRs) – among minimum wage workers are found in the second to fourth deciles, where minimum wage workers can pay extra tax and NICs and lose benefit entitlements when earnings rise. If those aged under 25 move onto Universal Credit, in line with the researchers' assumptions, then the poorest NMW workers could see a very large rise in their marginal effective tax rates (METRs). Under current rules for in-work conditionality, when Universal Credit is fully rolled-out, around 21 per cent of minimum wage workers will be subject to in-work conditionality.

66. They estimated that a hypothetical increase in both the NMW and NLW of 5 per cent in 2020-21 would increase the net incomes of minimum wage families by an average of less than 1.2 per cent. This is a lot less than the 5 per cent gross increase because some of the rise is lost to extra tax liabilities and foregone earnings, and because some minimum wage families have other sources of income. Among minimum wage families, the poorest families would gain a larger fraction of their income, on average. A rise in the NMW and the NLW would also help the poorest families most among all working-age families where someone is in work. It becomes less progressive when set among all working-age families or the whole population, because minimum wage increases do nothing to directly benefit non-workers.

67. The research found that the comparisons of the tax and benefit system between 2017/18 and 2020/21 would deliver net gains for most families across the income distribution and particularly for minimum wage families. Single people and couples generally gain but lone parents do not. The loss is greater for lone parents in minimum wage families, who are set to lose around 5 per cent of their net incomes. The research concluded by noting that these overall gains would not be apparent if the analysis for 2020/21 had been compared with the tax and benefit system in place in 2014/15.

68. The Apprentice Rate is an important part of the National Minimum Wage framework, particularly for young workers and even more so in light of the Government's commitment to 3 million new apprentices by 2020. The Apprentice Rate is a minimum wage applicable to all apprentices under the age of 19, and to those aged 19 and over in the first year of their apprenticeship. In October 2015, the Government increased the Apprentice Rate by 21 per cent from £2.73 an hour to £3.30. This was a much larger increase than the Commission had recommended (2.6 per cent to £2.80). The Government was concerned to reduce the gap with the 16-17 Year Old Rate and hoped that this would increase the number of applicants and improve their quality. Using a combination of administrative data (mainly the Individual Learner Record) and survey data (the Apprentice Pay Surveys of 2014 and 2016), Frontier Economics (2017) investigated the impact of that large increase on apprentice numbers and their characteristics. Due to data availability, the research focused on the impact in England.

69. Exploiting the geographic variation in apprentice pay across England, the researchers employed a difference-in-difference approach that effectively compared outcome variables in areas of low pay with those in higher-paying areas. The main econometric specifications found no statistically significant evidence of a negative impact on apprentice numbers, starts or completions. This finding was robust to a number of robustness checks. Indeed, the study found some evidence of positive effects on apprentice numbers. However, these positive effects were generally in apprentice frameworks, where relatively few apprentices were paid at or near the Apprentice Rate. The effect was also larger for men. The researchers could not rule out the possibility that the increases in apprentice numbers in low-paying areas were not driven by other policy changes

(including the introduction of the National Living Wage) and greater promotion of apprenticeships. When focusing on the lowest-paid frameworks, the study did find suggestive evidence of a negative employment effect in hairdressing, where a relatively large proportion of workers were affected by the increase in the Apprentice Rate, but limited sample sizes raised concerns about the robustness of this result.

70. The research found no evidence that the increase in the Apprentice Rate had affected the quality of apprentices, although the ability to measure quality was very limited. It also found no evidence that it had changed the composition of apprentices. The proportion of apprentices that had disabilities or were from a non-white ethnic background did not appear to have changed.

71. Frontier Economics (2017) concluded by highlighting the limitations of the available data on apprentices. Although the Apprentice Pay Surveys are the largest data sets on apprentice pay in Great Britain, the sample sizes prevent a comprehensive exploration of the variation in pay by detailed location and other characteristics. Further, information on off-the-job and on-the-job training hours was lacking in the 2016 survey. Data on the quality of apprentices in the Individual Learner Record were also mixed. The researchers suggested that future research might: make better use of matched administrative data; utilise new data sets (such as the National Pupil Database) to complement the data used in this study; and investigate the interdependencies between the Apprentice Rate and the other minimum wages, including the NLW.

72. In summary, the initial findings of the research on the NLW can be summarised as that the NLW has led to a large increase in wages for the lowest paid and that there has been some significant spillovers on the wages for those aged under 25. Firms initially appear to have coped by: a limited squeezing of differentials; increasing prices; and accepting a squeeze in profits. Survey evidence on reductions in employment and hours was limited and the results mixed. These findings are similar to those found on the NMW. Future research will continue to monitor and assess these effects for all the minimum wage rates.

Future Research

73. We will commission further research for our 2018 Report to complement the ongoing research that we have already in progress.

- **The impact of the National Living Wage on employment and hours –** Andrew Aitken, Peter Dolton, Monique Ebell, and Rebecca Riley (National Institute of Economic and Social Research).
- **Minimum wage and the propensity to automate or offshore** – Grace Lordan (London School of Economics and Political Science)
- **The impact of the National Living Wage on employment and hours using geographic variation –** Richard Dickens and Kieran Lind (University of Sussex and Low Pay Commission).

Table A2.1: Low Pay Commission Research Projects for the 2017 Report

Project title and researchers	Aims and methodology	Key Findings
The National Living Wage: employers' responses to the 2017 increase **Katherine Heffernan, Ken Mulkearn, Sarah Welfare Louisa Withers** and **Georgia Young** (Incomes Data Research)	This research built on previous research (Incomes Data Research, 2016), which had monitored the effects of the introduction of the NLW on key aspects of pay and reward, as well as other outcomes. It monitored employers' implementation of the April 2017 NLW and NMW upratings by conducting a structured survey of employers in low-paying sectors in April and May 2017. Detailed responses were achieved for 120 employers – mainly medium-sized or large – with a quarter each in childcare & housing/social care, and the public sector/not-for-profit, a fifth in retail, and the remainder split between manufacturing, hospitality, and business or financial services. Ten of these were targeted for follow-up case study interviews. The analysis examined employers' approaches to managing the costs arising from NLW increases, looking in particular at other aspects of pay and benefits. It explored changes in the age profile of workforces; assessed any effect on grading structures and pay, including salary differentials; and investigated the effect on jobs, job content and work organisation. The study also examined the changing relationship between statutory minimum wages for workers of different ages, employers' starting rates, and employers' pay rates for established staff, using a panel of low-paying employers from 1999 to 2017. The researchers also constructed a panel of pay rates for staff on the main grade at 31 major retail and hospitality firms between 2012 and 2016 to explore the changing relationship with the statutory minimum adult rate.	The key findings were: • The April 2017 NLW uprating has affected areas that were unaffected by the NLW's introduction in April 2016. • 46 per cent of respondents have narrowed or removed differentials, with over half saying that the NLW was a major factor behind such moves, and most of the remainder citing it as a contributing factor. • Some employers have introduced or expanded age rates. The majority of respondents pay adult rates at age 25, a response to the NLW. However, the major supermarkets – who employ a large proportion of retail staff – do not operate age-related pay. • Almost half of respondents reported that the differential between the main grade and supervisors had narrowed. There was also a much smaller gap between the adult main grade and the NLW. • Only 12 per cent of employers have made some off-setting changes, with reductions in premiums for overtime or unsocial hours the most common change to the reward package. • Around a third found introducing the NLW in 2016 'difficult', with just below half finding it 'easy' and the rest said it was 'neither easy nor difficult', with similar responses to the 2017 uplift. • A quarter of respondents offered fewer hours to individual staff, while 15 per cent increased basic contractual hours. • Many employers have implemented productivity changes since April 2016. The most common approaches were to reorganize roles and responsibilities (50 per cent), provide staff with extra training (45 per cent) and upskill staff (44 per cent). • Over half of respondents increased the prices they charged customers, compared with just a third in the 2016 survey. These increases were linked to the NLW by two-thirds of respondents. • Only a third of respondents reported a decline in profits. The majority of those that did linked it to the NLW. • For many sectors, the majority of businesses were expanding or maintaining their workforces. Headcount reductions were most common in the retail and public/not-for-profit sectors.

Project title and researchers	Aims and methodology	Key Findings
Pay settlements in the low-paying sectors **Claire De Bond, Katherine Heffernan, Ken Mulkearn** and **Louisa Withers** (Incomes Data Research)	This research project supplemented the previous analysis. It focused on pay settlements in the low-paying sectors. The research analysed: • how far the level of the NLW uplift affected the level (and distribution, or range) of pay settlements, especially settlements effective in the month of uplift (April) and adjacent months; • whether uplifts in the National Minimum Wage, now applicable to workers aged 16 to 24, were continuing to have an effect on the level and distribution of pay settlements; • the extent to which the shift from October to April for the annual uplift in the statutory floor had affected the timing of pay settlements; and • the key developments in relation to the NLW's impact on pay reviews and reward decisions. The study used IDR data on settlements collected directly from companies and organisations. The analysis was based on a total of 1,496 pay settlements with effective dates between 1 January 2015 and 31 July 2017. The data included 367 settlements in low-paying sectors which comprised the retail, fast food, pubs and restaurants, hotels, social care and housing, childcare and leisure sectors. The pay data exclude bonuses or lump-sum payments. For settlements with varying percentage increases in pay, the analysis used either the average increase, or the most common increase among employees. It presented a general analysis, on an unweighted and employee-weighted basis, of the distribution of settlements by: whole economy, private sector, low-paying sectors and individual low-paying sectors. The analysis also looked at the timing of pay awards using monthly data.	The key findings were: • Private sector pay awards have been broadly stable, with the exception of March, April and May 2016, when the weighted average figures were boosted by comparatively high pay awards at larger retailers. This period covers the introduction of the NLW. • Low-paying sector pay awards had been running at 2.0 per cent for much of 2015 and 2016, with upticks around the October NMW uplifts. Notably there was no uptick in the median around the implementation of the NLW but there was a large increase in the weighted average of pay settlements. • Since the start of 2017, low-paying sector pay awards have been running at a higher level, at around 2.5 per cent. This is higher than for the economy as a whole and for the private sector. • In low-paying sectors with severe constraints on funding, particularly social care, organisations paid for the implementation of the NLW by bearing down on the level of the general award for most employees. • In months coinciding with upratings of the NMW and NLW, pay awards were much greater in low-paying sectors, than in the rest of the economy. • A number of companies' (particularly in the retail sector) awards differentiated rises depending on employee group or position in the pay structure. Some retailers responded by applying higher increases to their lowest rates of pay while applying a lower or sometimes no across-the-board increase to all other rates. • There has been a noticeable shift in the timing of pay reviews in the low-paying sectors, with the proportion of pay reviews in October declining sharply (from 23 per cent in 2015 to 13 per cent in 2016) and the proportion in April increasing (from 31 per cent in 2015 to 48 per cent in 2016). The only noticeable shift in the rest of the economy has been away from January and towards April.

Project title and researchers	Aims and methodology	Key findings
Impact of the introduction of the National Living Wage on employment and hours **Andrew Aitken, Peter Dolton, Monique Ebell,** and **Rebecca Riley** (National Institute of Economic and Social Research)	This project is an extended 18 month study investigating the impact of the NMW and the National Living Wage on employment and hours. It investigated the impact of the introduction of the National Living Wage in April 2016. It will also provide subsequent analysis on the recent April 2017 minimum wage upratings. This study used two econometric approaches to assess the impact of the minimum wage applied to both ASHE and LFS data: • the standard wage-based differences-in-differences (DiD) approach on employment retention rates and changes in hours as used previously by Stewart (2004a, 2004b), Dickens and Draca (2005), Dickens, Riley and Wilkinson (2009); and Bryan, Salvatori and Taylor (2013); • a differences-in-differences-in-differences (DDD) approach, which exploited the fact that before April 2016 the NMW was the same for workers aged 21-24 and those aged 25 and over. It also uses the wage-dimension of the treatment-control group distinction. That is, the DDD approach uses the triple interaction between treated ages, treated wage groups and treated periods. These different approaches are intended to address some of the criticisms of the difference-in-difference methodology outlined in Brewer, Crossley and Zilio (2015). The study used Annual Survey of Hours and Earnings (ASHE), although the timing of ASHE may affect the identification of minimum wage effects in April 2016. It was supplemented by the quarterly Labour Force Survey (LFS). The focus of the study was minimum wage changes since October 2010, when 21 year olds became eligible for the adult rate.	The key interim findings were: • Consistent increases in real wage growth associated with the introduction of the NLW across demographic groups across all of the ASHE specifications considered. • There is no conclusive evidence of an impact of the introduction of the NLW on employment retention. Using ASHE data, some specifications did show weakly significant but negative effects on employment retention for some groups, but these were not robust to placebo effects. • The researchers found mixed evidence on the impact of the introduction of the NLW on hours worked for those workers who retained their jobs. • In the DiD specifications, there was some evidence from ASHE of a decline of less than an hour a week, and from the LFS of a decrease in hours of about one and a half hours per week, but concentrated among part-time women. • However, the researchers also found some marginally statistically significant evidence from DDD specifications using ASHE that the introduction of the NLW might have led to small increases in hours worked for workers who retained their jobs, but only for men working full-time. • Further robustness analysis using additional data is planned before the research is finalised in October 2018.

Project title and researchers	Aims and methodology	Progress to date and next steps
Employment and hours impacts of the National Minimum Wage and the National Living Wage in Northern Ireland **Seamus McGuinness** (Economic and Social Research Institute, Dublin), **Duncan McVicar** (Queen's University Belfast) and **Andrew Park** (Ulster University Economic Policy Centre)	The research examines the employment and hours impacts of two UK minimum wage policy shocks: • the original introduction of the National Minimum Wage in April 1999; and • the introduction of the National Living Wage for those aged 25 and over in April 2016. The analysis used a difference-in-differences methodology with Northern Ireland as the treatment group and the Republic of Ireland as the comparison or control group. The study made use of the substantial discontinuity in minimum wage rates provided by the jurisdictional border between Northern Ireland and the Republic of Ireland. The introduction of the NMW in April 1999 in the UK including Northern Ireland, was not matched by a minimum wage in the Republic of Ireland with a minimum wage not introduced there until July 2000. More recently, the introduction of the National Living Wage in Northern Ireland in April 2016 was not echoed by any contemporaneous increase in the Republic of Ireland. Both of these events were used by the researchers as a natural experiment to estimate employment and hours impacts of the introduction of, or increase in, minimum wages. The research considered how the relativities of the two minimum wages in terms of exchange rates and purchasing power parity have changed. The study used data from the Quarterly Labour Force Survey (QLFS) for Northern Ireland and the Quarterly National Household Survey (QNHS) for the Republic of Ireland. As the QNHS evolved from the Republic of Ireland's own Labour Force Survey there is a high degree of compatibility between the two data sources. Cross-sectional unit record data were available quarterly in both jurisdictions from the second quarter of 1998 through to the third quarter of 2016.	The key findings were: • A small decrease in the employment rate of the affected group of working age (those aged 22-59/64) in Northern Ireland, of up to two percentage points, in the year following the introduction of the NMW. • Similar significant decreases were found for men and women, and between the younger group (those aged 22-34) and the older group (those aged 35-59/64). • In the main specifications, these estimates were statistically significant at conventional levels. They are consistent with a non-trivial negative employment effect. • However, other potential explanations (including the employment impacts of the appreciation of sterling relative to the Irish pound during 1999 or of faster economic growth in the Republic of Ireland relative to Norther Ireland during 1999) cannot be entirely ruled out. • No evidence of an impact of the introduction of the NLW on employment in Northern Ireland. However, this period coincided with a depreciation in the relative value of sterling to the euro, and was preceded by a smaller but reasonably large increase in the Irish NMW (of 6 per cent in January 2016). • No evidence of impacts on weekly hours worked of either the introduction of the NMW or the introduction of the NLW, regardless of the particular model estimated.

Project title and researchers	Aims and methodology	Progress to date and next steps
Minimum wage and the propensity to automate or offshore **Grace Lordan** (London School of Economics)	The main aim of this research was to provide a deeper understanding of how minimum wage policies have affected automation and offshoring, focusing on the impact on those workers with low or no qualifications. The research built on similar research by Lordan and Neumark (2017), and Aaronson and Phelan (2017) looking at similar issues in the United States. This research project was the first such study to focus on the impact of the UK minimum wage on automation and offshoring. The report contributes to the UK minimum wage literature in a number of ways: • First, it explored whether increases in the minimum wage affected the employment possibilities for low-skilled workers relying on automatable employment. • Second, it explored whether firms substituted their production process with cheaper labour from a different geographic location following a minimum wage increase. • Third, it gave a full picture of any labour-market adjustment by industry and a variety of demographic groups to uncover differential responses. The Occupational Information Network (ONET) and the Employers Skills Survey were used to distinguish between occupations that were high in automatable and offshorable tasks by drawing on UK data to re-create accepted definitions from the US. These were then matched to the relevant occupation codes in the Quarterly Labour Force Survey (QLFS) using a consistent coding system as described in Lordan and Pischke (2016). The measure of routine task intensity (automation) is provided by Autur and Dorn (2013) while offshorability is derived using ONET. The main analysis was conducted using UK data from the Quarterly Labour Force Survey (QLFS) from 1992-2017. The study will be supplemented by analysis using the Annual Survey of Hours and Earnings (ASHE). This will report early next year.	The key findings were: • Minimum wage increases are followed by decreases in the shares of offshorable and automatable employment, but on aggregate, these effects are modest. • A £1 increase in the minimum wage leads to a 0.24 percentage point decline in the share of automatable employment (an elasticity of -0.055 if evaluated at the current NLW of £7.50). • A £1 increase in the minimum wage leads to a 0.15 percentage point decline in the share of offshorable employment (an elasticity of -0.034 if evaluated at the current minimum wage of £7.50). • These effects are small. • There are larger effects in manufacturing, particularly with respect to automation. A £1 increase in the minimum wage leads to a 0.58 and 0.34 percentage point decline in the share of automatable and offshorable employment in manufacturing respectively. • Low-skilled males and the older workers are the demographic groups affected the most, with larger effects also evident for Black low-skilled workers. • Low-skilled workers in automatable or offshorable employment are less likely to keep their jobs in the next period as compared to similar workers in non-automatable and non offshorable jobs. • They are also more likely to work fewer hours. • It concluded by speculating about the future of jobs, suggesting that some jobs would continue (social care, childcare and hairdressing) while others may disappear completely (delivery drivers and security).

Project Title and Researchers	Aims and Methodology	Key findings
Non-compliance and the National Living Wage: case study evidence from ethnic minority and migrant-owned businesses **Sabina Doldor, Paul Edwards, Trevor Jones, Monder Ram** (University of Birmingham), **Erika Kispeter**, **Giuglielmo Meardi** (University of Warwick), and **Maria Vilares** (University of Southampton)	The research aimed to investigate ways in which small firms in the 'informal economy' operate, particularly in respect of compliance with the NLW and other employment legislation. The research had two elements, comprising: • long-established firms in low-paying sectors, and • business owners and workers from new migrant communities. The study had four objectives: • To assess the actual experiences of how pay systems work in small firms in the clothing, food manufacture/processing, and hospitality (including restaurants). • To investigate the relationship between the level of the NLW and informal/illegal working and consider reasons for non-compliance. • To assess both employer and worker experiences in the context of broader work relationships and conditions, including how the NLW affects firms in the informal economy. • To compare firms that are 'compliant' with firms that operate 'informally'. In the first element – compliance in-depth and over time by long-established firms – the researchers conducted case studies of twelve Birmingham-based firms in clothing, food processing and hospitality. Five of these had been covered in previous research. Interviews were undertaken with the owner and one worker in each firm. Of the twelve case studies, four were compliant and eight were not. In the second element – new migrant business owners and workers – an ongoing survey of 30 firms was supplemented with questions about the NLW. Interviews with the owner and one worker from twelve of these firms were conducted. Only three of the twelve were compliant. A similar parallel study was also conducted in New Zealand. The findings of that study are detailed next.	The key findings were: • Although firms were still grappling with the implications of the NLW for their businesses, three broad responses had emerged. • First, firms that had complied with the NMW continued to comply with the NLW. Compliance was seen as necessary to operate in their markets. These employers were also generally pursuing growth strategies rather than concentrating on survival. However, these firms did appear to be finding the NLW more challenging than they had found the NMW. • Second, firms that were struggling to comply were uncertain how they would absorb future upratings of the NLW. They had already sought savings elsewhere by reducing staff, removing overtime payments, and cutting training budgets. • Third, many firms in the study did not comply with the NLW but the boundary between compliance and non-compliance was blurred. There was uncertainty about the status of workers with some being paid the NLW while others, in the same firm, were treated as casual labour or helpers and paid less. • Most employers in these firms were unaware of recent measures to strengthen the compliance regime by HMRC. They regarded the risks of being caught and punished as low. They also had little fear of complaints from workers. • They concluded that the findings confirmed the conclusions of previous research, particularly the self-perpetuating inertia of the informal labour process. • They argued that the three broad themes were not coincidental but rooted in the form of management and how firms had developed their business models. These had hardly ever changed over time.

Project Title and Researchers	Aims and Methodology	Key findings
The Minimum Wage and the National Living Wage in New Zealand: case study evidence from small owner-operators and employees in the food, clothing and hospitality sectors **Huibert de Vries** (University of Canterbury, Christchurch, New Zealand)	This study examined how small and medium-sized firms in New Zealand coped with the minimum wage legislation and how they were responding to calls for a National Living Wage. It complemented the research project conducted by Monder Ram and colleagues that is discussed above. It focused in particular on the issue of compliance or non-compliance of the New Zealand minimum wage legislation and the adoption of a wage strategy that supports the call for a NLW. The study aimed to: • investigate the reasons why many business owners believe they cannot afford to support a NLW in NZ; • examine well-established firms in the low paying sectors of clothing, food manufacture/processing, and hospitality (restaurants and supporting services); • explore the characteristics of a sample of small and medium-sized firms in each sector; • consider the composition of the labour force, the pay structures, and key features of work organisation; • observe organisational structures, sector-specific pay practices, as well as other formal and informal benefits; and • consider any changes in management practices, recruitment practices for firms positioning themselves as payers above the MW, and any move towards a NLW. Face-to-face structured interviews were conducted for the case studies in Christchurch, in the South Island of New Zealand. There were 5 firms and 6 workers from the food industry, 5 firms and 6 workers from the restaurant sector, and 5 firms and 7 workers from the clothing industry. The methods paralleled the study undertaken in the UK.	The key findings were: • Owner-operator participants in the study all stated they paid at least the MW and this was confirmed by their employees. • Within the small firms, those in food manufacture generally competed on price while those in hospitality and clothing mainly competed through differentiation and niche products. • The clothing employers were not aware of non-compliant businesses. However, those employers in hospitality and food were concerned about being undercut by non-compliant competitors exploiting vulnerable workers, usually immigrants working within their own ethnic communities. • Despite that, employers were concerned about the administrative cost of compliance for compliant businesses and that these measures did not help identify non-compliant firms or enable them to be penalised. • There was common agreement that productivity, investment and skills needed to be improved to support a higher minimum wage. • There were many historic barriers that prevented the lowest wages from rising to the NLW and a transition (rather than a step change) may be the only scenario that small business would be able to accept and that would sustain viable sub-sectors within food clothing and hospitality. • Although employers thought that increasing the minimum wage would attract higher quality staff, they were not convinced that it would automatically lead to better service or higher productivity. • Employers argued that there needed to be financial incentives that allowed for a rising pay scale that was affordable. They were concerned that raising the minimum wage would squeeze differentials and reduce those financial incentives. • However, employers were also concerned about staff quality and retention. Most minimum wage workers regarded their jobs as stop-gaps to earn money and not as a career option.

Project Title and Researchers	Aims and Methodology	Key findings
Non-standard contracts and the National Living Wage **Bethania Antunes, Sian Moore** (University of Greenwich), **Kirsty Newsome** (Sheffield University Management School), **Stephanie Tailby** (University of the West of England, Bristol), and **Geoff White** (University of Greenwich)	This research explored the relationship between contractual arrangements and the payment of the National Living Wage (NLW) focusing on non-standard employment arrangements, specifically: • zero hours contracts (ZHCs); • minimum hours contracts (MHCs); • agency work (effectively zero hours in this research); and • dependent self-employment (DS-E) (defined by the researchers as workers who are, to all intents and purposes, employees, but who are considered self-employed). Using qualitative data collection the research contributed a set of worker case studies – 36 in total – drawn from six low paying industry sectors (retail, hotels, logistics, social care, security, and recreation, sports and leisure). The research was conducted in London, the South West, and Yorkshire and Humberside. The approach allowed detailed scrutiny of hours and their relationship with earnings and consideration of whether the NLW was achieved, taking into account fluctuations and paid and unpaid components of working time. Drawing upon the experiences and perceptions of workers with non-standard employment contracts, this research explored the organisation of working time, the notion of unsocial hours and the payment of premia. It also identified changes in contractual arrangements and pay and grading structures in the light of the NLW. The impacts of contractual forms on work and the work-effort bargain are also explored. Finally the research illustrated how workers cope in the context of wider household and familial relationships, including interaction with the tax and benefits systems.	The key findings were: • There was uncertainty about contractual status among those on ZHCs and MHCs, with variability in hours leading to confusion over permanence with workers required to be available to the employer. Workers could be sent home if there was insufficient work, but also may work extra hours or back-to-back shifts. • Contracted hours can bear little relationship to actual hours worked. For workers on MHCs the scheduling of hours and days of work can vary from week to week, with shifts arranged only days in advance and changed at short notice. • MHCs appear to be used in retail to restrict employment rights to contracted hours only, rather than total hours worked. • Self-employed workers have limited control over their working time, as the work is paid on a task completion basis rather than by the hour. • Unpaid availability is a feature of ZHCs; where workers may wait between shifts or, in homecare, between visits with no guarantee that travel between visits is paid at the NLW. • The use of non-standard contracts can allow employers to redefine elements of the working day as 'non-productive' time and thus not paid. • One fifth of the workers were on an hourly rate at or close to the NLW, (this may be underestimated due to the inclusion of London in the sample). The NLW was welcomed but was still insufficient. • Awareness of minimum wages varies. Dependent self-employed did not consider it relevant. There was awareness of age rates among 20-29 year-olds. • Working time can be constructed to avoid the statutory breaks that workers would otherwise be permitted. • Some evidence that employers have made adjustments to terms and conditions to accommodate the NLW, primarily through cuts to hours and premia, but also increased use of younger workers. • Evidence of withholding of pay, as it can be difficult to keep track of 'extra' hours and complex while non-transparent pay systems, particularly for 'piece work', can facilitate non-payment.

Project Title and Researchers	Aims and Methodology	Key findings
The National Minimum Wage, The National Living Wage and the tax and benefit system **Mike Brewer** and **Paola De Agostini** (University of Essex)	This project built on previous work (Brewer and De Agostini, 2013, and Brewer, May and Phillips, 2009) on the interactions between the tax and benefit system and the NMW. It took account of the introduction of the NLW, and tax and benefit changes. It compared net incomes for minimum wage families observed in 2014/15 under the NLW, tax and benefit regimes in 2017/18 with those in 2020/21. The project: • showed where NMW and NLW recipients are in the distribution of household income; • estimated what fraction of NMW and NLW recipients are in households entitled to receive benefits or tax credits; • quantified how households containing NMW and NLW recipients are likely to be affected by current and future changes in the direct tax and benefit system; • calculated the marginal effective tax rate (METR) facing NMW and NLW recipients, and showed how this varied by household characteristics and place in the income distribution; and • quantified how possible future changes in the NMW and NLW would affect the distribution of household income, having accounted for the position of NLW and NMW recipients in the income distribution, the importance of earnings from the NMW and NLW to those households, and the way that the tax and benefit system responds mechanically to increases in earnings of NMW and NLW recipients. The EUROMOD microsimulation model was used, based on inputs from the Family Resources Survey (FRS) and supplemented by imputation from the Labour Force Survey to more accurately identify minimum wage workers. The newly created synthetic dataset was combined with the tax and benefit rules simulated by EUROMOD to produce an estimate of the net income of each family, and their incentives to work.	The key findings were: • NMW families (that is, families that contain a worker who is receiving the NMW) are mostly found in the bottom half of the working-age income distribution. • NLW workers are more evenly distributed, and are most likely to be found in the third decile of family income distribution. • NLW families tend to be better off than NMW families because they are paid more per hour, and they are more likely to live with a working partner. • NMW workers contribute more to their families' income than do NLW workers. This mostly reflects that NMW workers are more likely to be single. The contribution of NMW and NLW earnings to minimum wage families' net income falls as family income rises. • Forecast increases in the NMW and NLW by 2020-21 will increase real net incomes of minimum wage families on average by about 1.5 per cent. • Announced but not yet implemented tax and benefit changes will have small effects on minimum wage families, but the roll-out of UC could lead to considerable income gains for those families in the bottom two income decile groups. • The weakest financial incentives to work among minimum wage workers are found in the 2nd-4th decile, where they can pay extra tax and NICs but lose benefit entitlements when earnings rise. • Under current rules for in-work conditionality, when universal credit is fully rolled-out, around 21 per cent of minimum wage workers will be subject to in-work conditionality. • A 5 per cent hypothetical rise in the NMW and NLW in 2020-21 would increase the net incomes, on average, by less than 1.2 per cent. • The study compared 2017/18 with 2020/21, when most of the welfare cuts have already happened. Comparisons with 2014/15 would not yield such positive gains across family types and income deciles.

Project Title and Researchers	Aims and Methodology	Key findings
Estimating the impact of the October 2015 increase in the Apprentice Rate **Federico Cilauro, Stefano Piano** and **Danail Popov** (Frontier Economics)	In March 2015, the Government announced that the Apprentice Rate would increase by 21 per cent from £2.73 to £3.30 from October 2015. This was a considerably larger increase than for the other minimum wage rates – around 3 per cent – although the introduction of the National Living in April 2016 increased the minimum for those aged 25 and over by around 11 per cent over the year. This project aimed to assess the impact of that large increase in the Apprentice Rate on: • apprentice pay; • the number of new apprenticeships, and their completion rates; and • the nature of apprenticeships, including the quality of the training provided to apprentices. Apprenticeship policy is devolved across the four nations of the UK. The project described the variation in levels of apprentice pay in the UK before and after October 2015 along a number of dimensions, including: geography; apprenticeship level; industry; and age of apprentices. This provided an understanding of how different groups of apprentices were affected by the large October 2015 increase. Due to data availability, the econometric evaluation of the impact was restricted to England only. The analysis exploited the geographic variation in the proportion of apprentices paid below the Apprentice Rate – identifying low-paying and higher-paying areas – to understand the impact of the large increase in the Apprentice Rate, using difference-in-difference methodology. In addition to estimating the average effect of the Apprentice Rate increase, it also attempted to assess its impact by geography; age (under 19 compared with 19 and over); sector and occupation groups; apprenticeship level (focusing on Levels 2 and 3); and gender. The study used data from the Individual Learner Record (ILR), the 2014 and 2016 Apprentice Pay Surveys (APS), and the Annual Survey of Hours and Earnings (ASHE) for 2015 and 2016.	The key findings were: • No evidence that the 21 per cent increase in the Apprentice Rate had reduced the number of apprenticeships; the number of apprentice starts; or apprentice completions. • Indeed, there was evidence of significant positive effects, albeit generally in apprentice frameworks that had relatively few apprentices paid at the Apprentice Rate. These findings may have been due to other policies, including, potentially, the introduction of the NLW some six months later. • When focusing on low-paying frameworks, there was some evidence that hairdressing apprenticeships had been reduced, but these findings were based on small samples. • It found no evidence that training quality had fallen, but there were limited data to explore this properly. • There were, however, limitations of the available data on apprentices. There were problems with data access and quality across the UK, which restricted the analysis to England. • Sample sizes in the Apprentice Pay Surveys prevented a more comprehensive exploration by detailed location and other characteristics. Information on off-the-job and on-the-job training hours was also lacking. • Data on the impact on the quality of apprentices was also mixed. • The researchers suggested that future research might usefully also investigate the interdependencies between the Apprentice Rate and the other minimum wages, including the NLW.