Social Mobility & Child Poverty Commission

Understanding the parental employment scenarios necessary to meet the 2020 Child Poverty Targets

Research report

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Landman Economics is an economic research consultancy established by Howard Reed, its Director, in 2008. It specialises in combining research of high policy relevance with cutting-edge microsimulation and econometric modelling in a number of economic research fields including labour markets, taxation, health economics and policy evaluation.

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NIESR is an independent research institute, established in 1938. It conducts policy-relevant research on macroeconomic, microeconomic and social policy issues. Jonathan Portes is the Director.

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Social Mobility and Child Poverty Commission (SMCP)

The Social Mobility and Child Poverty Commission is an advisory non-departmental public body (NDPB) of the Department for Education, the Department for Work & Pensions and the Cabinet Office.

The Commission was established with a remit to:

- Publish an annual report setting out progress made in improving social mobility and reducing child poverty in Great Britain.
- Provide published advice to ministers at their request on social mobility and child poverty.
- Act as an advocate for social mobility beyond government by challenging employers, the professions and universities amongst others to play their part in improving life chances.

This research was commissioned to improve the Commission's understanding of the potential contribution of changes in parental employment outcomes to meeting the child poverty targets.

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Abstract

This report assesses whether changes in parental employment alone – rather than changes to the tax or welfare system or other policy measures – could enable the UK Government to achieve the targets for absolute and relative child poverty set out in the Child Poverty Act 2010:

- The **relative low income target** – less than 10% of children living in households with equivalised net income below 60% of median equivalised net household income for the financial year 2020/21.
- The **absolute low income target** – less than 5% of children living in households with equivalised net income below 60% of median equivalised net household income for the financial year 2010/11, uprated to 2020/21 using the Retail Price Index (RPI).

The project uses household survey data and tax-benefit microsimulation modelling to forecast child poverty levels under a range of different scenarios for employment growth and earnings growth in the UK economy between now and 2020. In the central scenario (corresponding to the Office for Budget Responsibility's most recent forecasts for earnings and employment growth in its March 2014 *Economic and Fiscal Outlook*), the model forecasts that child poverty in 2020 on the relative BHC poverty measure will be 21 percent – 3.5 percentage points higher than in 2011-12 (the most recent year for which figures are currently available), and 11 percentage points above the target level of 10 percent. Meanwhile, absolute child poverty in 2020 is forecast to be just over 24 percent – 19 percentage points above the target level of 5 percent.

Analysis of other scenarios for employment and wage growth shows that faster employment growth reduces relative and absolute poverty. Faster wage growth reduces absolute poverty but slightly *increases* relative poverty because higher wages increase net incomes of households in the middle by more than those at the bottom (meaning that more households are classified as 'poor' on a relative measure). Even in the most optimistic scenarios for parental employment and earnings growth (where employment and wages increase faster than the OBR forecast, and parents make up most or all of the additional entrants into work), the targets for relative and absolute poverty are not achieved. This remains true even if a different inflation measure is used.

To achieve the 2020 relative poverty target it is necessary to assume (a) an extreme (and implausible) increase in employment rates for parents, plus (b) substantial increases in hours worked for working adults in households with children who remain in poverty despite being in work – over and above the additional requirements for claimants in the Universal Credit system. Hitting the relative poverty target through improved parental employment outcomes alone looks impossible in any realistic scenario for parental employment and earnings in 2020. However, increases in employment and earnings over and above the OBR forecast result in substantial gains to the Exchequer through increased direct tax receipts and reduced welfare spending. This additional net tax revenue could be recycled into measures to reduce child poverty further (such as increased Universal Credit payments or improved childcare provision). The approach offering most scope for meeting the 2020 targets would be to supplement increases in parental employment (to reduce absolute and relative child poverty) and wage increases (to reduce absolute child poverty) with recycled savings through financial support for families (to offset the slightly negative impact of wage increases on relative child poverty).

Executive summary

The UK Government has recently enacted a number of policies designed to increase employment, particularly among disadvantaged groups. The objective of this research project is to identify the contribution that changes in parental employment outcomes would make towards the achievement of the child poverty targets in the Child Poverty Act 2010. The project focuses on two targets:

- The **relative low income target** – less than 10% of children living in households with equivalised net income below 60% of median equivalised net household income for the financial year 2020/21.
- The **absolute low income target** – less than 5% of children living in households with equivalised net income below 60% of median equivalised net household income for the financial year 2010/11, uprated to 2020/21 using the Retail Price Index (RPI)[1].

This project seeks to:

- explore whether changes in parental employment **alone** - rather than increased net expenditure on transfer payments, tax cuts, childcare support or other measures - could enable the UK Government to achieve the absolute and relative income targets set out in the Child Poverty Act 2010;
- assess the potential contribution of different aspects of parental employment (e.g. number of people employed, total hours worked, wage levels etc.) to the reduction of child poverty in realistic scenarios.

To ensure realistic estimates of child poverty in 2020, several different scenarios were developed for the evolution of key variables relevant to the evolution of household incomes between now and 2020:

- For **employment**, the central scenario used the most recent projection for employment rates from the Office for Budget Responsibility (OBR). An optimistic scenario (where employment for men and women rises to the level of the best-performing economies in the OECD) and a pessimistic scenario (where employment stays at 2013 levels) were also modelled. Additional scenarios where more of the increase in employment between 2014 and 2020 was due to parents (rather than adults in households without children) were also included.
- For **earnings growth** the central scenario used was again based on OBR projections (8% increase in average earnings growth relative to the Consumer Price index (CPI) between 2014 and 2020). A range of other scenarios for faster or slower earnings growth (and most pessimistically, continued falls in real earnings) were also modelled, as were scenarios where wage dispersion increased or reduced by 2020.

[1] It should be noted that the use of the Retail Price to uprate the absolute poverty line is currently under review given that ONS recently decided that RPI should no longer be accorded the status of an official national statistic due to concerns about the formula used to calculate the index. The decision made by the Department for Work and Pensions in April 2014 was to continue with RPI uprating but to report alternative measures of absolute poverty using RPIJ, CPIH and CPI uprating. A final decision on which index to use will be made after the Johnson Review of price indices reports in summer 2014. See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307007/hbai-statistical-notice-april-2014.pdf for details.

The IPPR/Landman Economics tax-benefit microsimulation model was used to simulate net household income in 2020 for households in the 2010-11 Family Resources Survey, incorporating the changes in employment and earnings specified in each scenario. It should be noted that the IPPR/Landman Economics model generates projections for relative child poverty in 2020 that are around 1.5 percentage points lower than those estimated in recent research by the Institute for Fiscal Studies using a similar (but not identical) methodology[2]. The difference between the IPPR/Landman Economics and IFS estimates appears to be largely due to the fact that Landman Economics assumes 100% take-up of means-tested benefits and Universal Credit, whereas the IFS model controls for non-take-up. This means that the forecasts for child poverty in this report should be viewed as relatively optimistic.

The analysis also incorporates all the changes to the tax and welfare system made in the 2010-15 Parliament (including Universal Credit, which is assumed to be fully rolled out by 2020), but does not include any additional cuts to Universal Credit or other benefits which might be announced after the 2015 general election (current plans are for £25 billion of spending cuts, including £12 billion of welfare cuts[3]). Additional scenarios were incorporated to examine the potential impact of in-work conditionality for employed and self-employed Universal Credit claimants. These scenarios assume that three-quarters of claimants who are in the full conditionality category but working fewer hours than the number of hours specified by their Claimant Commitment (35 hours per week for employees, or the equivalent level of gross income for self-employed people) manage to increase their work intensity to the level required in the Claimant Commitment.

The research also includes an assessment of how high the parental employment rates would need to be to hit the child poverty targets in 2020, and whether an across-the-board increase in hours of work for low-income working households with children – over and above the in-work conditionality in Universal Credit – would make a big difference to child poverty rates. Finally, the research examines the potential gains to the Exchequer from increased employment and gross earnings, in the form of higher income tax and National Insurance Contributions receipts, and reduced social security expenditure.

Two different measures of net income are used in child poverty statistics - Before Housing Costs (BHC) and After Housing Costs (AHC). The analysis focuses mainly on the BHC measure although the AHC measure is also discussed in the Appendix.

Findings

Relative child poverty in 2020

Using the OBR's projections for employment and wage growth, the IPPR/Landman Economics model forecasts that child poverty in 2020 using the relative BHC poverty measure will be 21 percent – 3.5 percentage points higher than in 2011-12, and 11 percentage points above the target level of 10 percent.

[2] J. Browne, A. Hood and R. Joyce (2014), *Child and working-age poverty in Northern Ireland over the next decade: an update*, IFS Briefing Note BN144, London: Institute for Fiscal Studies.

[3] "George Osborne pledges £12 billion cuts in Government welfare spending after next general election", *Daily Telegraph*, 6 January 2014.

Faster employment growth would reduce relative poverty, but faster wage growth would actually slightly *increase* relative poverty because higher wages increase net incomes of households in the middle by more than those at the bottom meaning that more households are defined as 'poor' on a relative measure. Measures designed to increase wages at the bottom of the earnings distribution (such as the minimum wage) make almost no difference to relative poverty.

When the potential additional impacts of in-work conditionality in the Universal Credit system are factored in to the central scenario, the 2020 forecasts for relative poverty fall, but only slightly (by 0.8 percentage points). However, this still leaves child poverty around 11 percentage points above the 2020 target in the central scenario.

Even in the most optimistic scenarios for parental employment and earnings growth (where employment increases above the OBR forecast level, and parents make up most or all of the additional entrants into work), the target for relative poverty is a long way from being met.

In order to hit the 2020 BHC relative poverty target, it is necessary to assume (a) an extreme (and implausible) increase in employment rates for adults in households with children, plus (b) substantial increases in hours worked for working adults in households with children who remain in poverty despite being in work – over and above the hours of work required in the current Universal Credit claimant commitment. Hitting the relative poverty target through improved parental employment outcomes alone looks impossible in any realistic scenario for parental employment and earnings in 2020.

It should be noted that these estimates look only at the *direct* effect of employment and wage increases. Because increased employment and wages will improve the government's fiscal position (through higher tax receipts and lower benefit expenditure), there could be *indirect* effects on relative poverty if these gains are "recycled" into anti-poverty measures (see below for more details). This leaves open the possibility that increases in wages could help reduce relative poverty rates if some of the Exchequer gains are recycled in this way.

Absolute child poverty in 2020

Using the OBR's projections for employment and wage growth, our forecast for absolute child poverty in 2020 using the BHC poverty measure is just over 24 percent – 4 percentage points higher than 2011-12 and 19 percentage points above the target level of 5 percent.

Faster employment growth and higher wage growth both reduce absolute poverty, but not by enough to hit the target. On the most optimistic forecast for overall wage and employment growth, absolute poverty is forecast to be around 21 percent – still a long way above the target.

Measures designed to increase wages at the bottom of the earnings distribution (such as the minimum wage) reduce absolute poverty, but only slightly.

When the potential additional impacts of in-work conditionality are factored into the central scenario, absolute poverty is reduced by around 1 percentage point.

There is no scenario (even an extreme scenario) for parental employment and earnings growth, plus increases in hours for low-income working parents, which results in the 5 percent absolute

poverty target being hit. The target is simply unattainable given that between 2010 and 2013, earnings (and therefore household incomes) have fallen sharply relative to the RPI inflation index used to uprate the official absolute poverty measure and the OBR expects earnings growth to continue to be outpaced by RPI inflation between now and 2020.

If the Consumer Price index is used to uprate the absolute poverty measure instead[4], measured absolute poverty is a lot lower in all the modelled scenarios but it is still well above the target level with limited progress being made towards it. For example, using OBR projections for employment and earnings, absolute poverty is forecast to be 17.3 percent in 2020 using CPI uprating – in other words, even if this lower measure of inflation used to uprate the absolute poverty line, absolute poverty will be at roughly the same level in 2020 as it was in 2010/11. This would be a historically unprecedented outcome – there has been no other 10 year period in which absolute poverty has not fallen since records began in 1961, even against an RPI-uprated poverty line. It is also still impossible to meet the absolute child poverty targets under any plausible scenario for parental employment, earnings growth, and hours of work.

Recycling revenue from increased earnings and hours of work

This report considers the potential fiscal impact of increased earnings and employment between 2014 and 2020. An increase in the employment rate, and/or an increase in gross earnings, results in gains for the Exchequer; the Government collects more income tax and National Insurance Contributions, and pays out less in Universal Credit and other benefits. Employment and earnings growth up to 2020 in the OBR's central forecasts will already have been factored into the Government's own fiscal projections, but if employment in 2020 is higher, and/or wages are higher, than the OBR forecasts, this would improve the Government's fiscal position over and above the central forecasts. Optimistic assumptions on employment growth (that the UK will increase adult employment rates to the level of the best performers in the OECD) and earnings (that earnings will regain the ground lost between 2008 and 2013, a real increase of 6% in addition to forecast OBR increases) result in an increase in net revenues of around £37 billion compared to the central projection. If realised, this improvement in the Government's fiscal position could be used to increase financial support for low-income working households with children (for example, through increased generosity for Universal Credit payments, or more extensive childcare provision for working families) in addition to obviating the need for further social security cuts after 2015.

Policy implications

Employment policy

Higher employment and longer weekly hours of work tend to reduce child poverty rates. However, this is not enough by itself to reduce child poverty to the levels required to meet the 2020 targets. For the relative child poverty target, implausibly high parental employment rates and a very substantial increase in parental work intensity (well beyond the levels required in the current Universal Credit Claimant Commitment) are required to have any chance of hitting the targets

[4] The use of CPI as an alternative uprating index for the absolute poverty measure in this report should not be taken to mean that the authors support CPI as the best formula for uprating the poverty line; there are a range of options to replace RPI, each with strengths and weaknesses for measuring household living standards.

under the 2020 tax/benefit system as it would stand after including all the reforms announced so far during the 2010-15 Parliament (but no further changes beyond that). These outcomes would be unprecedented both historically in the UK context, and across OECD countries.

Achieving such high employment rates through increases in work intensity beyond those required by the current Universal Credit Claimant Commitment would require, at the very least, a radical reshaping of the labour market and the support offered to parents to allow them to work as much as they would need to escape poverty. Necessary policies would include:

- More extensive childcare provision than currently exists in the UK system – perhaps more along the lines of provision in countries such as Sweden and Denmark, for instance;
- A tougher Universal Credit Claimant Commitment – perhaps including an expectation of work from mothers with very young children and disabled parents, and an expectation of working hours above 35 hours per week for claimants in the 'full conditionality' category. It should be noted, however, that the current Claimant Commitment is already more demanding than anything seen in the UK social security system over the last half century at least, and proposals to make the Claimant Commitment still tougher would be controversial.
- Greater ability to combine full-time jobs with parenting, requiring greater flexibility from employers;
- A macroeconomic environment which generates sufficient labour demand for the types of jobs that parents moving into work (and parents moving from part-time to full-time work) could be expected to do;
- Increased in-work support for families with children, for example through more generous rates of Universal Credit.

Some of these policies would involve additional expenditure (for example more extensive childcare provision and a more generous Universal Credit system) but there is significant scope for recycling the fiscal gains from increased parental (and non-parental) employment back into measures designed to reduce child poverty still further.

Increasing wages and net incomes

The direct impact of increased average wages in the economy is to slightly increase relative poverty, while at the same time decreasing absolute poverty (but not by a huge amount relative to the size of the wage increase) – those at the bottom get better off but are outpaced by those in the middle. Furthermore, higher wages for low earners, whether they are achieved by increases in the minimum wage or by a more generalised compression of the wage distribution, do not have a huge impact on either relative or absolute poverty. This means that increases in wages will need to be combined with measures to increase employment – and other measures which increase family incomes – to avoid increasing relative poverty overall. Although the impact of increased employment rates in reducing poverty is diminished by the upward shift in the poverty line as more people move into work, there is still nonetheless a fairly strong overall negative relationship between parental employment and child poverty.

On top of this, to secure substantial reductions in relative child poverty during a period of real earnings growth it will be necessary to introduce tax or welfare measures which target additional resources on low-income families with children. More generous in-work support for families with children through the Universal Credit system (perhaps through a lower net income taper rate, or higher work allowances for families with children) would be the obvious policy mechanism for doing this – in addition to improved childcare provision. The fiscal modelling in this report suggests that increasing employment and/or average wage growth beyond the OBR's central projections would free up substantial resources to make a significant investment in low income families without jeopardising the Government's deficit reduction strategy.

High marginal deduction rates on earned income for many low-income working families means that increases in gross income do not reduce absolute poverty as much as policymakers might have hoped (although increased wages for low earners do result in large net revenues for the Exchequer, which banks much of these increases in the form of lower Universal Credit payments). This implies that measures to ensure that low-income working households keep more of any increases in gross earnings that they can secure would be beneficial in reducing absolute poverty. Altering the parameters of Universal Credit to reduce marginal earned deduction rates for low earners (for example, through a lower taper on net incomes, or higher work allowances for families with children) would be an obvious policy option.

Introduction

The UK Government has introduced a number of reforms to the tax and welfare system over the current (2010 to 2015) Parliament designed to boost parental employment, with the aim of reducing child poverty by increasing the net incomes of families currently in poverty. This research report examines the parental employment outcomes that would be necessary to achieve the child poverty targets in the Child Poverty Act 2010[5]. The 2010 Act specifies four different targets for child poverty in 2020:

i) the **relative low income target** – that less than 10% of children who live in qualifying households live in households with equivalised net income for the financial year less than 60% of median equivalised net household income for the financial year.

ii) the **combined low income and material deprivation target** – that less than 5% of children live in qualifying households with equivalised net income below 70% of the median for the financial year, *in addition to* experiencing material deprivation.

iii) the **absolute low income target** – that less than 5% of children who live in qualifying households live in households with equivalised net income below 60% of median equivalised net income for the 2010-11 financial year (uprated to the 2020-21 financial year using the Retail Price Index);

iv) the **persistent poverty target** – that less than a certain target percentage of children who have lived in households with equivalised net income below 60% of the median for the financial year have lived in households that have been within the relevant income group in at least 3 of the survey years (the precise target percentage is listed in the 2010 Act as "a percentage to be prescribed by regulations made before 2015")

This research report focuses on estimating changes to child poverty under targets (i) and (iii) – the relative and absolute low income targets[6] – by 2020. It should be noted that all the targets are for income measured on a Before Housing Costs (BHC) basis. However, the report also reports results (in Appendix E) for income measures on an After Housing Costs (AHC) basis.

Research questions

This report seeks to:

- explore whether changes in parental employment **alone** – i.e. rather than increased net expenditure on transfer payments, childcare support, tax cuts or other measures - could enable the UK Government to achieve the absolute and relative income targets set out in the Child Poverty Act 2010;
- assess the potential contribution of different aspects of parental employment (for example, number of people employed, total hours worked and wage levels) to the reduction of child poverty in realistic scenarios.

[5] Part 1 of Child Poverty Act 2010, online at http://www.legislation.gov.uk/ukpga/2010/9/contents

[6] Ideally the analysis would look at all four targets, but it is not possible to model changes in the combined low income and material deprivation target or the persistent poverty target using the methodology outlined in this report.

Methodology

Development of scenarios

This project starts by developing scenarios for the evolution of employment, earnings and other key economic variables relevant to the rate of growth of household incomes between now and 2020. The purpose of this exercise is to ensure that the simulations of child poverty in the report are as realistic as possible.

Employment

Five different scenarios for employment rates in the period 2014 to 2020 are presented:

1. Central scenario

The central scenario uses the projections for employment rates in the Office for Budget Responsibility's March 2014 Economic and Fiscal Outlook[7]. The distribution of employment growth by population subgroup (gender, age, presence or absence of children in the household, age of youngest child) is assumed to continue along the same lines as for the decade 2003 to 2013 but the employment rates are calibrated so that total employment sums to the OBR forecast. Because the most recent OBR forecast only goes forward as far as 2018-19, the employment rate is assumed to continue on its 2014-18 trajectory in 2019 and 2020. Overall, this results in a total increase of 3.7 percentage points in the working age employment rate. Appendix A gives details of the methodology used to estimate trends in employment rates for working age adults using data from the UK Labour Force Survey, and how this is calibrated to the average OBR employment rate.

For adults who move into work, each adult is randomly allocated to full-time work (40 hours per week) or part-time work (20 hours per week) assuming that the split between full-time and part-time work for new entrants reflects the mix between full-time and part-time workers for people already in employment in each population subgroup. Figures 18 and 19 in Appendix A also give details of how the employment rates for families with children with different numbers of adults in work, broken down according to part-time and full-time work, differ in each employment scenario.

2. Optimistic scenario

This scenario assumes that employment rates for men and women will rise to the average level of the three best performing countries in the OECD (excluding Iceland and Switzerland). Appendix B gives details of the countries in the OECD with the highest employment rates. Overall, this results in an increase of 6.3 percentage points in the employment rate for men, and 9.4 percentage points for women, relative to the 2013 starting point.

3. Pessimistic scenario

This scenario assumes that employment rates for men and women do not improve any further from their winter 2013 levels (71.1 percent for men, and 60.3 percent for women).

[7] Office for Budget Responsibility, *Economic and Fiscal Outlook March 2014*. London: HMSO.

4. 'All employment growth from parents' scenario

This scenario assumes that employment rates improve to the OBR forecast projection level (as for scenario 1) but that the growth in employment rates between 2013 and 2020 all comes from parents rather than adults without children. The rationale behind this is to show the maximum difference it could make to the child poverty projections if employment increases within households with children rather than households without children. It is not realistic to expect that this would actually be the case, but the scenario represents an upper bound for the potential role of increased parental employment in reducing child poverty (while assuming that overall employment improves to the levels in the OBR forecast).

Appendix A uses data from the Labour Force Survey to analyse growth in employment for men and women with children compared to men and women in households without children; as it turns out, only around 40 percent of employment growth in the economy in the decade 2003 to 2013 was due to families with children. This has consequences for relative poverty rates in particular under scenarios 1 and 2, as explained later in the results section of the report.

5. 'Extra employment growth to optimistic level from parents' scenario

This scenario starts from the central employment projection (scenario 1) and then assumes *additional* employment growth to the level of the best-performing countries in the OECD (scenario 2), with this additional employment growth coming entirely from families with children.

Figure 1 gives a summary of the employment rates for men and women (with children and without children) assumed in each employment scenario. It should be noted that the projections for the employment rate of men with children in scenarios 4 and 5, in particular, are extremely ambitious, at around 93 percent in each case. The projection for the increase in employment for women with children in scenario 5 is also very ambitious – an increase of over 15 percentage points between 2013 and 2020 (although, as shown in Figure 21 in Appendix B, some OECD countries did have employment rates in 2009 which were over 15 points above the UK's employment rate for mothers at that time).

Scenarios 2, 4 and 5 in particular imply significant increases in the employment rates of adults with very young children or other caring responsibilities, and disabled people, as well as people with low qualification levels. The employment rates in scenarios 2, 4 and 5 are also far in excess of what the OBR predict is realistic given projected macroeconomic trends. Thus, they should be regarded as extremely ambitious and probably unattainable without very significant reforms to the operation of the labour market and the system of support for working families on low incomes. The policy implications section later in the report contains a more detailed discussion of the feasibility of reaching these ambitious employment targets by 2020.

Figure 1 Assumed employment rates for each employment scenario

	Employment rate (16-74 year olds)				
Scenario	Men no children	Men with children	Women no children	Women with children	Whole sample
Starting (2013)	59.5	84.0	54.0	64.7	63.0
1. central	64.0	86.9	58.9	69.3	67.0
2. optimistic	66.8	90.3	63.4	74.1	72.4
3. pessimistic	59.5	84.0	54.0	64.7	63.0
4. all employment growth from parents	59.5	93.4	54.0	74.1	67.0
5. employment growth from central to optimistic from parents	64.0	92.9	58.9	79.9	72.4

Source: starting (2013) employment rates are the measured employment levels in Labour Force Survey data for 2013. Assumed employment rates in scenarios 1-5 are authors' projections based on increases in employment for each population subgroup, calibrated to match the OBR forecasts (for the central scenario) and OECD employment rates (for the optimistic scenario) respectively. Appendix A gives more details of the methodology used for forecasting employment rates in each scenario.

Earnings

Seven different scenarios for earnings growth between 2014 and 2020 are modelled, as follows:

a. Central scenario

This scenario uses the projections for real earnings growth in the OBR's March 2014 Economic and Fiscal Outlook. These imply real growth in average earnings of approximately 8% relative to the Consumer Price Index (CPI). In this scenario (and in scenarios (b) and (c) below), all wages are assumed to grow at the same rate, i.e. there is no change in the *dispersion* of earnings. Scenarios (e) and (g) below use different assumptions which change wage dispersion.

b. Optimistic scenario

In this scenario, earnings are assumed to recover all of the loss in real earnings between 2008 and 2013 *in addition* to the real earnings growth projected by the OBR. This implies real average earnings growth of approximately 14% relative to CPI.

c. Pessimistic scenario

Earnings are assumed to continue their 2008-13 trajectory, resulting in a fall in real average earnings of approximately 6% relative to CPI.

d. No-growth scenario

Earnings are assumed to remain at their winter 2013 level in real terms (i.e. average real earnings growth of zero relative to CPI). This scenario sits somewhere between scenarios (a) and (c) in terms of the level of earnings in 2020.

e. Central scenario with increased wage dispersion

In this scenario, there is increased dispersion in wages around the central projection for average wage growth. Based on analysis of trends in hourly earnings over the period 1979 to 2012 by Gregg, Machin and Salgado (2013)[8], it is assumed that wages for high earners grow faster, and wages for low earners more slowly, than at the median. The assumptions in this scenario imply that while real hourly wages grow by 7.7 percent between 2014 and 2020 for employees on median hourly wages, growth for the highest-paid ten percent of employees is 12.3 percent over the same time period, while wage growth for the lowest-paid ten percent of employees is only 2.9 percent. Thus, the dispersion of earnings grows over time in this scenario. Appendix C gives more details of the assumptions for earnings growth used at each point in the wage distribution.

f. Increase in the minimum wage

This scenario is the same as the central scenario (a), but wages for workers earning between the National Minimum Wage (currently £6.31 per hour for workers aged 21 and over) and £7.50 per hour are assumed to increase to £7.50 per hour (at 2014 prices; this level is then uprated to the expected price level in 2020 using the CPI). This scenario aims to show the impact of an above-inflation increase in the minimum wage as an anti-poverty measure[9].

g. Wage compression

This scenario is the same as the central scenario (a), but weekly wages for workers earning below the median hourly wage (just over £13 per hour) are assumed to increase so that the gap between these low earners and the median is reduced by one-third. So for example, somebody earning £7 per hour in scenario is assumed to earn £9 per hour in this scenario. While wage compression is actually the opposite of recent trends (which have been towards increased wage dispersion), this scenario aims to reflect the potential for policies which might raise wages at the bottom of the scale without resorting to statutory measures such as increasing the National Minimum Wage – for example, greater coverage of the living wage, and better availability of workplace training.

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[8] P. Gregg, S. Machin and M. Fernandez-Salgado (2013), "Real wages and unemployment in the big squeeze", Centre for the Analysis of Social Policy, University of Bath, Working Paper CASP9.

[9] One concern regarding increases in the National Minimum Wage is adverse employment effects if the rate is set too high. However, based on recent evidence of strong employment growth in the UK labour market the most recent Low Pay Commission report (*National Minimum Wage: Low Pay Commission Report 2014*, London: HMSO) and a supplementary report on the future path of the minimum wage (*The Future Path of the National Minimum Wage*, 2014, Low Pay Commission, London: HMSO) suggest that real terms increases in the level of the National Minimum Wage can be implemented without significant adverse employment effects given that three conditions are met: (1) rising real wages in the economy generally, (2) stable or rising employment, particularly in low-paying industries and (3) an expectation of sustained economic growth. As the first two of these conditions are met in our central wage and employment scenarios, and the third is implied by real terms wage increases, it seems reasonable to assume for the purposes of this report that an increase of just over £1 per hour in the minimum wage will not generate substantial adverse employment impacts.

Each combination of these scenarios is run through the IPPR/Landman Economics tax-benefit model making (7 x 5 = 35) scenarios in total.

Scenarios for the impact of in-work conditionality in Universal Credit

Making receipt of benefits conditional on work-related activities (such as jobsearch) has been a feature of the UK benefit system for many unemployed claimants for some decades. But the Universal Credit system extends conditionality for many claimants who are in work to an extent not seen before in the UK. Once Universal Credit is fully rolled out, all working age adults in claimant families who are not in one of the following categories:

- assessed as having limited work capability due to long-term illness or disability;
- a lone parent with children aged under 13;
- the primary caring parent in a couple with children aged under 13;

Will be required to work at the following intensity (as a minimum):

- 35 hours per week as an employee;
- gross income from self-employment equivalent to 35 hours per week at National Minimum Wage (if self-employed).

Lone parents and primary carers in couples with children aged between 5 and 12 will be required to work at least 16 hours per week.[10]. The aim of these policies is to encourage claimants to increase their gross incomes rather than subsidising low-paying part-time jobs or unsuccessful self-employed businesses through Universal Credit.

To estimate the potential effect of the in-work conditionality provisions in Universal Credit on child poverty in 2020, the central scenario for employment and wage growth in the previous section was re-run with the following additions:

- An assumption that 75 percent of Universal Credit claimants in the full conditionality category who are employees in the central scenario with working hours below 35 hours per week manage to increase their gross earnings to 35 hours per week.
- An assumption that 75 percent of Universal Credit claimants who are self-employed with total gross income below the minimum income floor manage to increase their incomes so that their income reaches the income floor level.11.

The aim of this exercise is to show the potential impact of in-work conditionality in increasing the proportion of Universal Credit claimants in full-time work (or self-employment which delivers a gross income equivalent to full-time work as an employee)[12]. The 75 percent threshold was

[10] The detailed rules are set out in *Universal Credit Regulations 2013*, HM Government, http://www.legislation.gov.uk/ukdsi/2013/9780111531938

[11] In both (i) and (ii), 75% of low-earning families on Universal Credit were selected randomly, with the income of remaining 25% being unchanged from the original central scenarios for employment and earnings.

[12] Note that the increases in hours modelled in this in-work conditionality scenario only apply to Universal Credit claimants who are already in work (but working less than 35 hours) in the central wages and employment scenario. We do not move additional non-working claimants into work in this scenario over and above those already moved into work as part of the central wages and employment scenario as the aim of this particular aspect of the modelling is to look at the potential contribution of moving from part-time to full-time work to child poverty reduction.

chosen to take account of the fact that at any one time, not everyone who is subject to full conditionality is likely to actually be in full-time work, due to variations in hours worked from week to week and 'churn' between part-time and full-time jobs in the labour market. Also, for the self-employed, people whose business is in its first year of operation will be exempt from conditionality in most circumstances. The assumption that 75 percent of working claimants in the work conditionality group achieve full-time hours is optimistic (although not extraordinarily so given the findings from recent research on the number of hours worked by adults in households in poverty using the most recent Family Resources Survey data)[13]. The aim here is to show an upper bound for the likely effectiveness of the in-work conditionality in Universal Credit.

What parental employment outcomes would be necessary to meet the 2020 targets?

Starting with the central forecasts for employment and other variables plus the reforms to Universal Credit listed above, this scenario asks the question: how much would employment need to increase in excess of central forecasts to achieve the 2020 child poverty targets, if the additional employment (above the central scenario) were entirely composed of adults in families with children? The aim here is to examine just how high the employment rates for male and female parents need to be for the poverty targets to be met by an increase in employment rates alone (plus the potential improvements in the proportion of people entering full-time work and self-employment incomes incentivised by Universal Credit). This analysis includes the impact of the increase in the proportion of full-time workers, as modelled in the in-work conditionality scenario above. Further increases in employment over and above the central forecasts are modelled, starting from this baseline.

Assumptions regarding other economic variables

The analysis makes the following additional assumptions about other economic variables projecting forward to 2020:

Housing costs

Rents in the social sector are assumed to rise in line with the Retail Price Index plus 0.5 percent per year until 2015, and then in line with the Consumer Price Index plus 1 percent from 2015 to 2020, in line with current government guidelines. Rents and mortgage interest payments are assumed to rise in line with the Retail Price Index plus 0.5 percent per year. It seems reasonable

[13] Recent analysis by Jonathan Bradshaw and Gill Main (2014) for the Social Policy Research Unit at the University of York using the 2011-12 Family Resources Survey suggests that between 38% and 42% of children in households below the relative BHC poverty line with at least one adult in work are in households where the adults have 'additional working potential', defined as being able to move from part-time to full-time work. This suggests that the proportion of working households with at least one adult in the full conditionality category currently working 35 hours per week or more is already at least around 60%, which suggests that 75% is attainable, but not straightforward. See J. Bradshaw and G. Main (2014), "How many working poor parents might be able to work more?", Social Policy Research Unit blog, University of York, 19 March 2014. http://spruyork.blogspot.co.uk/2014/03/how-many-working-poor-parents-might-be.html

to assume an above-inflation rate of increase for housing costs given current trends in the UK housing market. In the social housing sector, most rents are currently subject to increases at RPI plus 0.5% until reaching the affordable rent level (defined as 80 percent of market rents by local area).

Demographics

The demographic structure of the population is assumed to be held constant at the population totals in the base year (2010-11). For this reason, the changes to child poverty rates as a result of higher employment and other changes are shown mainly a percentage terms in the results section rather than in number of children (which is likely to increase as the population increases)[14].

Simulating child poverty for each household in 2020

The analysis uses the IPPR/Landman Economics tax-benefit model to simulate net incomes for each household in 2020, using the 2010-11 Family Resources survey as a baseline dataset. Appendix C gives full details of this process.

The simulation methodology takes account of:

- changes to the tax, benefit and tax credit systems between 2010 and 2020 (including the introduction of Universal Credit), based on all announced reforms so far in the 2010-15 Parliament. After the introduction of reforms announced to date in the 2010-15 Parliament, tax thresholds, benefits and Universal Credit are assumed to increase at the rates specified in current uprating legislation[15]. Note that the simulations do not include any additional spending cuts to the social security system beyond already announced measures. Given that the current Government's spending plans imply around £25 billion of spending cuts in the first two years of the next Parliament to help eliminate the remaining structural deficit in the public finances, and that the Chancellor of the Exchequer has suggested that post-2015 spending plans should include £12 billion of additional cuts to welfare[16], it is likely that there will be further cuts to benefits and Universal Credit after 2015 which are not included here. However, as we have no way of knowing what precise form these additional cuts might take, and how they might affect families with children in particular, we have not included any assumptions on additional cuts in the analysis beyond those already announced.

[14] Recent child poverty forecasts by the Institute for Fiscal Studies make adjustments to the weighting factors in the Family Resources Survey to control for projected changes in the structure of the population by age, family type and employment status. Sensitivity analysis by the IFS shows that this demographic reweighting has no impact on forecast BHC relative poverty rates in 2020 and only a minor impact on forecast AHC relative poverty rates. See J. Browne, A. Hood and R. Joyce (2013), *Child and Working-Age Poverty in Northern Ireland from 2010 to 2020*, London: Institute for Fiscal Studies, Tables C1 and C2.

[15] For the majority of benefits and thresholds, and for Universal Credit, the current default uprating is by the Consumer Price Index (CPI); the main exception is the Basic State Pension, which is uprated by the maximum of CPI, average earnings or 2.5 percent each year (the "triple lock").

[16] "George Osborne pledges £12 billion cuts in Government welfare spending after next general election", *Daily Telegraph*, 6 January 2014.

- projected increases in employment rates between 2013 and 2020 as specified in the employment scenarios above.
- projected changes in earnings between 2013 and 2020 as specified in the wage scenarios above.
- assumed changes to other economic variables (e.g. increases in housing costs).
- assumed increases in full-time work, and the proportion of self-employed people earning above the minimum income floor, among the relevant categories of Universal Credit claimants in the scenarios which include the impacts of in-work conditionality.

The results from the tax-benefit model are used to produce simulated rates for child poverty in 2020 given the assumptions above. These are then compared with the 2020 child poverty targets to establish whether the targets have been achieved in each featured scenario.

The baseline: child poverty in 2011-12

Before reporting the results of the child poverty simulations, it is useful to examine the rates of child poverty which the 2010 Child Poverty Act takes as a starting point. Figure 2 shows the rates of child poverty in 2011-12 (the most recent year for which data is currently available) using the BHC poverty measure. These figures are calculated using Family Resources Survey data for 2011-12, and are taken directly from the Department for Work and Pensions' Households Below Average Income (HBAI) publication[17].

Figure 2 Child poverty rates, 2011-12

	Family Resources Survey, 2011-12	
Poverty measure	**m**	**%**
Relative: Below 60% BHC income in 2011-12	2.3	17
Absolute: Below 60% BHC income in 2010-11	2.6	20

Source: Department for Work and Pensions (2013).

The main points to note from Figure 2 are the following:

- Meeting the 2020 relative child poverty target would require a substantial reduction in child poverty – 7 percentage points to meet the relative poverty target of 10 percent on the BHC definition. Based on the 2011-12 demographic structure of the population this would be equivalent to a reduction of around 900,000 children in poverty on the BHC measure.
- The absolute child poverty target is lower than the relative poverty target, at 5 percent of children. This reflects the fact that for most of the post-1945 period average disposable

[17] Department for Work and Pensions (2013), *Households Below Average Income – an analysis of the income distribution 1994/95 – 2011/12*. London: HMSO

incomes were rising year on year across the income distribution, meaning that poverty was reducing in absolute terms each year regardless of changes in government policy[18]. However, since 2009 household incomes have been falling in real terms. Analysis by the Resolution Foundation suggests that average post-tax disposable income for low-to-middle income households has fallen by around 10 percent relative to the Consumer Prices Index (CPI) between 2009/10 and 2013/14[19]. This means that absolute poverty is likely to have risen more sharply than relative poverty in the years since 2010, and indeed for 2011-12 the number of children in absolute poverty increased by around 300,000 compared to the number of children in relative poverty[20]. Additionally, the absolute poverty lines as specified in the 2010 Child Poverty Act are uprated in line with the Retail Price Index (RPI). However, RPI no longer has the status of an official national statistic and the Government is currently considering a range of other options for indices to use to uprate the absolute poverty line in future years[21]. As an illustration of the impact that changing inflation indices could have on prospects for meeting the absolute target, analysis of national statistics and projections from the Office for Budget Responsibility show that by 2020/21, RPI-uprated absolute poverty lines are forecast to be around 12 percent higher than if Consumer Price Index uprating had been specified[22].

In addition, the reforms to the tax and social security systems made during the 2010-15 Parliament have the impact (when analysed in purely static terms and assuming no behavioural effects) of increasing child poverty, largely because of reductions in the real value of benefits and tax credits targeted on children which are not completely offset, for most low income families, either by cuts in income tax and National Insurance Contributions, or by the introduction of Universal Credit. Analysis using the IPPR/Landman Economics tax-benefit model suggests that if Universal Credit and the other changes to taxes and benefits over the 2010-15 Parliament had been introduced in the 2010-11 tax year (correcting for inflation between 2010 and 2015), relative BHC poverty in 2010-11 would have been approximately 3 percentage points higher.

Given that the focus of this report is primarily on reducing child poverty through increases in parental employment, it is also important to point out that there were around twice as many children in poverty in *working* households than there were in workless households in 2011-12 (the most recent year for which we have data from the FRS). Figure 3 shows a breakdown of children

[18] See for example the Institute for Fiscal Studies' dataset of absolute poverty rates from 1961 onwards at http://www.ifs.org.uk/tools_and_resources/incomes_in_uk

[19] Resolution Foundation (2013), *Squeezed Britain 2013*. London: Resolution Foundation

[20] When median household incomes fall in real terms, the relative poverty line falls in proportion, whereas the absolute poverty line – which is fixed in real terms – does not. Therefore, in periods of falling real median incomes, absolute poverty increases compared to relative poverty. In periods of rising real median incomes the opposite is the case.

[21] In January 2013 the UK National Statistician announced that the formula used to produce the RPI did not meet international standards and recommended that a new index be published (RPIJ) using formulae that meet international standards. The options being considered for uprating the absolute poverty line include RPIJ and CPIH (CPI including housing costs). The Government has commissioned a review of the price indices used to measure inflation, led by Paul Johnson (director of the Institute for Fiscal Studies). The review is due to report in summer 2014. See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307007/hbai-statistical-notice-april-2014.pdf for more details.

[22] This is the authors' own calculation based on OBR projections for RPI and CPI inflation from the March 2014 *Economic and Fiscal Outlook* and assuming that RPI and CPI inflation for 2019 and 2020 remain at the rates forecast by OBR for 2018 (the final year of current forecasts).

in poverty (under the relative BHC measure) in 2011-12 according to work status of the household. Around 1.5 million children in poverty in 2011-12 were in households where at least one adult was in work, compared with around 800,000 in households where no-one was in work. Even in couples with two earners, there were around 360,000 children in poverty on the BHC measure. These statistics suggest that while increases in employment certainly have the potential to reduce poverty, they may not be a complete solution in themselves; other factors such as hours worked, wage rates and the tax-benefit position of each household are also likely to play a role.

Figure 3 Child poverty composition by household type and work status (relative BHC poverty measure), 2011-12

Household category	Number of children (m)	% of all children
Lone parent not working	0.37	16.0
Couple, no earners	0.31	13.3
Multiple benefit unit, no earners	0.10	4.3
Non-working, total	**0.78**	**33.6**
Lone parent in work	0.14	6.0
Couple, 1 earner	0.73	31.7
Couple, 2 earners	0.36	15.7
Multiple benefit unit, at least 1 earner	0.29	12.9
Working, total	**1.51**	**66.4**
All children in poverty	**2.29**	**100.0**

Source: authors' analysis of Households Below Average Incomes dataset for 2011-12

Results

This section presents the results for each 2020 child poverty scenario modelled.

Child poverty in 2020 using the relative poverty measure: scenario analysis

Figure 3 shows the projected child poverty rate in 2020/21 using the relative BHC poverty measure, for each combination of the five employment scenarios and seven wage scenarios shown in the methodology section. Cell 1a has been highlighted in bold as this corresponds to the central projection for the employment and wage growth scenarios based on the OBR forecasts in the March 2014 Economic and Fiscal Outlook.

Figure 3 Child poverty in 2020 for various employment and wage scenarios: relative BHC poverty measure: number of children in poverty (%)

	Wage growth scenario						
Employment scenario	**a**	**b**	**c**	**d**	**e**	**f**	**g**
	central	**optimistic**	**pessimistic**	**Constant in 2013 terms**	**Increased wage dispersion**	**Minimum wage increase**	**Lower half wage compression**
1.Central	**21.0**	21.5	19.4	20.1	21.1	21.1	21.2
2.Optimistic	20.4	20.9	19.0	19.8	20.5	20.5	20.5
3.Pessimistic	21.7	22.4	19.8	20.5	21.7	22.0	22.3
4.Central with all employment growth coming from families with children	17.1	17.5	15.7	16.3	17.2	17.1	17.5
5.Optimistic with all employment growth above central projection coming from families with children	16.9	17.4	15.7	16.5	17.1	16.9	16.8

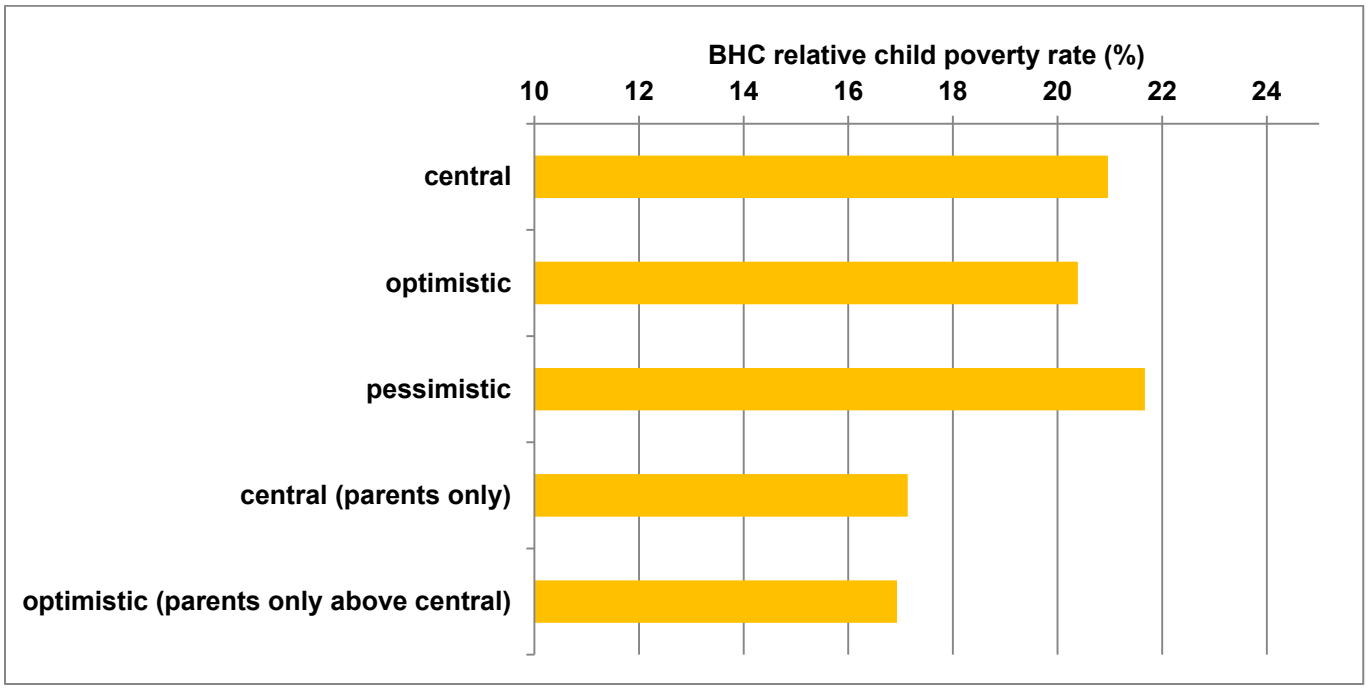
Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 3 shows that under the central scenario for wage growth and employment growth, the BHC relative child poverty rate is forecast to be 21.0% by 2020 – an increase of 3.5 percentage points since 2010-11[23].

Impact of increased employment

Figure 4 shows the impact of increased employment on the child poverty rate under the central scenario for wage growth. Child poverty is lower in the optimistic employment scenario compared to the central employment scenario, but only slightly (20.4% compared to 21.0% - a fall of 0.6 percentage points). Conversely, in the pessimistic employment scenario, child poverty is slightly higher than the central scenario (at 21.7%).

Figure 4 Child poverty in 2020 for each employment scenario, assuming central wage growth scenario, relative BHC poverty measure



Source: authors' estimates using IPPR/Landman Economics tax/benefit model

The fall in child poverty in the optimistic scenario relative to the central and pessimistic scenarios is only very slight because in these three scenarios, the composition of the increase in employment from 2014 to 2020 is assumed to be similar to the composition of employment growth between 2003 and 2013 – and as explained in Appendix A, 60 percent of net employment growth over the decade 2003-13 comprised men and women in families without children. The impact of adults in households without children moving into work is to push up median incomes (and hence

[23] It should be noted that this central estimate is around 1.5 percentage points higher than the central estimate in the IFS's most recent forecasts of child poverty (see J. Browne, A. Hood and R. Joyce, *Child and working-age poverty in Northern Ireland over the next decade: an update*, Briefing Note BN144, London: Institute for Fiscal Studies.) Appendix D contains a detailed discussion of the differences between the two forecasts, which appear to be mainly due to the assumptions used on take-up. The IFS modelling allows for incomplete take-up of means-tested benefits and Universal Credit whereas the modelling in this report assumes 100% take-up. The difference between the two sets of results implies that the results in this report should be taken as an optimistic assessment of the prospects for hitting the child poverty targets.

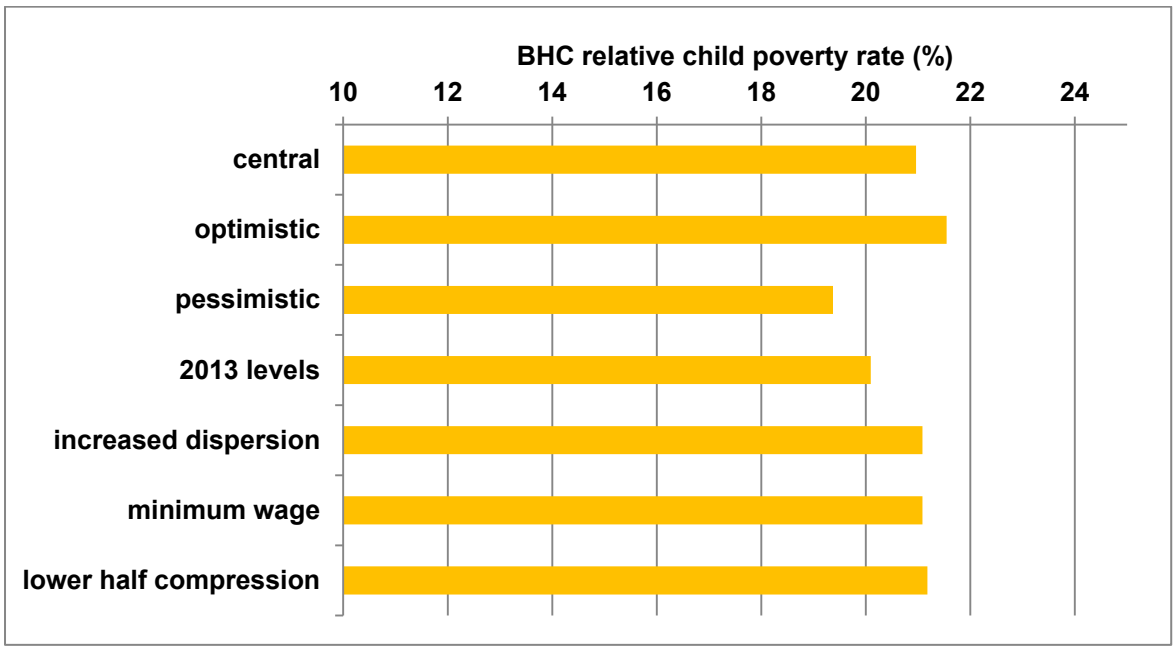
the relative poverty line) without increasing the incomes of households with children, thus tending to increase relative child poverty, other things being equal. This offsets most of the gain from increased employment among parents in the optimistic scenario compared to the central and pessimistic scenarios.

In the employment scenario where employment rises to the central projection level but this increase is assumed to be entirely due to parents moving into work, relative child poverty does fall substantially (by around 4 percentage points on the central wage growth projection). Similarly, child poverty falls by around 4 percentage points in the scenario where employment increases from the central projection to the optimistic projection and this increase is entirely due to parents moving into work. This shows that the assumptions on the composition of employment growth have an important impact on forecast relative child poverty; the child poverty rate falls by a much larger amount when increased parental employment is assumed to make up the majority of the overall employment increase than when non-parents are assumed to comprise the majority of the increase in employment.

Impact of wage growth

Figure 5 shows the impact of each of the seven different scenarios for wage growth on the child poverty rate, under the central scenario for employment growth. Higher wage growth across the wage distribution is associated with *increased* relative poverty. This occurs because higher wage growth increases net incomes of households in the middle of the income distribution by more than those at the bottom of the income distribution, which makes the relative poverty target harder to achieve. The impact of wage growth on median incomes is shown clearly in Figure 34 in Appendix E, where (for example) in the central employment scenario, BHC median equivalised household income (deflated to the January 2014 price level using CPI inflation) varies from £441 under pessimistic wage projections to £478 under optimistic wage projections. In the most pessimistic scenario, where wages fall by 6 percent relative to CPI between 2014 and 2020, relative poverty is almost 2 percentage points lower than in the central wage growth scenario (where real wages are assumed to grow by around 8 percent).

Figure 5 Child poverty in 2020 for each wage growth scenario, assuming central employment growth scenario, relative BHC poverty measure



Source: authors' estimates using IPPR/Landman Economics tax/benefit model

In the increased dispersion scenario, relative poverty is almost the same as in the central scenario. Similarly, the increase in the National Minimum Wage has no impact on the relative child poverty rate. This appears to be because, although average incomes for people with low hourly earnings increase under this scenario, median incomes also rise as shown in Figure 24 in Appendix E (raising the poverty line), and the overall impact on poverty is zero as a result of the combination of both of these effects. An important point to remember here is that some of the employees who benefit from an increase in the minimum wage are second earners in couples where the primary earner has higher earnings and so the impact of raising the minimum wage is to increase net household incomes for some households in the middle (and indeed the top) of the income distribution as well as lower-income households. The increase in median incomes is a consequence of this. Finally in Figure 5, compression of the lower half of the wage distribution has almost no impact on the child poverty rate.

Performance against the 2020 relative child poverty target

The challenging nature of the 2020 relative child poverty target is underlined by the fact that none of the scenarios modelled come particularly close to meeting the target. The scenarios which are nearest to meeting the target are the two scenarios where most or all of the employment growth comes from parents, and where wages continue to fall in real terms. In these scenarios, relative BHC child poverty by 2020 is projected to be around 16 percent compared to 21 percent in the central scenario. However that would still leave child poverty around 5 percentage points above the 2020 target (although it would represent a reduction of around 1.5 percentage points since 2010/11).

The potential role of increased hours of work

Another way of assessing the role of wage growth in meeting the child poverty targets is to measure how far away from the poverty line households in work are, in terms of the increase in the number of hours of additional work (at the wage rate of the highest-paid earner in the household[24]) required to move the household above the poverty line. Figure 6 below shows this for the seven wage scenarios featured in the report (assuming the central scenario for employment). In the central wage scenario, 205,000 children who are in working households in child poverty would be moved out of poverty if the main earner in every working poor household increased his or her weekly hours of work by 5 hours. A 10 hour increase would lift around 380,000 children out of poverty. In total, if working households in poverty all increased their weekly work time by 20 hours, an additional 660,000 children could be lifted out of BHC relative poverty relative to the central scenario with no increase in hours – leading to a reduction in the poverty rate of over 5 percentage points.

However, recent research by Bradshaw and Main (2014) suggests that only around 40 percent of households with children who are currently below the relative poverty line, but with at least one adult in work, have adults in them who could be expected to move from part-time to full-time hours under the current rules for the Universal Credit Claimant Commitment[25]. This implies that an across-the-board increase in working hours for working households with children in poverty would involve most households in this group working hours *in excess of* those required by the current rules for the Universal Credit system. For that reason, the scenarios for reduction in poverty through increased working hours outlined in Figure 6 should be regarded as extremely ambitious. Nonetheless, the analysis in Figure 6 shows that substantial increases in working hours for working households would make hitting the relative child poverty targets much more feasible than if the distribution of hours for working households is assumed to remain constant.

[24] For two earner households, the household member with the highest hourly wage rate is used for this simulation.

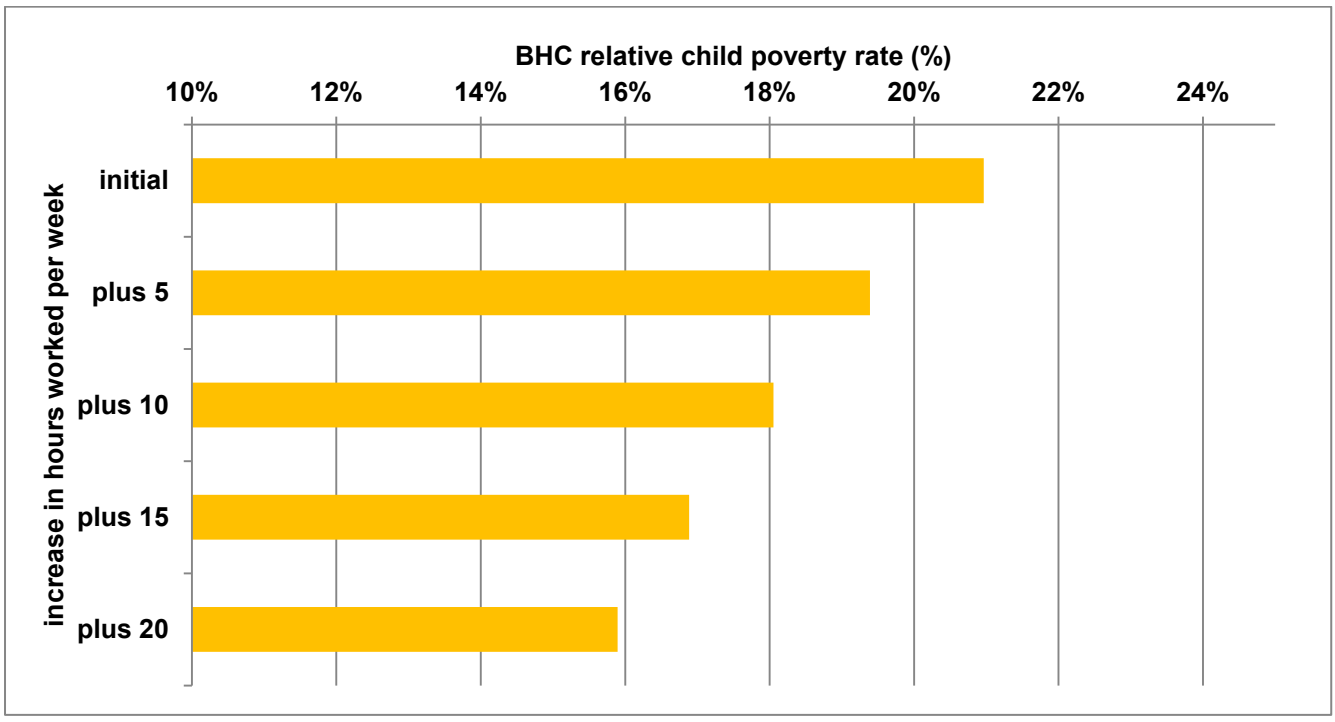
[25] See J. Bradshaw and G. Main (2014), "How many working poor parents might be able to work more?", Social Policy Research Unit blog, 19 March 2014. http://spruyork.blogspot.co.uk/2014/03/how-many-working-poor-parents-might-be.html Note that the figure of 42% for 'proportion of children in working poor households where the adults have some more working potential' is almost certainly an overestimate as it does not exclude families with disabled adults or children; when these are taken into account the adjusted figure for 'proportion of children in working poor households where the adults have some more working potential' is around 30%.

Figure 6 Number of children moved above the poverty line when working households in poverty increase their hours by 5, 10, 15 and 20 hours per week, and reduction in child poverty at 20 hours increase

	Wage growth scenario						
	a	b	c	d	e	f	g
Number of children moved out of poverty (1000s) by increase in hours:	central	optimistic	pessimistic	Constant in 2013 terms	Increased wage dispersion	Minimum wage increase	Lower half wage compression
5 hours	-205	-210	-231	-207	-218	-211	-223
10 hours	-379	-396	-365	-364	-382	-369	-378
15 hours	-531	-532	-528	-531	-542	-543	-560
20 hours	-660	-659	-628	-625	-666	-673	-707
Reduction in poverty rate (% pts):							
5 hours	-1.6%	-1.6%	-1.8%	-1.6%	-1.7%	-1.6%	-1.7%
10 hours	-2.9%	-3.0%	-2.8%	-2.8%	-2.9%	-2.8%	-2.9%
15 hours	-4.1%	-4.1%	-4.1%	-4.1%	-4.2%	-4.2%	-4.3%
20 hours	-5.1%	-5.1%	-4.8%	-4.8%	-5.1%	-5.2%	-5.4%

Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 7 Central wage scenario: BHC relative child poverty rate after increases in weekly hours worked for primary earners



Source: authors' estimates using IPPR/Landman Economics tax/benefit model

AHC poverty

All of the 2020 scenarios in this report have been calculated for AHC child poverty as well as for BHC child poverty. For the sake of brevity in the main body of the report, the AHC results for the employment and wage growth scenarios are contained in Appendix D.

Child poverty in 2020 using the absolute poverty measure: scenario analysis

Figure 8 shows the projected child poverty rate in 2020/21 using the absolute BHC poverty measure for each employment and wage scenario.

Under the central scenario for wage growth and employment growth, the BHC absolute child poverty rate is forecast to be 23.9% by 2020 – an increase of around 6.5 percentage points since 2010-11. This is much bigger than the forecast increase in BHC poverty on the relative measure. As explained in the previous section, the absolute poverty measure is likely to have risen significantly between 2010 and 2014 because of falling real incomes. Even though the central wage growth forecast is for average earnings growth of 8 percent between 2014 and 2020, this is not enough to keep pace with forecast growth of around 12 percent in the Retail Prices Index (compared to CPI) over the same time period, and so the poverty line continues to move up between 2014 and 2020 compared to average incomes in the central wage scenario.

Impact of increased employment

Figure 9 shows the relationship between employment growth and the absolute poverty rate, which is more straightforward for absolute poverty than it is for relative poverty[26]. Because each person moving into work almost invariably has a higher net income than he or she does out of work[27], absolute poverty falls when employment increases. Accordingly, absolute poverty is lower in scenarios where employment is higher. In the optimistic scenario where employment increases for parents and non-parents, absolute poverty is around 2 percentage points lower than in the central scenario. In the scenario where the whole of the increase between the central forecast and the OECD 'best performer' forecast is due to increased parental employment, absolute poverty is even lower, at 19.3%.

[26] It should be noted that the scales of the horizontal axis for Figures 9 and 10 are wider than Figures 4 and 5 for the relative poverty rates, because the absolute poverty rates are higher and the target – at 5% for absolute poverty rather than 10% for absolute poverty – is lower.

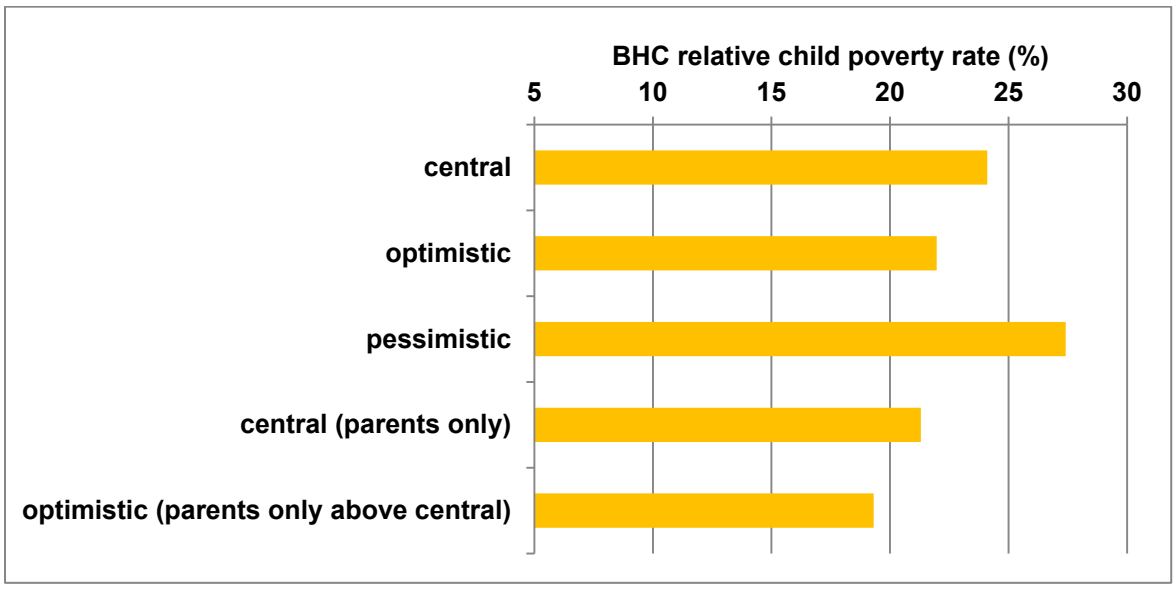
[27] The only exception to this would be if someone moved from unemployment or labour market inactivity into self-employment and made an annual loss, in which case they could be worse off in work than out of work. However, self-employed people making a loss are a very small proportion of the workforce (only 0.4% of the entire workforce according to the 2010-11 FRS).

Figure 8 Child poverty in 2020 for various employment and wage scenarios: absolute BHC poverty measure, uprated by RPI: number of children in poverty (%)

Employment scenario	Wage growth scenario						
	a	b	c	d	e	f	g
	central	optimistic	pessimistic	Constant in 2013 terms	Increased wage dispersion	Minimum wage increase	Lower half wage compression
1.Central	**24.1**	23.4	26.6	25.2	24.3	23.6	23.2
2.Optimistic	22.0	21.2	24.6	23.2	22.2	21.5	21.0
3.Pessimistic	27.4	26.7	29.9	28.6	27.6	26.9	26.5
4.Central with all employment growth coming from families with children	21.3	20.4	24.1	22.7	21.5	20.8	20.2
5.Optimistic with all employment growth above central projection coming from families with children	19.3	18.4	22.2	20.7	19.5	18.8	18.0

Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 9 Child poverty in 2020 for each employment scenario, assuming central wage growth scenario, absolute BHC poverty measure



Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Impact of wage growth

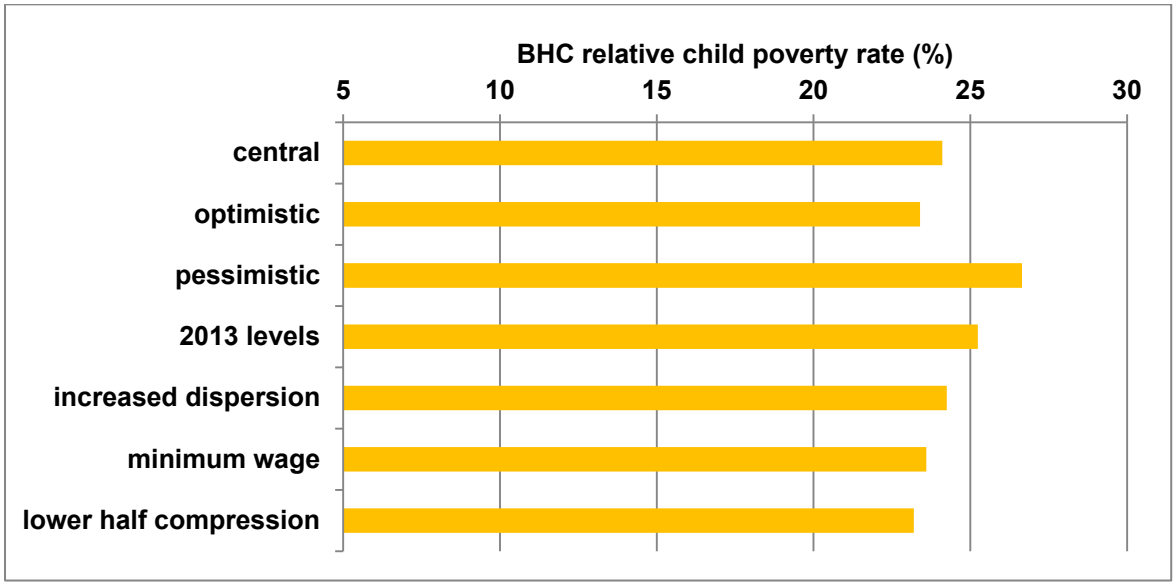
Figure 10 shows the forecasts for absolute child poverty in 2020 for the seven different wage growth scenarios, under the central employment growth scenario. In contrast to the findings for relative poverty, higher wage growth is associated with lower absolute poverty. Once again, this follows obviously from the fact that the absolute poverty line is fixed, and hence increased gross earnings (and therefore increased net household incomes) make it unambiguously less likely that households will be in poverty. In the optimistic scenario for wage growth between 2014 and 2020, absolute poverty is 0.7 percentage points lower than the central scenario, around 2 percentage points lower than the scenario where there is no wage growth in real terms between 2014 and 2020, and over 3 percentage points lower than the pessimistic scenario.

The increase in the minimum wage and compression of the lower half of the earnings distribution also reduce absolute poverty relative to the central wage growth scenario, although the effect is not especially large; a reduction of around 0.5 percentage points for the minimum wage increase scenario and 1 percentage point for the wage compression scenario. Absolute poverty in the increased wage dispersion scenario leads to slightly higher poverty rates than the central scenario because wages for low earners are rising more slowly than at the median. Although wages for high earners are rising faster than the median in this scenario, relatively few high earners live in households below 60% of median BHC incomes, and so the overall impact of wage dispersion is a slightly higher absolute poverty rate.

In summary, increased wages are associated with lower forecast absolute poverty rates for 2020, but the impact of wage growth is not especially large. Partly this reflects the fact that when wages rise, the increases in *net* incomes for households below the absolute poverty line are significantly lower than increases in gross earnings, largely because of withdrawal through the Universal Credit taper. In the central employment and wage scenario, the average marginal earned deduction rate on additional earnings for the main earner for working households in poverty claiming Universal

Credit is at least 65% and in many cases over 80%[28], compared to an average of 39% for working households above the poverty line. This means that on average, the net income of working poor households only increases by just over half of the value of an increase in gross earnings.

Figure 10 Child poverty in 2020 for each wage growth scenario, assuming central employment growth scenario, absolute BHC poverty measure, uprated by RPI



Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Performance against the 2020 absolute poverty target

Because real incomes have been falling – and falling by a larger margin relative to RPI than CPI – between 2010 and 2013 (and this is likely to be the case in 2014 as well), the absolute child poverty target for 2020 is considerably more challenging to meet than the relative poverty target. This is doubly the case given that the absolute poverty target is 5 percent whereas the relative poverty target is 10 percent. The best scenario for absolute poverty is in the lower right-hand corner of Figure 3, where overall employment growth reaches the OECD 'best performers' level but with all the employment increase from the central scenario due to parents moving into work, and the lower half of the wage distribution is compressed. In this scenario, absolute BHC poverty is forecast to be 18.8 percent – which would still be an increase of 1.3 percentage points compared to the 2010-11 baseline.

The results for AHC absolute poverty are shown in Figure 25 in Appendix E.

[28] The Universal Credit taper on net incomes is 65 percent but for many households in receipt of Council Tax Support income will be subject to an additional taper (the taper rate under the old Council Tax Benefit system prior to 2013 was 15 percent). Households with adults paying employee National Insurance Contributions (12 percent) and income tax (20 percent) will also face combined marginal deduction rates significantly in excess of 65 percent.

Comparison with CPI uprating of absolute poverty

A key reason why the absolute poverty target is so challenging is that it is uprated using the Retail Prices Index. Following the decision in 2013 that the RPI should no longer be an official national statistic, the Government is currently considering whether an alternative uprating measure should now be used for uprating the absolute poverty measure. A final decision will not be taken until after the Johnson review of price indices reports in summer 2014. For the 2013/14 Households Below Average Income report, expected in June 2014, DWP has announced that it will report three additional absolute poverty measures using each of the RPIJ, CPIH and CPI indices for uprating, as well as the headline RPI-uprated measure[29].

To illustrate the impact of using a different index to uprate the absolute poverty line, Figure 11 below presents the results for the BHC poverty measure when CPI, instead of RPI, is used to uprate the 2010 poverty line to 2020. As growth in the price level between 2010 and 2020 is forecast by OBR to be around 12 percentage points lower using CPI compared to RPI, this means that modelled poverty rates are considerably lower using a CPI-uprated absolute poverty measure. For example, CPI-uprated BHC child poverty in the central scenario is forecast to be 17.3 percent in 2020 compared with 23.9 percent for RPI-uprated BHC child poverty.

The relationship between employment growth and CPI-uprated absolute poverty in the central wage scenario (see Figure 12), and the relationship between wage growth and CPI-uprated absolute poverty in the central employment scenario (see Figure 13), show very similar patterns to those in Figures 9 and 10 for RPI-uprated absolute poverty, but the forecast poverty rates using CPI uprating are much lower. In the central wage scenario, poverty rates range from 12.9% (in the optimistic scenario where all employment growth above the central projection comes from parents moving into work) to 19.8% (where employment rates remain at winter 2013 levels). Meanwhile, using the central employment projection, forecast CPI-uprated absolute poverty rates range from 16.5% (for the central scenario with wage compression in the lower half of the wage distribution) to 19.1% (for the pessimistic scenario where wages fall by 6 percent between 2014 and 2020). The lowest forecast for CPI-uprated absolute poverty in Figure 11 is 12.2% (in the scenario where all employment growth from the central forecast to the optimistic forecast is due to parents, and there is compression of the bottom half of the earnings distribution). This is a lot lower than the lowest forecast for RPI-uprated absolute poverty in Figure 8 (18.0 percent), but it is still well above the target level of 5%.

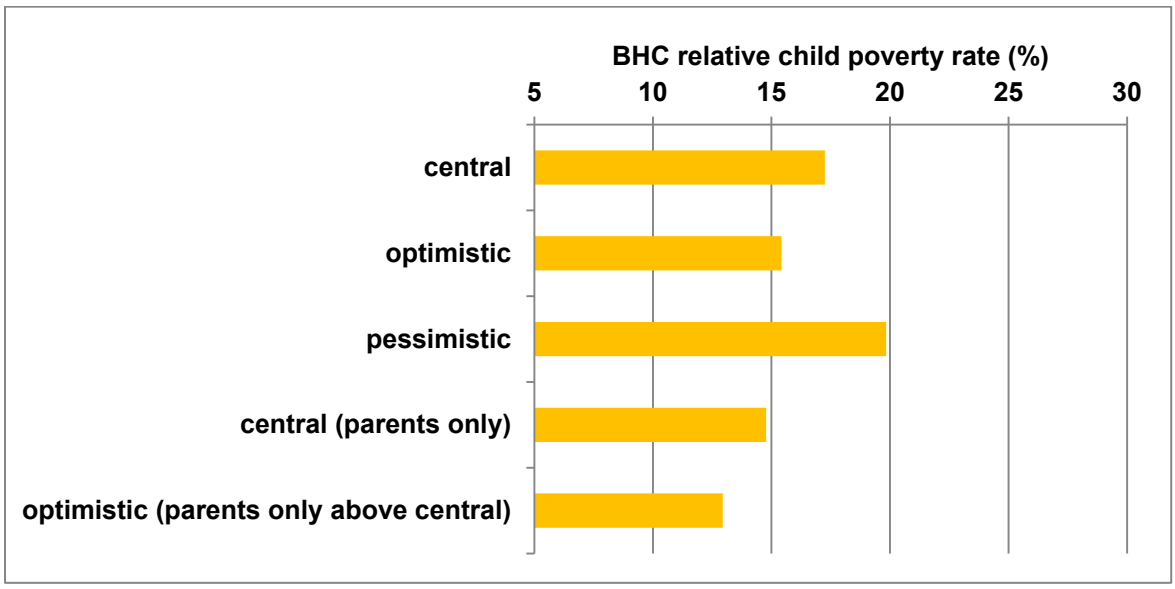
[29] RPIJ is a new version of the Retail Price Index with a different method for calculating the index which is judged by the ONS to be more robust for measuring the cost of living, while CPIH is a version of the Consumer Price Index which includes housing costs. Each of the different metrics have different coverage which will affect how appropriate they are for uprating the absolute poverty line. RPIJ has exactly the same coverage as RPI. CPI has a number of coverage differences, among other things excluding various costs faced by owner occupiers and council tax and including spending by institutional households and foreign visitors to the UK. See Office for National Statistics *Differences Between the RPI and CPI Measures of Inflation*, 2010

Figure 11 Child poverty in 2020 for various employment and wage scenarios: absolute BHC poverty measure, CPI uprated: number of children in poverty (%)

	Wage growth scenario						
Employment scenario	**a**	**b**	**c**	**d**	**e**	**f**	**g**
	central	**optimistic**	**pessimistic**	**Constant in 2013 terms**	**Increased wage dispersion**	**Minimum wage increase**	**Lower half wage compression**
1.Central	**17.3**	16.6	19.1	18.1	17.4	16.8	16.5
2.Optimistic	15.4	14.7	17.3	16.3	15.5	15.0	14.7
3.Pessimistic	19.8	19.3	19.4	20.6	19.9	19.3	19.2
4.Central with all employment growth coming from families with children	14.8	14.1	16.6	15.6	14.9	14.4	14.1
5.Optimistic with all employment growth above central projection coming from families with children	12.9	12.3	14.8	13.8	13.1	12.6	12.2

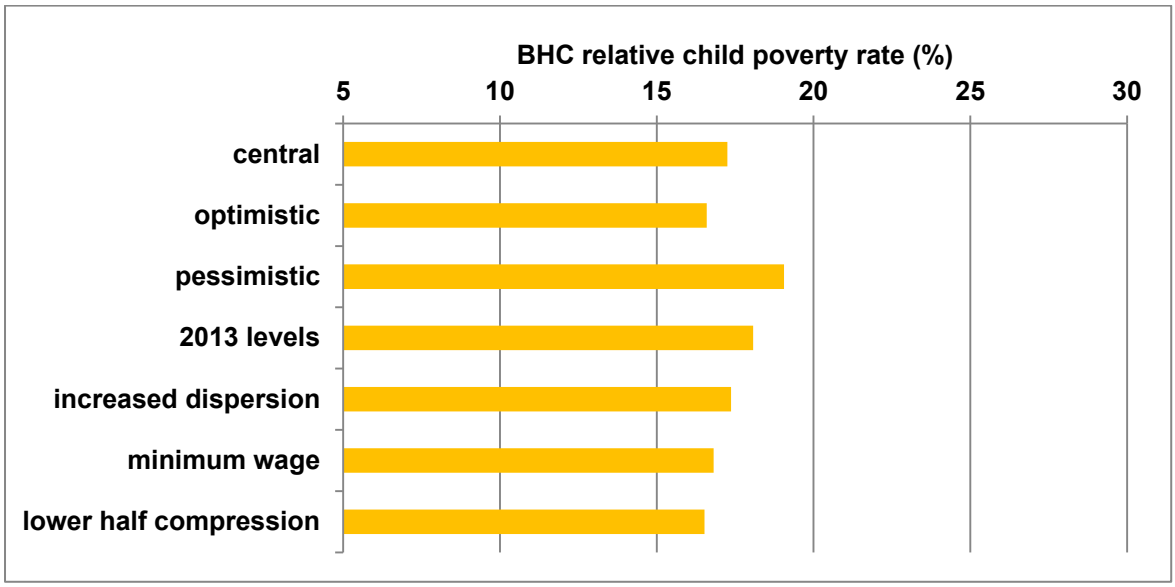
Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 12 Child poverty in 2020 for each employment scenario, assuming central wage growth scenario, absolute BHC poverty measure, uprated by CPI



Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 13 Child poverty in 2020 for each wage growth scenario, assuming central employment growth scenario, absolute BHC poverty measure, uprated by CPI



Source: authors' estimates using IPPR/Landman Economics tax/benefit model

The potential impact of in-work conditionality in Universal Credit on child poverty in 2020

The projections for child poverty in the previous section of this report do not explicitly take into account the impact of Universal Credit or other reforms to the tax or benefit system, although the

central scenario and scenarios 3, 4 and 5 assume very large increases in employment rates (and *extremely* large increases in parental employment rates in particular in scenarios 4 and 5) and it could plausibly be argued that the only way these could occur is if the claimant commitment in Universal Credit, which is designed to incentivise increases in employment, has a very large impact. This section examines how increases in hours of work for Universal Credit claimants who are in work in the central scenario for wages and employment, but working less intensely than required under the Universal Credit Claimant Commitment, might impact on absolute and relative BHC poverty in 2020.

Figure 14 shows the potential impact of in-work conditionality on relative and absolute BHC poverty rates using the central wage and employment scenarios as a baseline. The first row of the table shows the impact of in-work conditionality for employees only, while the second row shows the impact for employees plus the self-employed. It should be noted that this analysis is optimistic in terms of impact as it assumes that 75 percent of Universal Credit claimants who are in the full conditionality category (and therefore expected to work at least 35 hours per week as employees, or if self-employed, are expected to earn the equivalent of 35 hours per week at National Minimum Wage) who are working less intensely than this in the FRS data do in fact manage to increase their hours to this level.

Figure 14 Estimated impact of in-work conditionality in Universal Credit on BHC child poverty rates

	BHC child poverty rate (%)	
Scenario	**Relative**	**Absolute**
Central wage, central employment	20.9	24.1
Plus UC in-work conditionality for employees	20.3	23.3
Plus UC in-work conditionality for self-employed	20.1	23.1

Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 14 shows that introducing in-work conditionality for employees results in a fall of 0.6 percentage points in BHC relative child poverty, and 0.8 percentage points in BHC absolute child poverty. Introducing in-work conditionality for the self-employed as well reduces relative and absolute child poverty rates by a further 0.2 percentage points. This is a relatively small impact, especially compared to the analysis of increasing hours of work in Figure 6 above. To a large extent this is because, as Bradshaw and Main (2014) point out, the majority of families with children below the poverty line with at least one parent in work are already meeting their Universal Credit Claimant Commitment.

Is it possible to meet the 2020 child poverty targets with a large enough increase in parental employment?

Previous sections have shown that, while different assumptions on employment and wage growth make a considerable difference to the projected rate of child poverty in 2020, it is not possible to meet the child poverty target through any of the main scenarios considered – even taking into account an optimistic view of the potential impact of in-work conditionality in Universal Credit. It is worth emphasising just how optimistic many of the employment scenarios modelled in this report (in particular scenarios 2, 4 and 5) are with respect to increased employment rates and work intensity. In addition every scenario examined in this report assumes 100% benefit take-up, full implementation of Universal Credit and ignores the additional £25 billion of cuts to public spending (possibly including at least £12 billion of further cuts to the welfare system) which are in the Government's current plans for the next Parliament.

This section goes one step further than the analysis in previous sections by assessing whether there are *any* feasible scenarios for increases in parental employment under which the 2020 targets can be attained, and if so, how large the increase in parental employment would have to be.

The analysis in this section starts with the central employment and wage scenario plus in-work conditionality (assuming that three quarters of Universal Credit claimants modelled as in work and in the full conditionality group meet their claimant commitment), giving a starting 2020 BHC relative child poverty projection of 20.1% and a BHC absolute child poverty projection (using the official RPI-uprated poverty line) of 23.1%. Using the IPPR/Landman Economics tax-benefit model, the employment rate for parents is then gradually increased from 87% for fathers and 69% for mothers in the starting scenario towards 100% until either the child poverty target is attained, or the employment rate for parents hits the maximum of 100%. The employment rate for non-parents is assumed to stay at the levels in the central scenario – 64.0% for men and 58.9% for women.

It turns out that *even with a parental employment rate of 100 percent for men and women with children, it is impossible to meet the absolute or relative poverty targets.* Assuming 100% parental employment, the BHC relative poverty rate in 2020 is projected to fall to 11.1%– close to the relative poverty target of 10% but still just above it. Meanwhile, the BHC absolute poverty rate is forecast to be 13.8% at 100% parental employment – still well above the target level of 5%.

Using an alternative absolute poverty measure uprated by CPI rather than RPI between 2010 and 2020 (just as an example to illustrate the impact of different uprating assumptions for absolute poverty), it is possible to get a lot closer to the absolute poverty target; the absolute poverty rate on a CPI-uprated basis falls to 8.9% assuming that all parents are in work. Nonetheless, the absolute poverty target is still unattainable even with CPI uprating.

It should be stressed that the assumption of 100% parental employment is purely a thought experiment – in reality it is impossible to imagine employment for parents getting close to 100 percent, even with the most comprehensive and extensive employment support policies in place. Against that backdrop, the main purpose of the inclusion of the results in this section is to

demonstrate just how challenging the current child poverty targets are, given any reasonable forecast for employment, wages and the impact of reforms to the social security system.

The potential role for increased working hours in meeting the child poverty targets

Given that the 2020 child poverty targets are unattainable through increases in parental employment alone (even given the increase in hours for Universal Credit claimants implied by 75 percent of them meeting their claimant commitment), one possible additional channel of impact which remains to be explored further is the potential for further increases in working hours among parents already in work in the relevant scenario (after taking account of employment increases) in households below the poverty line. Figure 15 below shows five different scenarios for increases in parental employment, rising linearly from the central scenario for wages and employment up to the theoretical maximum employment rate of 100 percent for male and female parents. In-work conditionality is presumed to be in place as set out in the previous section, and the employment rate for male and female non-parents is assumed to be equal to the central scenario as shown in Figure 1. The third row in Figure 15 shows how far away the relative BHC child poverty rate is from the target given these assumptions on parental employment, while the bottom row shows the extra number of work hours per week that would be required from all working households still in poverty in each scenario to meet the relative child poverty target.

Figure 15 Number of additional working hours required by highest paid earner in working households below the relative BHC poverty line to meet poverty target in various scenarios for parental employment levels

	Percentage of gap closed between parental employment in central scenario with in-work UC conditionality, and 100% parental employment				
	20%	40%	60%	80%	100%
Assumed employment rate: male parents	89.5	92.1	94.8	97.4	100.0
Assumed employment rate: female parents	75.4	81.6	87.7	93.9	100.0
Required fall in relative child poverty to meet target (% pts)	5.4	4.5	3.5	2.2	1.1
Number of additional working hours required by highest-paid earner in poor working households	22	18	13	8	4

Figure 15 shows that if male and female parents' employment rates increased to 100%, the highest paid earner (or, for lone parent families, the only earner) in households with children with net incomes below the relative poverty line would require 4 hours of extra work per household per week for the poverty target to be met. Lower (though still extremely high) rates of parental employment require correspondingly higher increases in hours of work. For example, in the scenario where male parental employment is assumed to be 92.1% and female employment 81.6% - still extremely high rates of parental employment and far higher than what has been achieved at any time in history either in the UK or in any other advanced industrialised country – weekly hours worked for the highest earner in each household with children still in poverty would need to rise by 18 hours to meet the child poverty target. This is an extremely large increase, especially given that the scenario assumes that 75 percent of parents in the full conditionality group for Universal Credit are already meeting their claimant commitment. For a primary earner in a household who works 35 hours per week in the baseline scenario, for instance, this increase in hours would require him or her to work 53 hours per week – a very long working week.

Because the assumed increase in working hours in Figure 15 is 'across the board' it would also imply large increases in work hours for groups who are not subject to full work conditionality under Universal Credit – for example, disabled people, lone parents and primary carers for children in couples with children under 13. Thus, although the relative child poverty targets could theoretically be met through an increase in hours worked for families in poverty, combined with very large increases in parental employment, in reality these increases in employment and work intensity are too large to be realistically achievable.

For the (RPI-uprated) absolute poverty target, it is impossible to meet the target in 2020 even assuming an increase of 22 hours worked per week for working families in poverty. This serves to illustrate once again how challenging the absolute poverty target is, given the trends in wages and real incomes observed since 2010 in the UK.

Potential improvements in the Government's fiscal position arising from increases in employment and real wages

So far, this report has not addressed the possibility of making changes to the parameters of the tax or welfare systems to reduce child poverty: the focus has been entirely on the potential impact of increased employment and hours of work on child poverty rates, assuming that the tax, benefit and Universal Credit systems remain unchanged (subject to the current uprating rules) after the implementation of all reforms announced during the 2010-15 Parliament. However, increases in employment and real wages in excess of those forecast by the OBR have the potential to deliver substantial savings which could be recycled into tax cuts or increases in Universal Credit or other benefits without increasing the projected fiscal deficit in the next Parliament. Figure 16 shows the estimated improvement in the Government's fiscal position (increased income tax and National Insurance Contributions receipts plus decreased welfare expenditure) in each of the scenarios we considered earlier in the report relative to the central scenario where employment and real wages increase according to OBR projections. remain at 2013 levels. The analysis assumes that the Government has already 'banked' the increased income tax receipts and reduced Universal Credit expenditure implied by the OBR's central scenario for employment and wages, and hence the net

fiscal position in each scenario is evaluated using the central wages and employment scenario as a baseline. The objective here is to show how much additional revenue is potentially available for 'recycling' through the tax/benefit system in each of these scenarios[30].

Figure 16 shows that in the optimistic scenario for wages and employment, the Government's fiscal position improves by around £37 billion per year relative to the central projection in 2020 (in January 2014 prices). This is over three times the size of the £12 billion of additional welfare cuts which have been pencilled in for the first two years of the next Parliament, and would obviate the need for additional cuts to the social security system as well as providing an additional £25 billion which could be used to cut taxes, increase expenditure on Universal Credit or other benefits, or to reduce the amount of cuts needed to other areas of public expenditure such as education, health and social care after 2015.

By contrast, in the pessimistic scenario for wages and employment, the Government's fiscal position deteriorates by almost £65 billion relative to the central scenario. This would necessitate substantial further cuts in public spending or tax increases to balance the public finances by 2020 compared with current Government plans based on the central OBR projections.

Focusing on the central scenario for employment, increased wage dispersion around the central forecast for wage growth results in additional net revenue gains of £7 billion per year. This is because of the progressive nature of the income tax system, with growth for high earners translating into higher revenue for the Exchequer at the higher and additional tax rates of 40% and 45% respectively. The minimum wage and wage compression scenarios also lead to higher revenue than the central scenario (by around £4 billion and £10 billion respectively), as increases in wages for low earners tend to reduce the Universal Credit bill even for people whose earnings are below the income tax personal allowance.

Figure 17 below charts the overall revenue effects for the five particular employment and wage scenarios discussed above, with net improvements in the government's fiscal position broken down into increased revenues from increased tax receipts, and reduced spending on Universal Credit and other benefits (conversely, deterioration in the government's fiscal position in the pessimistic scenario is broken down into reduced tax revenue and increased benefit spending). As Figure 17 shows, in these five scenarios the majority of the change in revenues is accounted for by changes in tax receipts rather than changes in welfare spending. Figures 28 and 29 in Appendix E give detailed figures for the change in tax revenues and the change in welfare spending across each of the 35 scenarios modelled.

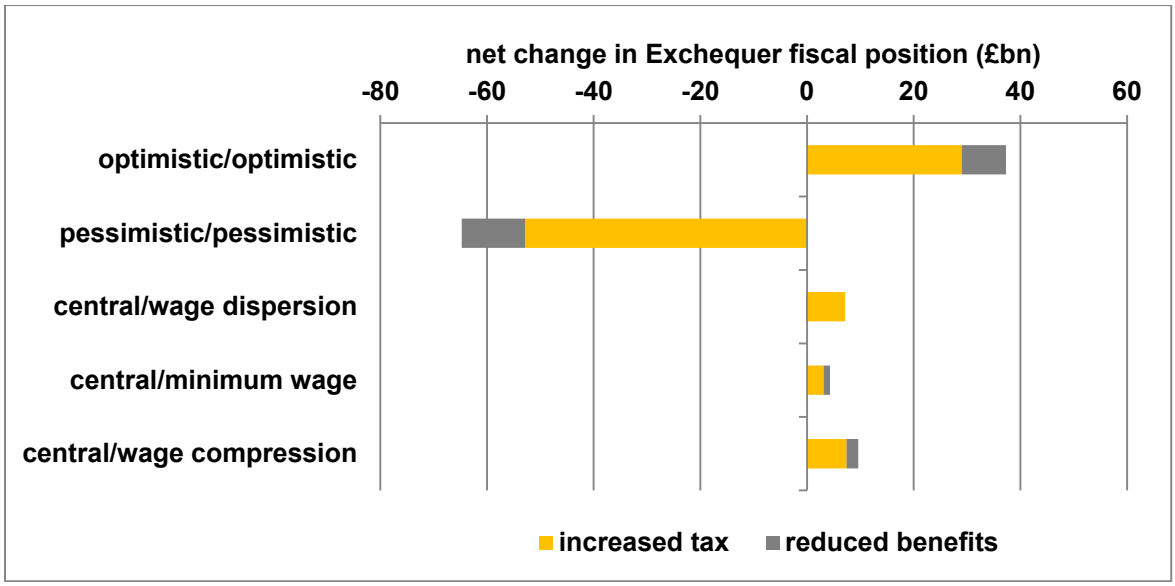
[30] Note that because the Family Resources Survey does not include expenditure information, this analysis is unable to estimate the additional increase in revenue from *indirect* taxes arising from increased employment and real wages. However, given the increased purchasing power of families moving into work and households receiving higher wages, it is likely that indirect tax revenues would increase considerably in response to increased wages and employment. These results should therefore be seen as an underestimate of the overall revenue effects of the scenarios modelled in this report.

Figure 16 Extra net revenue from increased direct tax receipts and reduced welfare expenditure available to the UK Exchequer by 2020 as a result of increased employment and increased wages relative to OBR employment and earnings growth forecasts, £billion

	Wage growth scenario						
Employment scenario	**a**	**b**	**c**	**d**	**e**	**f**	**g**
	central	**optimistic**	**pessimistic**	**Constant in 2013 terms**	**Increased wage dispersion**	**Minimum wage increase**	**Lower half wage compression**
1.Central	**0.0**	22.9	-50.0	-27.9	7.0	4.3	9.6
2.Optimistic	13.6	37.3	-38.1	-15.3	20.6	17.9	23.5
3.Pessimistic	-17.0	4.8	-64.7	-43.7	-10.0	-12.7	-8.3
4.Central with all employment growth coming from families with children	-2.5	20.2	-52.0	-30.2	4.5	1.8	6.8
5.Optimistic with all employment growth above central projection coming from families with children	11.9	35.5	-39.6	-16.9	18.9	16.2	22.2

Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 17 Net improvement in the UK Government's fiscal position by 2020 compared with fiscal position under central scenario, for selected employment/wage scenarios, £billion, January 2014 prices



Policy Implications

This section considers the implications of the results of the analysis in this report for Government policy.

Employment policy

The results show that the level of parental employment and the number of hours worked by parents have a significant impact on both absolute and relative poverty; higher employment and longer weekly hours of work tend to reduce child poverty rates. However, this is not enough by itself to reduce child poverty to the levels required to meet the 2020 targets. For the relative child poverty target, implausibly high parental employment rates and a very substantial increase in parental work intensity (well beyond the levels required in the current Universal Credit Claimant Commitment) are required to have any chance of hitting the targets under the 2020 tax/benefit system as it would stand after including all the reforms announced so far during the 2010-15 Parliament (but no further changes beyond that). These outcomes would be unprecedented both historically in the UK context, and across OECD countries.

Achieving such high employment rates through increases in work intensity beyond those required by the current Universal Credit Claimant Commitment would require, at the very least, a radical reshaping of the labour market and the support offered to parents to allow them to work as much as they would need to escape poverty. Necessary policies would include:

- More extensive childcare provision than currently exists in the UK system – perhaps more along the lines of provision in countries such as Sweden and Denmark, for instance;
- A tougher Universal Credit Claimant Commitment – perhaps including an expectation of work from mothers with children aged under 5 and disabled parents, and an expectation of working hours above 35 hours per week for claimants in the ‘full conditionality’ category. It should be noted, however, that the current Claimant Commitment is already more demanding than anything seen in the UK social security system over the last half century at least, and proposals to make the Claimant Commitment still tougher would be controversial.
- Greater ability to combine full-time jobs with parenting, requiring greater flexibility from employers;
- A macroeconomic environment which generates sufficient labour demand for the types of jobs that parents moving into work (and parents moving from part-time to full-time work) could be expected to do;
- Increased in-work support for families with children, for example through more generous rates of Universal Credit.

Some of these policies would involve additional expenditure (for example more extensive childcare provision and a more generous Universal Credit system) but the results in Figure 16 show that the in scenario 2 where employment increases to the level of the OECD 'best performers', with wages increasing according to OBR projections, around £14 billion per year is generated for the Exchequer through higher tax receipts and reduced welfare spending. More optimistic scenarios for wage growth generate even greater revenues. Therefore, it can be argued that there is

significant scope for recycling the fiscal gains from increased parental (and non-parental) employment back into measures designed to reduce child poverty still further.

Increasing wages and net incomes

The results in this report show that the direct impact of increased average wages in the economy is to slightly *increase* relative poverty, while at the same time decreasing absolute poverty (but not by a huge amount relative to the size of the wage increase). Furthermore, higher wages for low earners, whether they are achieved by increases in the minimum wage or by a more generalised compression of the wage distribution, do not have a huge impact on either relative or absolute poverty. These findings have very important implications for the role of wages in reducing child poverty.

Any positive impact of wage increases on *relative* poverty will be via the indirect effect of the improvement in the government's fiscal position that they bring through higher tax revenue and lower expenditure on in-work benefits. The fiscal modelling in the previous section of the report suggests that, if employment and average wages can be increased compared to OBR projections, this will free up substantial resources which could be used to make a significant investment in low income families with children without jeopardising the Government's deficit reduction strategy. These gains could be used, for example, to provide more generous in-work support for families through the Universal Credit system (perhaps through a lower net income taper rate or higher work allowances for families with children) or to provide improved childcare provision. For *absolute* poverty, increases in wages have an unambiguous direct impact in reducing child poverty, although the presence of high marginal deduction rates on earned income for many low-income working families means that increases in gross income do not reduce absolute poverty as much as policymakers might have hoped (although the flipside of this is that increased wages for low earners *do* result in large net revenues for the Exchequer, which banks much of these increases in the form of lower Universal Credit payments). As with the relative child poverty target, this implies that measures to ensure that low-income working households keep more of any increases in gross earnings that they can secure would be beneficial in reducing absolute poverty. The real-terms increases in the income tax personal allowance enacted during the 2010-15 Parliament have certainly helped increase net incomes for many low-income households, but increasing the personal allowance on its own is not a particularly well targeted policy as most of the gains go to households who are not in poverty. Altering the parameters of Universal Credit to reduce marginal earned deduction rates for low earners would be a better targeted policy.

Conclusions

This research report has assessed the prospects for meeting the 2020 relative and absolute poverty targets as laid out in the 2010 Child Poverty Act, under a range of scenarios for employment and earnings growth, taking into account changes to the tax and welfare system, forecasts of CPI and RPI inflation, and likely increases in housing costs between the present day and 2020.

On the BHC relative poverty measure, the results using OBR projections for earnings and employment growth, and assuming that the patterns of employment increases for men and women of different ages and family types are similar to those seen in the past decade, suggest that child poverty in 2020 will be around 11 percentage points above the target level of 10 percent. Faster employment growth would reduce poverty slightly, but because the target is based on relative incomes, faster wage growth would actually slightly *increase* it, and measures designed to increase wages at the bottom of the earnings distribution (such as the minimum wage) make little difference to relative poverty. However, increases in wages (and increases in employment) over and above the central OBR forecasts do result in significant extra tax revenue and reduced social security expenditure – a 'dividend' from labour market improvements which could be recycled into increase support for low income families to drive further reductions in poverty.

When the impacts of in-work conditionality in the Universal Credit system are factored in, the 2020 forecasts for relative BHC poverty fall slightly (by about 0.8 percentage points). However, this still leaves relative poverty over 10 points above the 2020 target. In order to hit the relative poverty target through increases in parental employment and work intensity *alone*, it is necessary to make two extreme assumptions: (a) a dramatic (and almost certainly implausible) increase in employment rates for adults in households with children, *plus* (b) substantial increases in hours worked for working adults in households with children who remain in poverty despite being in work – increases in hours worked *above and beyond the working hours required under the Universal Credit claimant commitment*. In-work poverty is far from rare in the UK – indeed, in the 2011-12 FRS data, children in poverty were far more likely to be in a working household than a non-working household. While increased employment certainly has a vital role to play in reducing child poverty (regardless of whether the 2020 target is reachable or not), the role of increased net incomes for households already in work – whether through increased hours, increases in gross earnings, more extensive childcare provision, more generous support through the tax-benefit system, or other mechanisms – should not be neglected.

Both the relative poverty target and the absolute poverty target are impossible to attain by 2020 through increased parental employment alone – even with parental employment at the (completely implausible) figure of 100 percent. In addition, the absolute poverty target is impossible to attain through increases in hours of work for low-income working households with children, even at 100 percent parental employment. This is largely due to the decision to specify Retail Price Index uprating of the absolute income target in the 2010 Child Poverty Act. Growth in household net incomes and gross earnings is forecast to fall substantially short of RPI growth over the 2010-2020 decade, even assuming strong earnings and employment growth from 2014 onwards. With earnings and net incomes falling in real terms it is impossible to hit the absolute poverty target even with the maximum possible employment increase. If the absolute poverty target had instead been uprated by CPI rather than RPI it would be around 12 percent lower in 2020 – still impossible

to reach through parental employment alone, but potentially reachable with some (albeit very ambitious) combination of increased gross earnings and/or hours of work for low income working households in poverty, and drastic increases in employment rates for parents. However, even a CPI-inflated absolute poverty target would still be extremely difficult to hit in 2020, given the real terms decline in wages and net incomes in the first half of the 2010s.

The overall conclusion from this report is that neither the absolute nor the relative poverty targets can be achieved in 2020 in any realistic scenario for parental employment growth or wage growth over the next six years. However, policy measures designed to increase employment and earnings for low-income households have a clear role to play as part of an integrated package of anti-poverty measures. For employment, this role is both direct and indirect; higher employment rates for low income households with children reduce child poverty and also improve the Government's fiscal position. For earnings, the indirect role is most important; increased earnings drive increased net revenues for the Exchequer which can be recycled into targeted measures to reduce in-work poverty (such as a more generous Universal Credit system). This helps to compensate for the fact that higher wages in themselves tend to slightly increase rather than reduce relative poverty (but not absolute poverty).

Appendix A: Estimating trends in employment using the Labour Force Survey

Rather than assuming a fixed proportionate rate of increase in employment rates regardless of age, gender, presence of children or other attributes, the analysis in this report uses the Labour Force Survey data for the decade 2003 to 2013 to analyse trends in employment rates for different population groups. Annual employment rates are estimated for adults in the LFS sample, classified according to the following variables:

- Age (16-24, 25-34, 45-54, 55-64, 65-74)
- Sex (male/female)
- Family type (single/couple)
- Children in family (yes/no)
- [for families with children]: Age of youngest child (0-4 years, 5 or older)

Breaking the LFS data down using every combination of these groups gives a theoretical maximum of 5 x 2 x 2 x 3 = 60 groups, but some (for example male single parents, and all groups of parents aged 65-74) are too small to use to estimate employment rates with any accuracy. Hence in some cases adjacent age groups for groups with similar other attributes are combined to yield a greater sample size. In total 48 groups are used for the LFS employment projections.

The growth in the employment rate for each group (defined as number of people in employment divided by total size of the group) was measured on an annualised basis between 2003 and 2013 and these employment trajectories were then extrapolated to 2020 to produce 'raw' employment projections. The overall (weighted) employment rate for individuals aged 16 to 74 in the LFS in 2013 (excluding children under 19) in full-time education was 67.2%. By 2020, based on extrapolation of employment growth over the previous decade, this is projected to increase to 69.9%.

The OBR projections in the March 2014 *Economic and Fiscal Outlook* imply a faster rate of increase than this, with the employment rate rising by 2.0 percentage points above the trend for the previous decade. Accordingly, an employment rate of 71.9% for 16-74 year olds[31] has been used as the central 2020 forecast in the simulations.

Analysis of the increase in employment in the LFS between 2003 and 2013 shows that around 60 percent of additional jobs were filled by childless single adults or people in childless couples, with only 40 percent filled by parents. This seems to be largely due to an expansion in employment for people aged 55 and over, most of whom do not have children in the household.

Figures 18 and 19 below show a detailed breakdown of the projected employment rates derived by extrapolation from the Labour Force Survey for families with children in each of the five main employment scenarios modelled in the report, broken down into non-workers, adults working part-

[31] Note that the OBR forecasts show the increase in employment for adults below state pension age (i.e. excluding men over 65 and women over 62 in 2013). The employment rate forecasts have been adjusted to match the rate of growth of the OBR forecasts but the employment rates stated in this report are below the OBR's reported rates because the modelling in this report includes men and women aged above state pension age but younger than 75.

time and adults working full-time. Figure 18 shows the employment rates for lone parents, while Figure 19 shows the employment rate for couples with children. Both figures show that the way we have modelled the OBR's central scenario for employment growth implies a large decrease in the proportion of workless families with children and a significant increase in the number of parents working full-time. In the more optimistic scenarios (2, 4 and 5) these trends are accentuated.

Figure 18 Employment rates by part-time/full-time split for lone parents in FRS 2010-11 data and the main employment scenarios

Employment scenario	% in each category			
	Not working	Part-time	Full-time	TOTAL
FRS 2010-11 base data	43.4	26.7	29.9	100.0
Employment scenarios				
1.Central	29.8	34.1	36.1	100.0
2.Optimistic	24.4	37.7	37.9	100.0
3.Pessimistic	40.0	28.6	31.4	100.0
4.Central with all employment growth coming from families with children	27.4	35.6	37.0	100.0
5.Optimistic with all employment growth above central projection coming from families with children	15.1	43.5	41.4	100.0

Figure 19 Employment rates by part-time/full-time split for couples with children in the FRS 2010-11 base data and the main employment scenarios

Employment scenario	% in each category						
	Both partners not working	One part-time, one not working	One full-time, one not working	Both part-time	One full-time, one part-time	Both full-time	TOTAL
FRS 2010-11 base data	7.0	4.0	23.9	1.3	33.8	30.0	100.0
Employment scenarios							
1.Central	3.8	3.3	23.1	1.5	36.1	32.2	100.0
2.Optimistic	2.2	2.6	19.4	1.8	39.3	34.7	100.0
3.Pessimistic	6.5	3.8	23.8	1.4	34.1	30.4	100.0
4.Central with all employment growth coming from families with children	0.7	1.7	16.3	2.1	42.2	37.0	100.0
5.Optimistic with all employment growth above central projection coming from families with children	0.6	1.5	12.0	2.3	44.8	38.8	100.0

Appendix B: OECD best performing countries on employment rates

In the construction of the 'optimistic' employment scenarios, data from the OECD Statbase on employment rates for men and women across OECD countries is used to identify the countries with the highest employment rates. Figure 20 shows the employment rates for the ten best-performing OECD countries. The UK is ranked 10th in the OECD for male employment and 13th for female employment. The average of the top 5 best performing economies in the OECD (excluding Iceland and Switzerland on the grounds that they are very small countries which may not be directly comparable with the UK labour market) is used as a benchmark for the optimistic employment scenario.

Figure 20 Employment rates for men and women aged 16-64, OECD, 2012

	Male employment rate		Female employment rate	
Ranking	Country	%	Number	%
1	Switzerland	85.2	Iceland	78.5
2	Iceland	81.9	Norway	73.8
3	Japan	80.3	Switzerland	73.6
4	Netherlands	79.7	Sweden	71.8
5	Australia	78.1	Netherlands	70.4
6	Austria	77.8	Denmark	70.0
7	Norway	77.7	Canada	69.2
8	Germany	77.6	Finland	68.2
9	New Zealand	77.5	Germany	67.8
10	United Kingdom	76.1	Austria	67.3
(13)	-	-	United Kingdom	65.3
Average, Top 5		81.0		73.6
Average, Top 5 (excl small countries)		78.7		71.0
Gap (UK to top 5 excl small countries)		2.6		5.7

Source: OECD StatBase

For comparison, Figure 21 below shows data on the employment rates of female parents in various OECD countries for the latest year for which collated OECD statistics exist (2009). Figure 21 shows that in 2009, the employment rate for mothers in the UK with children aged under 15 was 67.1 percent – just above the OECD average of 66 percent, but well below Slovenia, Denmark, Iceland and Sweden, all of which had maternal employment rates of over 80 percent. This suggests that there is certainly scope for substantial increases in the employment rates of mothers in the UK to the levels envisaged in the more optimistic scenarios in Figure 1 of the main

report. However, no OECD country attained an employment rate for mothers of over 90 percent, as would be required to meet the relative child poverty target (in addition to substantial increases in hours worked for working parents.)

Unfortunately the OECD does not publish data on paternal employment in its StatsBase database so we are unable to provide comparable figures for fathers in this Appendix.

Figure 21 Employment rates for mothers with children aged under 15, OECD, 2009

Mother's employment rate, 2009	
Country	%
Slovenia	85.7
Iceland	84.8
Denmark	84.0
Sweden	80.3
Netherlands	78.5
Finland	77.2
Portugal	75.4
Austria	75.4
France	73.6
Belgium	70.9
Germany	70.8
Canada	70.5
Switzerland	69.7
Poland	68.1
United Kingdom	67.1
United States	66.7
Australia	61.9
Spain	60.0
Czech Republic	58.8
Greece	58.8
Ireland	58.7
Italy	58.2
OECD average	66.2

Source: OECD StatBase

Appendix C: Trends in growth in wages at different percentile points in the distribution of earnings

Scenario (d) for earnings growth in the modelling uses an assumption that the dispersion of earnings increases over time, with people on hourly wages above the median seeing faster wage growth than average, and people on hourly wages below the median seeing slower wage growth than average. The assumed rates of increase in each decile of the hourly wage distribution are taken from recent research by Gregg, Machin and Salgado (2013) which analyses growth in hourly earnings between 1979 and 2012 at different points in the wage distribution. Figure 22 below shows the assumptions about the rate of growth of wages between 2014 and 2020 which are used in scenario (d). Real earnings growth over the six-year period 2014-2020 is assumed to range between 2.9% at the bottom decile of hourly earnings and 12.3% at the top decile.

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Figure 22 Assumed real hourly earnings growth at each decile of hourly earnings, wage scenario (d)

Decile	Wage growth, 2014-20 (%)
1st (lowest)	2.9
2nd	4.1
3rd	5.3
4th	6.5
5th	7.7
6th	7.7
7th	8.8
8th	10.0
9th	11.1
10th (highest)	12.3

Source: authors' calculations based on Gregg, Machin and Salgado (2013), Table 1.

Appendix D: Detailed methodology

The IPPR/Landman Economics tax-benefit model

The IPPR/Landman Economics tax-benefit model is a microsimulation model which uses data from the Family Resources Survey to simulate net incomes for individuals and families under various assumptions about the tax-benefit system in place. The model is used to calculate tax liabilities and benefit and tax credit entitlements, given a set of parameters for the tax-benefit system in place at a given time (for example, the April 2010 tax-benefit system, or the April 2014 tax-benefit system. Hypothetical reforms based on changes to an existing benefit or tax credit (for example, an increase in the Universal Credit per-child payment) can also be modelled. The functionality of the model is similar to HM Treasury's IGOTM microsimulation model, the Department for Work and Pensions' Policy Simulation Model, and models from independent research institutions such as the Institute for Fiscal Studies' TAXBEN model. The IPPR/Landman Economics model is capable of running on data from either the Family Resources Survey or the Living Costs and Food Survey, but for this report only data from the FRS was used as modelling of indirect tax and household expenditures was not required.

Recent projects which have used the Landman Economics tax-benefit model for microsimulation of the impact of tax and welfare reforms includes Elson, Himmelweit and Reed (2013)[32] and Reed and Portes (forthcoming)[33].

The most recent version of the model runs on 2010-11 FRS data. This is one year older than the most recent available data but the model has not yet been updated to run on 2011-12 data (this is planned for the near future). Using the 2010-11 FRS data has the benefit that the baseline year for the poverty measures used for the child poverty targets in the 2010 Child Poverty Act is 2010-11, and so it is straightforward to model changes to child poverty from a 2010 baseline using the 2010-11 FRS.

Modelling changes in employment

In order to simulate the impact of changes to employment in the FRS, the employment rates by population subgroups from the Labour Force Survey broken down by characteristics as listed in Appendix A are transferred across to the FRS and employment rates are adjusted by moving additional individuals in each subgroup into work in the FRS so that the grossed-up employment rates in the adjusted FRS sample match the 2013 baseline projections.

For each of the 2020 employment scenarios, the employment rates in each population subgroup are then further adjusted upwards (except for the pessimistic employment scenario, where no further employment increase takes place after 2013) and additional individuals in the FRS are

[32] H.Reed, D.Elson and S. Himmelweit (2013), *An Adequate Standard of Living: A Child Rights Based Quantitative Analysis of Budgetary Decisions 2010-13*. London: Office of the Children's Commissioner.

[33] H.Reed and J. Portes (forthcoming), *Cumulative Impact Assessment of Recent Fiscal Events: A Review*. Manchester: Equalities and Human Rights Commission.

moved into employment by randomly allocating them from the adults in each subgroup in the FRS who are not working in the initial FRS dataset.

The composition of individuals moving into work in terms of the mix of part-time and full-time hours, and the mix of employees and self-employed workers, is chosen to match the proportions of full-time and part-time workers, and employees and self-employed people, in the LFS data for 2013.

Modelling earnings for people moving into work

For people already in work in the 2010-11 FRS, their actual weekly wage information is used, uprated to 2013 levels using data from the ONS's Average Weekly Earnings index. The various wage growth scenarios (for example, 8% real earnings growth in the central wage scenario) are then applied to the FRS sample using multipliers. For the scenario with higher wage growth for high earners, the FRS sample is divided into deciles using the hourly earnings measure and the additional multipliers are applied to deciles 7 to 10.

For people who are not in work in the 2010-11 FRS, but who are assumed to move into work in one or more of the modelled employment scenarios, it is necessary to make an assumption on earnings in work. This is achieved by using a set of quantile regressions on hourly wages using the 2013 Labour Force Survey data. Hourly wage equations are estimated separately for each of the following groups:

- men without children
- women without children
- lone parents
- men with children
- women with children

The regressions include the following variables:

- age (16-24, 25-34, 35-44, 45-54, 55-64, 65-74)
- highest educational qualification (degree, other higher education, A-level or equivalent, GCSE or equivalent, other, no qualification)
- regional variables (London, South East or East of England, rest of the UK)
- part-time work dummy (less than 30 hours per week)
- Youngest child aged under 5 (where relevant)

The quantile regressions are estimated at the following percentiles: 20^{th}, 25^{th}, 30^{th}, 35^{th}, 40^{th}, 45^{th}, 50^{th}, 55^{th}, 60^{th} and 65^{th}. For each person entering work, a random draw is then taken from the distribution of ten quantile wage points. This allows some dispersion of earnings for people entering work rather than just giving all entrants the median wage (or some other percentile point). The distribution of quantile points chosen leads to average earnings for work entrants being slightly below median wages for the in-work population, which reflects the well-known finding that

people currently not in work are likely to have somewhat lower earnings than people in work due to lower experience or other unobservable characteristics (Blundell, Reed and Stoker, 2003)[34].

For people modelled as entering self-employment rather than employment, similar quantile regressions are estimated using weekly self-employed incomes from the 2010-11 FRS. A single equation is estimated rather than five separate equations by gender and family type due to the smaller sample size of self-employed people in the FRS compared to the population of employees in the LFS.

The randomly selected hourly wage from the LFS equations is constrained to be no lower than the appropriate minimum wage rate for individuals based on age (e.g. £6.31 for employees aged 21 or over). For self-employment, no such restriction is applied, but all the estimated quantile points of self-employed earnings are positive rather than negative (i.e. losses); this is because only a small percentage of self-employed people in the FRS make net losses.

Modelling the impact of Universal Credit

Two of the modelled scenarios are concerned with the potential for in-work conditionality in UC to move additional people from part-time to full-time work and from low-paying self-employment to self-employment which pays at least the equivalent of 35 hours per week at National Minimum Wage. The impact of in-work conditionality for employees is simulated by taking the sample of recipients of UC who are in the 'full conditionality' group for UC but are working below 35 hours per week in the central employment forecast scenario and moving a proportion of these part-time workers to full-time work at 35 hours per week. Similarly, the impact of the minimum income floor for the self-employed is simulated by taking the sample of self-employed UC recipients in the central employment forecast scenario with income below the minimum floor level and increasing the gross income of these low-income self-employed people to 35 hours per week at minimum wage. In both cases it was assumed that 75% of UC recipients in the relevant group manage to increase their hours or work, or self-employed income, to 35 hours at minimum wage.

The range of modelled tax, benefit and tax credit reforms

Direct tax measures

The Landman Economics tax-benefit model includes the following direct tax measures announced during the 2010-15 Parliament:

- increases in the income tax personal allowance;
- transferable income tax allowances (introduced April 2015);
- changes to the income tax higher rate threshold;
- the reduction in the 50% top rate to 45%;

[34] R. Blundell, H. Reed and T. Stoker (2003), "Interpreting Aggregate Wage Growth: The Role of Labor Market Participation", *American Economic Review*, Vol 93 No 4, pp 1114-1131.

- changes to the Primary Threshold and Secondary Threshold for Class 1 National Insurance Contributions, and the Lower Profits Limit for Class 4 National Insurance Contributions;
- increases in the rates of employee, employer and self-employed National Insurance Contributions;
- nominal freezes in Council Tax from 2011-12 onwards.

Indirect tax measures

None of the indirect tax measures announced in the 2010-15 Parliament (for example the increase in the standard rate of VAT, changes to excise duties (motor fuels, alcoholic drinks, and tobacco products), or changes to Insurance Premium Tax) are included in the modelling in this report for two reasons. Firstly, the Family Resources Survey does not include data on household expenditure and so cannot be used to model indirect taxation. Secondly, the BHC and AHC income measures used to calculate child poverty rates using the FRS data do not include the impact of indirect taxation on household living standards.

Benefits, tax credits and Universal Credit measures

Figure 23 gives a detailed breakdown of benefit and tax credit measures specified in the documentation for all Budgets, Autumn Statements and Spending Reviews since June 2010, with a list of which reforms are included in the Landman Economics model. In addition to this it should be noted that the Landman Economics model takes into account all the announced parameters of the Universal Credit system (with the exception of certain rules for the treatment of housing costs that are the equivalent of the reforms to Housing Benefit announced below – see separate note on Housing Benefit below Figure 23).

Figure 23 Benefit and tax credit changes 2010-15: which reforms are included in the IPPR/Landman Economics modelling

Measures		
Budget June 2010	**Cost (£m, 2015-16)**	**Modelled?**
Switch to CPI indexation for benefits and tax credits from 2011-12	*7900*	yes
DLA gateway reform	*1190*	no
lone parent benefits: extend conditionality to those with children aged 5 and above	*210*	no
Abolish Health in Pregnancy Grant	*150*	no
Sure Start Maternity Grant: first child only	*75*	yes
Income Support Mortgage interest: payments at average mortgage rate	*75*	no
Savings Gateway: never introduced	*120*	no
Housing benefit reforms:		
LHA set at 30th percentile of rents from 2011-12	*435*	no
NDDs: reverse uprating freeze and maintain link with prices from 2011-12	*360*	no
Social sector: entitlements reflect size of family ("bedroom tax")	470	no
CPI indexation for LHA	*480*	no

Reduce awards to 90% after 12 months for JSA claimants		
additional bedroom for carers	-15	no
LHA caps on maximum rates (4-bed limit)	65	no
additional discretionary housing payments	-40	no
Tax credits:		
2nd income threshold: reduce to £40,000	3300	yes
Withdrawal rate increased to 41%	150	yes
CTC: taper family element immediately after child element	480	yes
CTC: remove baby element	280	yes
WTC: remove 50-plus element	45	yes
CTC: reverse supplement for children aged 1 and 2	180	yes
reduction of income disregard to £5000	500	no
introduction of disregard for falls in income	600	no
changes of circumstances: reduce backdating to 1 month	340	no
CTC: increase child element above inflation in 2011-12 and again in 2012-13	-2050	yes
Child Benefit: freeze rates for 3 years from 2011-12	1000	yes
State pension triple guarantee	-480	yes
Pension Credit MIG: matching basic State Pension cash increase in 2011-12	-535	yes
Child Trust Funds: abolition of govt contributions	565	no
Spending Review Autumn 2010		
Contributory ESA: time limit for those in the Work Related Activity Group to one year	1475	no
HB: increase age limit for shared room rate from 25 to 35	215	no
Benefit cap	185	yes
DLA: remove mobility component for claimants in residential care	160	no
Savings Credit: freeze maximum award for 4 years from 2011-12	280	yes
ISMI: extend temporary changes to capital limit to Jan 2012	0	no
Cold weather payments: increase rate to £25	-50	no
Council Tax Benefit: 10% reduction in expenditure and localisation	475	yes
Child Benefit: remove from families with a higher rate taxpayer	2580	yes
WTC: freeze basic and 30 hour elements	675	yes
WTC: reduce payable costs through childcare element from 80% to 70%	410	yes
CTC: additional increase in child elements	-575	yes
WTC: increase working hours requirement for couples with children to 24 hours	395	yes
CTC and WTC: real time information	190	yes
Budget 2011		
ISMI: one year extension from Jan 2012	0	no
HB: cancel reductions for long term jobseekers		no
DLA: mobility components for claimants in residential care	0	no
LHA: transitional protection	0	no
ESA youth: abolish NI concession	15	no
Benefit fraud: sanctions and debt recovery	65	no

Autumn Statement 2011		
Housing Benefit changes	-15	no
CTC: remove 2012 over indexation	995	yes
WTC: freeze main parameters	295	yes
Pension Credit changes	-10	yes
Budget 2012		
child benefit: threshold at £50,000 and taper to £60,000	*630*	yes
WTC: extend exemptions for carers allowance	*-5*	no
DWP fraud and error initiatives	*80*	no
welfare reform bill: amendments	*0*	no
Autumn Statement 2012		
Working age discretionary benefits and tax credits: increase by 1% for 3 years from 2013-14	2680	yes
Child Benefit: increase by 1% for 2 years from 2014-15	360	yes
HB: increase LHA by 1% for 2 years	280	no
UC: increase disregards by 1% for 2 years from 2014-15	680	yes
extension of support for ISMI	-20	no
tax credits: error and fraud	185	no
tax credits: debt recovery	125	no
Budget 2013		
UC: exempt from Income Tax	-35	yes
Tax Free Childcare and additional support for childcare in UC	-400	yes
Autumn Statement 2013		
Tax credits: improving collection and admin	75	no
tax credits: annual entitlement	5	no
Budget 2014		
Tax Free Childcare: extension	-200	yes
Universal Credit: increased childcare support	-200	Yes

Notes: Costings in italics are estimated by the authors based on extrapolation from the published costings for 2014/15 as the June 2010 Budget and 2010 Spending review did not contain costings for 2015/16.

Overall, the Landman Economics model includes all the changes to income tax and National Insurance Contributions announced during the 2010-15 Parliament, and around 80% of the changes to social security (measured by the reduction in the overall amount spent on benefits, tax credits and Universal Credit.) The main benefit and tax credit reforms which cannot be modelled are:

- most of the changes to Housing Benefit (in particular the reductions in Local Housing Allowance eligible rent levels for private sector tenants and the penalties for unoccupied extra bedrooms for social sector tenants);
- changes to disability benefits involving reduction of the overall claimant caseload (in particular, the reassessment of the existing Incapacity Benefit caseload as they are moved

over to Employment and Support Allowance, and the replacement of Disability Living Allowance with Personal Independence Payment);

- changes to the tax credit system involving the disregards for reassessment of income in response to increases or falls in gross income from year to year.

Each of these unmodelled changes involves a reduction in overall benefit spending, and hence the overall impact of omitting them is likely to be that the modelling in this report underestimates the extent of child poverty in 2020 in each scenario (because the tax/benefit system used in 2020 is more generous than if we had been able to model all the changes.)

Simulating changes in the child poverty rate

Modelling of the child poverty rate proceeds in six stages as follows.

- Firstly, the Family Resources Survey data from the 2010-11 Households Below Average Income (HBAI) dataset is analysed to identify households who are below 60% of equivalised median household disposable income on the Before Housing Costs (BHC) and After Housing Costs (AHC) measures.
- Next, the FRS data for 2010-11 is run through the Landman Economics tax-benefit system in place in the 2010-11 tax year. This generates a 'starting income' for each household in the model, which is then uprated to December 2013 prices using the Consumer Prices Index.
- For each scenario used in this report, the FRS data for 2010-11 – with earnings, hours, employment and housing costs for the relevant individuals and households adjusted as explained earlier in this report – is run through the tax-benefit model using the tax-benefit system in place after all the changes announced in the 2010-15 Parliament (including changes scheduled to take place after 2015 but before 2020). Universal Credit is assumed to be fully rolled out. For scenarios which feature changes to the Universal Credit system, these are also included in the relevant tax-benefit system used in the scenario.
- Net household incomes in each reform system (uprated to January 2014 prices) are compared with the 'starting income' from the initial scenario and the change in income between the initial scenario and reform scenarios is calculated for each household.
- The change in income is compared with the difference between the relevant poverty line and income in the 2010-11 HBAI data (again, uprated to January 2014 prices).
- Households who were below the relevant poverty line but whose increase in equivalised net income between the initial scenario and the reform scenario would take them above the poverty line are assumed to have moved out of poverty in the reform scenario. Conversely, households who were above the relevant poverty line but whose decrease in equivalised net income between the initial scenario and the reform scenario would take them below the poverty line are assumed to have moved into poverty in the reform scenario. For households where the change in income is not enough to move them from one side of the relevant poverty line to the other, there is assumed to be no change in poverty status.

- New simulated poverty rates for each scenario are calculated on this basis.

Assumptions on take-up

By default the IPPR/Landman Economics tax-benefit model assumes 100% take-up of means-tested benefits, tax credits and Universal Credit. This is likely to mean that child poverty is underestimated in the baseline scenario because the Universal Credit payments being made to households are more generous than if rates of take-up corresponding to the actual forecast rates of take-up of Universal Credit were assumed. However, because Universal Credit is designed to increase take-up rates compared to the benefit and tax credit system it replaces (by replacing separate application processes for Housing Benefit, Income Support/Jobseekers Allowance and Tax Credits with a single application process) it is quite possible that take-up of Universal Credit will be higher than under the previous social security system. Landman Economics is currently developing a reliable algorithm for modelling incomplete take-up which is expected to be in use for future research projects.

Comparing our results with recent 2020 child poverty estimates from the IFS

The Institute for Fiscal Studies (IFS) has recently published a simulation analysis of child poverty in 2020[35]. In its most recent set of projections in January 2014, the IFS estimates that BHC relative child poverty will be 22.5 percent by 2020-21. This is 1.5 percentage points higher than the central estimate in this report of 21 percent. Meanwhile, the IFS's estimate of BHC absolute child poverty in 2020-21 is 27.9 percent, which is almost 4 percentage points above the central estimate in this report of 24.1 percent.

After analysing the details of the methodology used to produce the IFS's estimates, we have concluded that the difference between the two sets of relative poverty results seems to be mainly due to the fact that the IFS analysis allows for incomplete take-up of means-tested benefits and Universal Credit, whereas the Landman Economics model assumes full take-up. Although the child poverty estimates in the Landman Economics model are calibrated to reduce the impact of assuming 100% take-up on the measured child poverty rate (as explained in the section "Simulating changes in the child poverty rate" above), it is unlikely that the calibration procedure corrects fully for the effect of the take-up assumption. This means that the forecast child poverty rates in this report should be taken as relatively optimistic estimates, corresponding to a 'best case scenario' for the impact of Universal Credit in increasing take-up.

A second difference between the IFS's estimates and the Landman Economics estimates is that the IFS reweights the FRS data to take account of the Office for National Statistics' forecast for

[35] The full IFS methodology and detailed projections under a range of assumptions are in J. Browne, A. Hood and R. Joyce (2013), *Child and Working-Age Poverty in Northern Ireland from 2010 to 2020*, Research Report R78. London: Institute for Fiscal Studies. Revised headline projections using more recent data (the 2011-12 FRS) and updated OBR employment and wage forecasts are in J. Browne, A. Hood and R. Joyce (2014), *Child and working-age poverty in Northern Ireland over the next decade: an update*, IFS Briefing Note BN144, London: Institute for Fiscal Studies.

changes in the structure of the UK population between 2010 and 2020. However, the reweighting appears to make no difference to estimated relative child poverty in 2020.

Finally, the IFS analysis accounts for industry-level variations in earnings growth using forecasts from Oxford Economics, whereas the Landman Economics analysis uses an assumption of an equal rate of earnings growth across all industries. However, this correction makes very little difference to measured child poverty in the robustness analysis of the IFS's results[36].

[36] See Browne et al (2013), Tables C1 and C2.

Appendix E: Additional results

Figure 24 Equivalised BHC median household income under each employment and wage growth scenario: £/week, January 2014 prices

Employment scenario	a	b	c	d	e	f	g
	central	optimistic	pessimistic	Constant in 2013 terms	Increased wage dispersion	Minimum wage increase	Lower half wage compression
1.Central	**467**	478	441	452	467	471	476
2.Optimistic	480	491	451	464	480	484	489
3.Pessimistic	451	460	429	439	451	455	459
4.Central with all employment growth coming from families with children	457	468	433	444	457	461	466
5.Optimistic with all employment growth above central projection coming from families with children	472	483	445	459	472	477	482

Figure 25 Child poverty in 2020 for various employment and wage scenarios: relative AHC poverty measure: number of children in poverty (%)

Employment scenario	a	b	c	d	e	f	g
	central	optimistic	pessimistic	Constant in 2013 terms	Increased wage dispersion	Minimum wage increase	Lower half wage compression
1.Central	**31.1%**	31.4%	29.8%	30.6%	31.2%	30.9%	31.0%
2.Optimistic	30.4%	30.8%	29.1%	29.7%	30.5%	29.2%	30.6%
3.Pessimistic	32.0%	32.3%	31.0%	31.5%	32.2%	32.0%	32.1%
4.Central with all employment growth coming from families with children	26.7%	27.2%	25.9%	26.4%	26.8%	26.7%	26.6%
5.Optimistic with all employment growth above central projection coming from families with children	26.6%	27.1%	25.7%	26.3%	26.7%	26.7%	26.3%

In the central scenario for employment and wage growth, relative AHC child poverty in 2020 is forecast to be 31.1 percent – over 10 percentage points higher than BHC child poverty. As with BHC poverty, increases in employment across the whole working age population reduce AHC child poverty slightly, but scenarios where most or all of the increase in employment is due to parents result in larger falls; AHC poverty falls to 26.7% in the scenario where employment increases to the OBR central projection but with all of the increase due to parents. As with BHC relative poverty, faster wage growth across the earnings distribution leads to increases in AHC relative poverty. Increased wage dispersion, a higher minimum wage, and compression of the earnings distribution all have little or no impact on relative AHC poverty.

Figure 26 Child poverty in 2020 for various employment and wage scenarios: absolute AHC poverty measure, uprated with RPI: number of children in poverty (%)

Employment scenario	a	b	c	d	e	f	g
	central	optimistic	pessimistic	Constant in 2013 terms	Increased wage dispersion	Minimum wage increase	Lower half wage compression
1.Central	**34.7**	33.3	38.3	36.5	34.6	34.1	33.5
2.Optimistic	32.3	30.9	36.1	34.3	32.3	31.7	31.1
3.Pessimistic	37.5	36.2	40.7	39.1	37.4	36.9	36.4
4.Central with all employment growth coming from families with children	31.9	30.5	35.8	34.0	32.0	31.2	30.6
5.Optimistic with all employment growth above central projection coming from families with children	29.7	28.3	34.0	32.1	29.8	29.1	28.2

In the central scenario for employment and wage growth, absolute AHC child poverty in 2020 is forecast to be 34.7 percent – over 10 percentage points higher than BHC child poverty. As with BHC absolute poverty, increased employment (especially for parents) and increased wage growth lead to reductions in child poverty relative to the central scenario, but absolute AHC poverty remains above the 2010-11 baseline in all of the scenarios modelled (the lowest scenario forecast for 2020 is 28.2 percent).

Figure 27 Child poverty in 2020 for various employment and wage scenarios: absolute AHC poverty measure, uprated with CPI: number of children in poverty (%)

Employment scenario	a	b	c	d	e	f	g
	central	optimistic	pessimistic	Constant in 2013 terms	Increased wage dispersion	Minimum wage increase	Lower half wage compression
1.Central	**24.6**	25.7	25.9	27.5	28.8	25.0	24.3
2.Optimistic	27.0	28.0	28.2	29.8	31.0	27.3	26.6
3.Pessimistic	30.4	31.2	31.3	32.8	33.9	30.5	29.9
4.Central with all employment growth coming from families with children	23.8	25.0	25.2	26.9	28.3	24.2	23.5
5.Optimistic with all employment growth above central projection coming from families with children	21.7	22.9	23.0	24.7	26.0	22.2	21.4

Figure 28 Extra net revenue from increased direct tax receipts available to the UK Exchequer by 2020 as a result of increased employment and increased wages relative to OBR employment and earnings growth forecasts, £billion

	Wage growth scenario						
Employment scenario	**a**	**b**	**c**	**d**	**e**	**f**	**g**
	central	**optimistic**	**pessimistic**	**Constant in 2013 terms**	**Increased wage dispersion**	**Minimum wage increase**	**Lower half wage compression**
1.Central	**0.0**	21.2	-45.7	-25.7	7.2	3.1	7.4
2.Optimistic	7.1	29.0	-40.2	-19.4	14.2	10.2	14.7
3.Pessimistic	-9.0	11.3	-52.9	-33.6	-1.9	-5.9	-2.3
4.Central with all employment growth coming from families with children	-2.7	18.3	-47.9	-28.1	4.5	0.4	4.4
5.Optimistic with all employment growth above central projection coming from families with children	5.1	26.9	-41.7	-21.2	12.3	8.2	12.9

Source: authors' estimates using IPPR/Landman Economics tax/benefit model

Figure 29 Extra net revenue from reduced welfare expenditure available to the UK Exchequer by 2020 as a result of increased employment and increased wages relative to OBR employment and earnings growth forecasts, £billion

	Wage growth scenario						
Employment scenario	**a**	**b**	**c**	**d**	**e**	**f**	**g**
	central	**optimistic**	**pessimistic**	**Constant in 2013 terms**	**Increased wage dispersion**	**Minimum wage increase**	**Lower half wage compression**
1.Central	**0.0**	1.7	-4.3	-2.3	-0.2	1.2	2.2
2.Optimistic	6.6	8.3	2.1	4.2	6.4	7.7	8.8
3.Pessimistic	-8.0	-6.5	-11.9	-10.1	-8.1	-6.8	-6.0
4.Central with all employment growth coming from families with children	0.2	1.9	-4.2	-2.1	0.0	1.4	2.4
5.Optimistic with all employment growth above central projection coming from families with children	6.8	8.6	2.1	4.3	6.6	7.9	9.3

Source: authors' estimates using IPPR/Landman Economics tax/benefit model

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