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**Research Report**

## Child and working-age poverty in Northern Ireland from 2010 to 2020

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# Child and Working-Age Poverty in Northern Ireland from 2010 to 2020

IFS Report R78

James Browne  
Andrew Hood  
Robert Joyce



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# **Child and Working-Age Poverty in Northern Ireland from 2010 to 2020**

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## Preface

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## Executive Summary

- This report presents projections of relative and absolute income poverty among children and working-age adults in every year to 2016–17, and in 2020–21. The aim is to estimate the implications for household incomes – and hence, income poverty – of what we know about tax and benefit policy and current forecasts for the macroeconomy. As well as updating previous IFS projections of household incomes and poverty at the UK level, it extends this analysis by showing projections for Northern Ireland (and, in an appendix, for England and Wales, and for Scotland).
- Since 2010–11, the average earnings of those in paid work have fallen in real terms, and this is forecast to continue until 2014–15. And a large fiscal consolidation to help reduce an unsustainable budget deficit has begun in earnest. One component of this is a £20 billion cut to the social security budget by 2015–16 – the vast majority of which affects working-age households – and this inevitably tends to hit lower income households hardest. This report estimates the implications of these kinds of factors for the path of income poverty now and in future.
- These projections are necessarily subject to uncertainties and limitations. Macroeconomic forecasts are highly uncertain, particularly at present; we cannot fully account for the behavioural response to tax and benefit reforms, and both the underlying survey data we use and the future statistics we project are subject to sampling error. However, the results should provide a useful indication of what could be expected to happen to income poverty under current policies.
- The projections in this report were produced before Budget 2013, and therefore do not take account of the updated macroeconomic forecasts and new tax and benefit policies announced in the Budget. Updated projections will be produced in Summer 2013 to take account of these updates and make use of more recent underlying data.

### Background

- The current UK Government has affirmed its commitment to the highly ambitious income-based targets for child poverty in 2020–21, set by its predecessor in the Child Poverty Act 2010. The Act specifies targets for four indicators, of which we focus on the relative and absolute low-income measures. Relative low-income poverty is defined as having a household income below 60% of the contemporary median, and absolute low-income poverty as having a household income below 60% of the 2010–11 median in real terms. Hence, movements in the former indicate changes in the position of low-income households relative to middle-income households; movements in the latter indicate real-terms changes in the incomes of low-income households. Both indicators are for poverty with incomes measured before housing costs are deducted. All figures presented in this Executive Summary follow these definitions.
- The latest official data on the distribution of household income are for 2010–11. The decade to 2010–11 saw large reductions in relative and absolute income poverty among children in Northern Ireland, and in the rest of the UK. Previous analysis by IFS researchers has shown that this was heavily driven by discretionary increases to benefits and tax credits for families with children as the Labour Government attempted (but ultimately failed) to hit its ambitious targets for child poverty in 2010–11. During and immediately after the financial crisis of 2008, relative measures of poverty among children fell particularly sharply, as middle incomes fell substantially, whilst those of low-income families with children were relatively stable. This is in

large part because earnings (which are the most important component of incomes at the median) fell in real terms, whereas benefits (the most important component of income for the poor) were increased in line with inflation.

- The trends for working-age families without children have been very different. Relative poverty among working-age non-parents has continued on an upwards trend that has seen it double since 1979.
- Over the past decade, poverty in Northern Ireland has followed broadly the same trends as in the rest of the UK. Relative and absolute measures of child poverty have fallen, while poverty among working-age non-parents has increased in both relative and absolute terms. The relative levels of poverty in Northern Ireland and the UK are very sensitive to whether incomes are measured before or after housing costs; since housing costs are much lower in Northern Ireland, measuring incomes after housing costs eliminates much or all of the difference in measured poverty rates.

### **The path of income poverty under current policies and macroeconomic forecasts**

- In the short run, we project a sharp increase in income poverty among children in Northern Ireland. According to both the absolute and the relative low-income measures, child poverty is projected to increase in each year. However, relative poverty is projected to rise by less, because we are projecting falls in the median income, and hence the relative poverty line.
- The projections for the UK are very similar, although the rate at which child poverty is projected to increase is significantly slower. The increases in child poverty according to the relative low-income measure are explained by the fact that as we project out to 2013–14 earnings – which are relatively more important for middle-income households – fall less sharply in real terms, and welfare cuts – which affect predominantly low-income households – continue. This reverses much of the reduction in relative child poverty seen during and immediately after the recession.
- We project smaller rises in working-age non-parent income poverty in Northern Ireland, and again the increase is greater using the absolute low-income measure than using the relative low-income one. This is again because projected real falls in median income reduce the relative poverty line. The smaller rise in poverty for the working-age childless is likely to be due to the fact that they tend to be less reliant on income from benefits, which is being cut. This also helps to explain why their relative poverty rate rose in the immediate post-recession period whilst relative child poverty was falling. Similar results are obtained for the rest of the UK.
- Increases in income poverty are projected to slow down or stop between 2013–14 and 2016–17 as Universal Credit is phased in, increasing the incomes of low-income families. But beyond 2016–17, we project continuing increases in relative and absolute income poverty among both children and working-age non-parents. Relative child poverty in Northern Ireland is projected to be 8.3 percentage points (ppts) higher in 2020–21 than 2010–11, with relative working-age non-parent poverty projected to increase by 6.0ppts across the decade.
- In the UK, relative child poverty is projected to increase by 6.0ppts between 2010–11 and 2020–21, reversing all of the reductions between 2000–01 and 2010–11. In 2020–21, child poverty is projected to be 23.5% and 27.2% using the relative and absolute low-income measures respectively, compared to targets of 10% and 5%. This translates to increases across the decade of 1.1 million in the number of children in

poverty according to the relative low-income measure, and 1.4 million in the number of children in poverty according to the absolute low-income measure.

- It is surprising that absolute low-income poverty measures are projected to continue to increase after 2016–17 despite forecasts of relatively strong economic growth for this period. An important reason for this is that the Retail Prices Index (RPI) is used to uprate the official absolute poverty line over time. There are increasing concerns that the RPI consistently overstates the true rate of inflation faced by households, and that this problem got worse following changes to the way clothing prices were sampled in 2010. In a variant where the Consumer Prices Index (CPI) is used to uprate the absolute poverty line instead, our projection for the absolute low-income measure of child poverty would be an increase of 1.7ppts at the UK level between 2010–11 and 2020–21, compared to the 10 percentage point increase projected when the RPI is used.

	<i>% children</i>		<i>% working-age non-parents</i>	
	<i>UK</i>	<i>NI</i>	<i>UK</i>	<i>NI</i>
	<b><i>Relative poverty</i></b>			
2010 (actual)	17.5	21.4	14.6	19.8
2011	17.5	23.6	15.1	20.3
2012	19.0	24.8	15.1	20.9
2013	20.5	26.3	15.7	22.2
2014	20.9	27.2	16.0	23.3
2015	21.4	27.8	16.0	24.5
2016	21.6	27.9	16.1	25.0
2020	23.5	29.7	17.2	25.8
	<b><i>Absolute poverty</i></b>			
2010 (actual)	17.5	21.4	14.6	19.8
2011	19.3	25.1	15.8	21.6
2012	20.9	26.6	15.9	22.7
2013	23.1	28.5	16.6	23.5
2014	23.8	28.9	17.0	25.2
2015	23.8	28.8	17.2	25.3
2016	24.0	29.4	17.2	25.7
2020	27.2	32.9	18.7	27.8

Notes: Poverty line is 60% of median before-housing-costs (BHC) income. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

### **The direct impact of tax and benefit reforms on poverty**

- The ongoing fiscal consolidation to help reduce the budget deficit involves tax rises and benefit cuts that directly reduce household incomes. Low-income working-age

households are particularly affected as a result of cuts to the social security budget. We attempt to isolate the impact of these changes on the income-based measures of poverty that we are projecting.

- Tax and benefit reforms introduced since April 2010 can account for almost all of the increase in child poverty projected over the next few years using the absolute low-income measure; using the relative low-income measure, child poverty would actually have fallen in the absence of reforms as a result of falls in median income. The effect of reforms on working-age non-parent poverty is significantly smaller. In both cases, the effect of reforms on poverty is particularly large in Northern Ireland.
- In 2015–16, reforms introduced since April 2010 are projected to increase child poverty in Northern Ireland by 5.4ppts according to the absolute low-income measure and 7ppts according to the relative low-income measure by 2015–16. Across the UK, the same reforms are projected to increase the number of children in poverty by around 5ppts or 700,000 in the UK according to both the relative low-income and the absolute low-income measure.
- Isolating the impact of Universal Credit in Northern Ireland, we estimate its long-run effect in to be a reduction of 1.3ppts in relative child poverty, compared to 2.7ppts in the UK. In both cases, the effect of Universal Credit is outweighed by the effects of other tax and benefit reforms being introduced over the same period.

### **Sensitivities**

- Alternative scenarios in which employment and average earnings growth are significantly higher or lower than currently expected rates show rates of poverty in 2015–16 which are little different from the central forecast. Variants where future earnings growth favours high or low earners also result in little difference in poverty rates.

### **Implications for policy**

- Official statistics on household incomes use a measure of inflation based on the RPI to enable real terms comparisons over time. It is increasingly recognised that the RPI consistently overstates the average level of inflation faced by households. The UK Government should give serious consideration to using a different measure of inflation in its household income statistics that more accurately reflects households' average inflation experiences.
- Given our projections for poverty in 2020–21, it seems impossible that the targets set out in the Child Poverty Act could be met even if there were unprecedented changes in the labour market, welfare policy, and the amount of redistribution attempted by the state. It is not the case that tax and benefit reforms introduced since 2010–11 have made it impossible for these targets to be hit: even without these changes, they would still have been missed by a considerable distance. We recommend that the UK Government either reveals a credible plan for meeting the targets that it has signed up to; or that it sets different objectives which reflect its view of what is both desirable and achievable, and explains how it plans to meet those, ideally verified using a quantitative modelling exercise such as this one.

# CHAPTER 1

## Introduction

This report provides projections of income poverty among children and working-age non-parents in Northern Ireland and the UK under current tax and benefit policies and current forecasts of demographics and the macroeconomy, up to and including policies and forecasts announced at the time of the December 2012 Autumn Statement. We also estimate the direct impact on income poverty of tax and benefit reforms introduced since 2010–11. Projections for England and Wales, and for Scotland, can be found in Appendix B.<sup>1</sup>

Projections are produced using the IFS static tax and benefit microsimulation model, TAXBEN.<sup>2</sup> There are several reasons why microsimulation techniques are well suited to poverty modelling. Such models allow for explicit simulation of the entire income distribution, which enables precise quantification of the effect on relative poverty of rises in the relative poverty line caused by rises in the median income; and such models enable us to estimate precisely the impact of direct tax and benefit changes (including often complicated interactions between them) on household incomes. This report extends and refines the methodology of Brewer, Browne and Sutherland (2006), Brewer *et al.* (2009), Brewer and Joyce (2010) and Brewer, Browne and Joyce (2011) in applying such techniques to project child and working-age poverty at the level of the UK and its constituent nations. Pensioner poverty cannot be adequately modelled using these techniques.<sup>3</sup>

The definitions of poverty used in this report are two of the four measures set out in the Child Poverty Act (2010), namely the relative low-income and absolute low-income measures. An individual is in poverty according to the relative low-income measure in a particular year if their household income is less than 60% of the household income of the UK median individual in that year. An individual is in poverty according to the absolute low-income measure in a particular year if their household income in that year is less than 60% of the 2010–11 median (in real terms).<sup>4</sup> In the remainder of this report, we use the terms ‘relative poverty’ and ‘absolute poverty’ to refer to these two concepts. Household incomes are measured net of taxes and inclusive of benefits and tax credits, and are equivalised using the modified OECD equivalence scale. We produce projections using incomes measured both before and after housing costs have been deducted (though note that the Child Poverty Act refers only to the before housing costs (BHC) measure).

Note that the projections in this report were produced before Budget 2013, and therefore do not take account of the updated macroeconomic forecasts and new tax and benefit policies announced in the Budget. Updated projections will be produced in Summer 2013 to take account of these updates and make use of more recent underlying data.

This report proceeds as follows. Chapter 2 describes the recent trends in poverty in Northern Ireland and how this compares to the rest of the UK. Chapter 3 provides an overview of how we produce our projections (more details are provided in Appendix D). Chapter 4 presents the results of the modelling exercise, showing projections of poverty under current policies (Sections 4.1–4.3) and without the tax and benefit reforms introduced since 2010–11 (Section 4.4). In Chapter 5, we quantify the sensitivity of our results to changes in employment and earnings. Chapter 6 concludes.

<sup>1</sup> Due to the small sample size in our data, projections for poverty in Wales alone would not be sufficiently robust.

<sup>2</sup> For a description of TAXBEN, see Giles and McCrae (1995). The basic structure of the model has not changed since then.

<sup>3</sup> Static microsimulation techniques cannot account for ‘cohort effects’ whereby new pensioners retire with higher amounts of different characteristics – including different levels of private income – from their predecessors. For an example of a report that does attempt to forecast pensioner poverty, see Brewer *et al.* (2007).

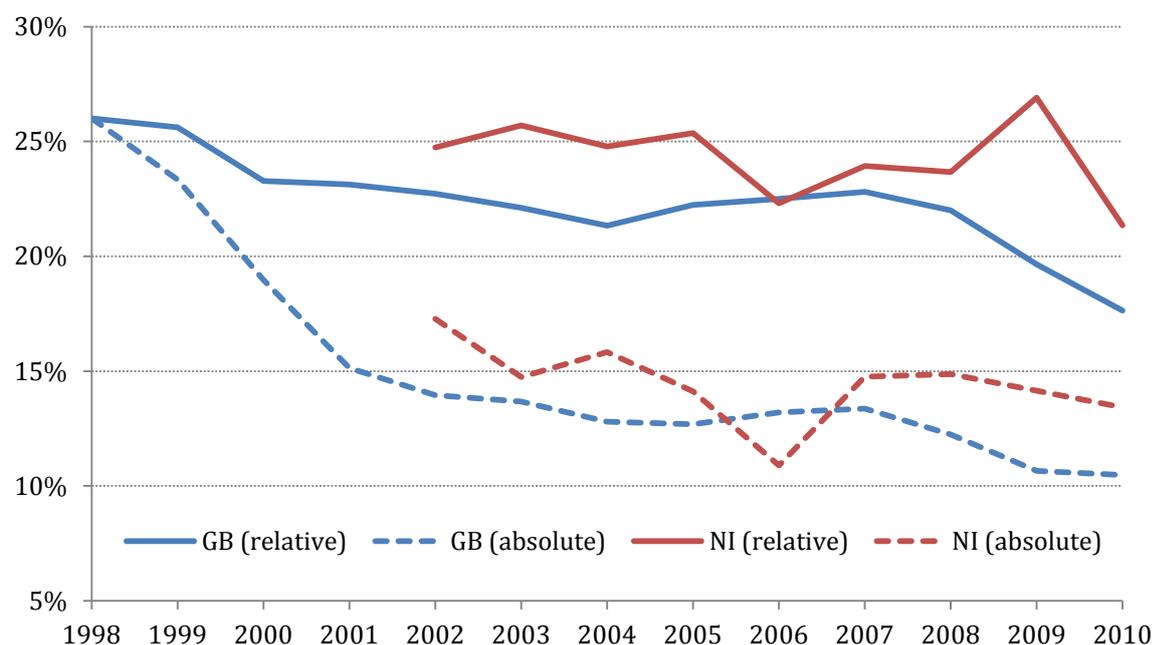
<sup>4</sup> The absolute poverty line is updated in line with the Retail Prices Index (excluding council tax) and the Rossi index for before-housing-costs and after-housing-costs incomes, respectively.

## CHAPTER 2

### Recent trends in poverty

This chapter provides context for the poverty projections in Chapter 4, focusing on recent trends in poverty among children and working-age non-parents, the groups for which we present our projections. In each case, the changes in poverty in Northern Ireland are presented alongside the figures for Great Britain, and for the most part the trends shown are broadly similar. This chapter draws heavily on Cribb, Joyce and Phillips (2012), which provides a more comprehensive discussion of poverty in the UK over recent years.

Figure 2.1. Child poverty since 1998–99 measured BHC (Great Britain and Northern Ireland)



Notes: Relative poverty line is 60% of median before housing costs (BHC) income. Absolute poverty line is 60% of 1998–99 BHC median income in real terms. Years refer to financial years.

Source: Authors' calculations using Family Resources Survey, various years.

Figure 2.1 presents absolute and relative child poverty rates since 1998–99 for Great Britain and Northern Ireland (for which the comparable data series begins only in 2002–03). In this case, the absolute poverty line is 60% of 1998–99 BHC median income in real terms rather than 60% of the 2010–11 BHC median income used in Chapter 4 and the Child Poverty Act. The overall story for Great Britain is clear: relative child poverty fell significantly, from 26.0% in 1998–99 to 17.6% in 2010–11, and absolute child poverty fell even faster, down to 10.5% by the end of the period. However, the 12 years between 1998–99 and 2010–11 can be viewed as three quite distinct 'sub-periods' for child poverty. The period between 1998–99 and 2004–05 saw rapid and large reductions in child poverty, with the relative poverty rate falling by around 5ppts across that period. But the period between 2004–05 and 2007–08 saw progress go into reverse, with relative child poverty actually increasing slightly. A similar pattern can be seen in changes to absolute poverty, with extremely fast reductions through to 2001–02, before progress slowed in the middle of the decade. From 2007–08 child poverty began to decline again, with a particularly dramatic fall in 2010–11. This was the result of a large decrease in the median income (and hence the relative poverty line) in 2010–11 rather than an increase in the living standards of poor households with children, as is seen in the fact that absolute child poverty remained roughly constant.

Our view of the relative levels of child poverty in Northern Ireland and the UK varies greatly depending on whether incomes are measured before housing costs (BHC) or after housing costs (AHC). Compared to the rest of the UK, Northern Ireland has a relatively high child poverty rate when incomes are measured BHC, but a relatively low child poverty rate when incomes are measured AHC, presumably because housing costs are significantly lower than the UK average in Northern Ireland. For the years since 2002–03, the trends in child poverty in Northern Ireland have been broadly similar to those observed in Great Britain, although both relative and absolute poverty were higher than in the rest of the UK for the most part. Although the Northern Irish series is more volatile from year to year (probably as a result of the relatively small sample size in Northern Ireland) child poverty rates follow a similarly flat trajectory during the second of the three ‘sub-periods’, with relative poverty falling by less than a percentage point between 2004–05 and 2007–08. Just as in Great Britain, the large fall in the UK median income in 2010–11 led to a significant drop in relative child poverty, while absolute poverty remained roughly the same.

The policy context is crucial in understanding why the decade to 2010–11 saw such a large decline in child poverty. In March 1999, the then Labour government announced a target to ‘eradicate’ child poverty by 2020–21.<sup>5</sup> A key interim target was for the number of children in poverty in the UK to be one-half of its 1998–99 level in 2010–11, according to both the absolute and relative indicators shown in Figure 2.1. While the absolute low-income target was achieved well in advance of 2010–11, the relative low-income target was missed by a substantial margin; the number of children in relative poverty fell by 1.1 million, compared to the target of 1.7 million. It is clear that a large part of these falls in absolute and relative child poverty were the result of the government’s attempts, through the tax and benefit system, to redistribute income sufficiently to meet the targets it had set itself. Between 1997 and 2006, spending on child-contingent support increased by £10 billion a year (a 60% increase in real terms).<sup>6</sup> Brewer *et al.* (2010) find that reforms to direct taxes and benefits play a very important role in explaining the large overall decline in child poverty since 1998–99, why progress slowed after 2004–05, and some of the variation in child poverty trends between different groups of children. A decomposition analysis by Dickens (2011) found that benefit and tax credit changes explain more than four times as much of the decrease in relative child poverty as changing parental work patterns. This is partly because a parent moving into work does not ensure a child will move out of poverty. According to the 2010–11 Family Resources Survey, only 42% of children in relative poverty in Great Britain lived in a workless household (the equivalent figure for Northern Ireland is 48%).

Given the close correlation between changes in income-based measures of child poverty over the past decade and the generosity of benefits and tax credits for families with children, the prospects for these poverty measures in the years ahead look bleak. In the context of the large fiscal consolidation currently being implemented, which will extend through to 2017–18, it is implausible that the increase in the generosity to families with children seen from 1998–99 to 2010–11 will be replicated in the decade to 2020–21. In fact, recent work by IFS researchers has shown that cuts to social security spending since 2010–11 have gone some way to reversing that increased generosity, a change that is likely to increase income-based measures of child poverty.<sup>7</sup>

Figure 2.2 shows absolute and relative poverty among working-age non-parents (WANPs) since 1998–99, using the same poverty lines as before. In contrast to the path of relative child poverty, there has been a clear upward trend in relative WANP poverty in Great Britain, rising from 11.5% in 1998–99 to 14.6% in 2010–11. While absolute poverty among this group did fall in the early 2000s, it was less than 1% lower in 2010–11 than in 1998–99. As Cribb, Joyce and Phillips (2012) show, these increases are part of a longer term trend that has seen relative poverty measured BHC more than double among this group since 1979, at least partly as a result of being less favoured by changes to the tax and benefit system.

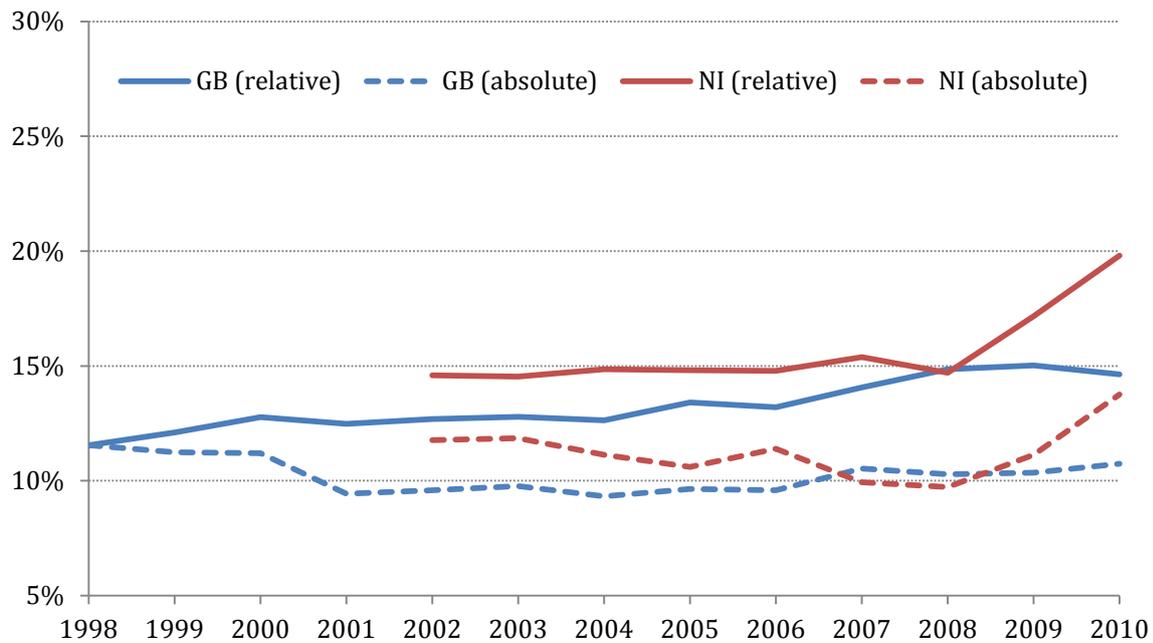
<sup>5</sup> This was announced in Tony Blair’s 1999 Beveridge lecture, available at <http://www.bris.ac.uk/poverty/downloads/background/Tony%20Blair%20Child%20Poverty%20Speech.doc>

<sup>6</sup> See Adam *et al.* (2007).

<sup>7</sup> See Browne, Hood and Johnson (2013).

Before 2008–09, absolute and relative WANP poverty in Northern Ireland followed a very similar path to the rest of the UK, with little or no change in relative poverty and a slight decline in absolute poverty. After 2008–09, both relative and absolute poverty rates among this group increased dramatically, indicating a substantial fall in the real household incomes of WANPs in the low-income population. These data suggest that WANPs in Northern Ireland were hit harder by the effects of the recession than their counterparts in the rest of the UK.

Figure 2.2. Working-age non-parent poverty since 1998–99 measured BHC (Great Britain and Northern Ireland)



Notes: Relative poverty line is 60% of median before housing costs (BHC) income. Absolute poverty line is 60% of 1998–99 BHC median income in real terms. Years refer to financial years.

Source: Authors' calculations using Family Resources Survey, various years.

## CHAPTER 3

### Methodology: how we produce our projections

In this chapter we provide an outline of how we produce our poverty projections. Section 3.1 details the basic steps. Section 3.2 describes the uncertainties and limitations of our methodology.

#### 3.1 The basic approach

We simulate the whole distribution of household incomes in the UK in future years, using a definition of income as close as possible to that used for official measures of poverty. In doing this, we estimate the two things that define the number of individuals in relative poverty: the household income of the median individual, which determines the relative poverty line, and the number of individuals with a household income below that relative poverty line. Poverty projections are obtained directly from our simulated income distribution: we simply count the number of children or working-age adults whose household income is less than 60% of the median individual. In the case of absolute poverty, we count the number of children or working-age adults whose simulated household income is below the absolute poverty line, which is fixed in real (i.e. inflation-adjusted) terms.<sup>8</sup> The methods by which we simulate the household income distribution are best understood as a number of steps, outlined below.

#### Data

We use data on 25,287 households in the UK from the 2010–11 Family Resources Survey (FRS), the most recent data available. Crucially for our purposes, this contains information about private income sources and other characteristics that determine tax liabilities and benefit and tax credit entitlements. It is the same data set that is used to provide official poverty statistics in the UK. This is important, given that we are forecasting poverty as it is officially measured. There are other approaches to measuring child poverty. For example, HM Revenue and Customs (HMRC) use administrative data on tax credit claims to estimate child poverty rates at a local level:<sup>9</sup> these measures are not the focus of this report.

We use the 2010–11 FRS as our ‘base data’ on the UK distribution of household incomes, from which we project forward to future years. To project forwards, we need to take account of future changes to the demographic composition of the population, financial variables (e.g. earnings), tax liabilities, and benefit and tax credit receipts.

#### Accounting for socio-demographic change

The FRS data are weighted to adjust for differential non-response to the survey. These weights are calculated such that, in the weighted data, the number of people or households with certain characteristics matches a set of control totals for the population.<sup>10</sup> To take account of expected changes in these control totals when projecting poverty in future years (e.g. changes in the number of lone parents), we reweight the data so that, in the newly weighted data, the number of people or households with certain characteristics matches a set of projected control totals for the future population. In combination

<sup>8</sup> This means that unlike the relative poverty line (which depends on the level of median income), it only changes in line with price inflation as measured by the Retail Prices Index, and so represents the same absolute living standards in each year.

<sup>9</sup> See HM Revenue and Customs (2011a). The main differences between the HBAI measure and the HMRC measure of child poverty other than the source of the data are that the HMRC definition does not pick up children in families who do not claim either tax credits or out-of-work benefits, non-taxable income sources (other than tax credits) are not included in the income measure and the HMRC measure assumes that all families on out-of-work benefits are in poverty.

<sup>10</sup> See Department for Work and Pensions (2005).

with the uprating of financial variables described below, this enables us to produce ‘synthetic’ populations for future years.

The full set of characteristics we use to form our control totals is given in Table 3.1. The sources of the population and household control totals that we use for future years are Office for National Statistics (2011, 2012),<sup>11</sup> Northern Ireland Statistics and Research Agency (2010), Department for Communities and Local Government (2012), Welsh Assembly Government (2011) and General Register Office for Scotland (2010). We control for changes in total employment using forecasts from the Office for Budget Responsibility (2012b). Within that forecast, changes in employment are allowed to vary by constituent nation and English region, and by industry, according to forecasts provided by Oxford Economics. This allows us to produce projections of poverty at the level of the nations.

**Table 3.1: Control totals used to derive grossing weights**

<i>Dimension</i>	<i>Categories</i>
Total population	Constituent nation and English region
Households	Household type, constituent nation and English region
Age and gender (jointly)	Males and females split into the following age categories: 0–9, 10–15, 16–19 (dependent child), 16–19 (non-dependent), 20–24, 25–29, 30–44, 45–59, 60+
Employment	Industry, constituent nation and English region
Ethnicity	Asian (Great Britain only)

The weights are calculated using the algorithm set out in Gomulka (1992), which we have implemented in Stata using the command ‘*reweight2*’.<sup>12</sup> This is the same method that was used in Brewer *et al.* (2009) and Brewer, Browne and Joyce (2011), and is subject to the same limitations as outlined in those papers, reproduced below:

The re-weighting method simply controls for characteristics in a few dimensions, leaving joint distributions uncontrolled (for example, typically we can get the number of lone parents and the number of children in each age group to match control totals, but the ages of children in lone-parent families are not directly controlled for). Other relevant dimensions, on which we have inadequate information for predictions, are entirely uncontrolled (for example, receipt of child support or hours of work). Furthermore, with a given sample size the number of dimensions that can be controlled for at once is limited. If the number of constraints becomes large it can become impossible to satisfy them, or some households have extremely high weights, making the policy simulation results unstable.

Finally, the greater the difference between the world represented by the FRS data and the world that the re-weighting using projected control totals attempts to sketch out, the more difficult it is to find weights to satisfy many controls simultaneously.

<sup>11</sup> Note that these population projections are for the UK as a whole, whereas the Family Resources Survey on which official poverty statistics are based is a survey of the household population only. We therefore adjust the official population projections downwards to account for non-household membership, by assuming that the rate of non-household membership in each region remains the same as it was in 2010–11.

<sup>12</sup> Browne (2012).

## Uprating financial variables

We uprate the financial variables in our 2010–11 ‘base data’ to their projected levels in future years. We use actual out-turns from 2010–11 to the present, as measured by the Office for National Statistics. Thereafter we use forecasts of average earnings, the Retail Prices Index (RPI), and nominal GDP from the Office for Budget Responsibility (OBR) forecasts published alongside the Autumn Statement 2012 and the Fiscal Sustainability Report published in July 2012.<sup>13</sup> Most of these forecasts were updated in the OBR’s Economic and Fiscal Outlook published alongside Budget 2013, but these are not incorporated in our analysis. Updated projections taking these revised forecasts into account will be published in Summer 2013.

The assumptions used to uprate financial variables are outlined in Table 3.2.

Table 3.2: Uprating assumptions

<i>Rule</i>	<i>What it’s used to uprate</i>
In line with RPI	Scholarship income Income from government training schemes Allowances paid other than from spouse Council Tax
In line with nominal earnings	Water and sewerage rates Private pensions income Employment income Self-employment income Maintenance payments Allowances from absent spouse
In line with nominal GDP	Imputed capital from savings, annuities, property, stocks and shares, and bonds

- We also need to make an assumption about interest rates, as these affect income from savings and investments.<sup>14</sup> We assume that the average interest rate received by households on their savings increases in line with the OBR’s forecast of changes to Bank of England’s base rate until 2016–17, and stays constant at 5% thereafter.
- When projecting poverty in 2020–21 (beyond the OBR’s usual forecast horizon), we are mostly able to uprate the relevant financial variables according to the financial year forecasts provided in their *Fiscal Sustainability Report*. In the case of earnings, substantial revisions to forecast average earnings since the publication of the report make that unsuitable. Instead we assume that nominal average earnings growth rises from 4.0% in 2017–18 towards its long-run level of 4.4%, with earnings growth of 4.2% in 2018–19 and 2019–20 and 4.3% in 2020–21. Within these forecasts for the trajectory of average earnings, we allow earnings growth to vary by industry, according to forecasts provided by Oxford Economics. This allows us to more robustly produce poverty projections at the level of constituent nations, as the different labour market compositions of each nation are reflected in different forecasts for earnings growth.

## Simulating future tax liabilities and benefit and tax credit receipts

Using the IFS tax and benefit microsimulation model, TAXBEN, we can calculate the benefits and tax credits individuals and households are entitled to, and the taxes they are liable to pay, under hypothetical

<sup>13</sup> Office for Budget Responsibility (2012a, 2012b). See Table D.3 for the OBR forecasts used.

<sup>14</sup> The effect on poverty of assumptions regarding savings and investment income will have a negligible effect on poverty, because few individuals in the bottom half of the income distribution have much investment income.

tax and benefit systems. Hence, using the current default rules for annually uprating tax thresholds and benefit and tax credit amounts, and taking account of direct tax and benefit reforms that were announced in and before the Autumn Statement 2012, we can simulate net household incomes in future years according to what the tax and benefit system will look like in those future years under current policies.<sup>15</sup> Note that we do not include policies announced in Budget 2013 in this analysis: updated projections that include these measures will be produced in Summer 2013. The most significant pre-announced reform, the introduction of Universal Credit, will take place over a number of years from October 2013 onwards. We explicitly model both this gradual migration and the transitional protection that applies (see Appendix D for details).

Once we have calculated tax liabilities and benefit and tax credit entitlements, an adjustment needs to be made to account for the fact that not everyone who is entitled to benefits and tax credits will claim them. Some households may be unaware of their entitlement, or find it too time-consuming to claim, or find claiming means-tested benefits stigmatising, or dislike the uncertainty around over- or under-payments that surrounds tax credit receipt. We could use take-up rates based on administrative data to withdraw means-tested benefits and tax credits randomly from the appropriate fraction of eligible recipients. However, estimates of the take-up rates of benefits and tax credits from the FRS tend to be *lower* than those based on administrative data, even when allowance is made for the less-than-full coverage of the FRS (i.e. it omits people not in private households).<sup>16</sup> This suggests that there is misreporting of means-tested benefit and tax credit income in the FRS (specifically, under-reporting).<sup>17</sup> Since we are forecasting poverty as it is officially measured (i.e. using the FRS), we want to account for this.

Having obtained our simulated net incomes from TAXBEN, we therefore do the following. If someone is eligible for a benefit or tax credit in the 2010–11 base data, as simulated by TAXBEN, but they did not report receiving it in the FRS, then we assume that they will still not report taking up the benefit or tax credit in future years. (The implicit assumption is that the accuracy with which the FRS records benefit and tax credit receipt remains constant.) For those who were not eligible in the base data but are simulated by TAXBEN as becoming eligible in future years, we instead use administrative data on the take-up rates of different benefits and tax credits, disaggregated by various subgroups. We randomise take-up among these people, with the probability of take-up being equal to the caseload take-up rate from administrative data for that benefit or tax credit for the relevant subgroup.<sup>18</sup>

When modelling take-up of Universal Credit, we assume that anyone claiming a means-tested benefit in the base data will claim Universal Credit if they are eligible. This has the effect of characterising the introduction of Universal Credit as a substantial giveaway to those households currently claiming some means-tested benefits but not others, since they receive their full Universal Credit entitlement rather than just the element corresponding to a particular benefit. This increase in take-up is important in explaining why, despite the fact that Universal Credit will not increase entitlements overall (see Browne and Roantree (2013)), we project it will act to reduce poverty. For those who we predict will be entitled to Universal Credit but were not entitled to any means-tested benefits and tax credits in 2010–11, we assume that the take-up rate is the same as it currently is for the family element of the Child Tax Credit for those with children, and the same as for Working Tax Credit for those without children. We assume that those who do not take up any of their means-tested benefit entitlements continue to not claim Universal Credit.

The poor are more likely to be eligible for substantial amounts of such benefits, so one might expect that they lose the most from lower take-up. Hence, absolute poverty projections will tend to be biased

<sup>15</sup> Table D.2 provides a complete list of the default indexation rules.

<sup>16</sup> See appendix C in Brewer *et al.* (2008).

<sup>17</sup> This helps to explain the discrepancies between official poverty statistics and those produced by HMRC, which are based on administrative data. See HM Revenue and Customs (2011a).

<sup>18</sup> See Department for Work and Pensions (2012) and HM Revenue and Customs (2011b).

upwards if take-up is under-estimated, and vice versa. For relative poverty projections, the direction of bias from under- or over-estimating take-up is ambiguous because those with the lowest entitlements may be the most likely not to claim, and these are more likely to be households with an income around the median. Hence, lower take-up can in principle reduce relative poverty by reducing the median income (and hence the poverty line) by more than it reduces the incomes of low-income families.

For the benefit of analysts and modellers (or anyone interested in the extent to which non-take-up hinders efforts to reduce poverty), we provide the results obtained (for 2015–16) under a full-take-up scenario in Appendix C.

## Creating HBAI incomes

Finally, we need to create a measure of disposable income that is as close as possible to that used when calculating official poverty statistics (the precise definition is given in Department of Social Development (2013)). To construct something broadly equivalent to this, we add together various sources of private (i.e. pre-transfer) income, subtract estimated tax liabilities, add estimated receipt of benefits and tax credits, and then subtract various ‘deductions’ from income.<sup>19</sup> Data on the deductions are partly derived from outputs from TAXBEN (e.g. Council Tax) and partly taken from the official HBAI data set (because this is based on the FRS, we are able to merge the official HBAI data set with the data set produced by TAXBEN). We assume that this latter set of deductions (pension contributions, housing costs, child support paid for non-resident children, and financial support given by parents to children who are students living away from home) increase over time in line with average earnings. We can then create a measure of household equivalised income, by summing this final measure of disposable income across all members of a household and multiplying by various factors to take account of household size and structure according to the modified OECD equivalence scale.<sup>20</sup>

However, as noted in Brewer *et al.* (2009), the income distribution simulated by TAXBEN is not identical to the income distribution measured officially by HBAI, even though both use the same underlying FRS data. This is likely to be because while TAXBEN estimates tax liabilities and benefit and tax credit entitlements on the basis of relevant characteristics as recorded in the FRS, the HBAI series uses self-reported figures for taxes paid and benefits and tax credits received. Any differences between estimates from TAXBEN and the self-reported figures that remain after adjusting for non-take-up will therefore lead to discrepancies. With no kind of adjustment to account for this, it is therefore likely that projections of future income distributions using TAXBEN would not accord with the actual income distribution in those future years as measured by HBAI (even if all our assumptions about policy, demographics and the macroeconomy turned out to be correct).

To account for these discrepancies, we check our TAXBEN-simulated incomes for each household in our 2010–11 base data against the 2010–11 HBAI-measured income for that household. We derive an additive correction term for each household such that, after the correction is applied, its 2010–11 TAXBEN-simulated income is identical to the income recorded in HBAI. We then use the same real-terms corrections for each household when projecting poverty in future years. Clearly, the extent to which TAXBEN-simulated and HBAI-measured incomes differ may not stay constant in real terms over time – it is likely, for example, that the discrepancy is a complicated function of the tax and benefit system and/or levels of earnings. But it is not clear what direction of bias (if any) this would lead to, in terms of projecting poverty rates, and it is highly likely that making an adjustment based on the discrepancy in the base year enables more accurate projections than making no adjustment at all. For the benefit of analysts and modellers, we provide the results obtained (for 2015–16) without applying any such correction in Appendix C.

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<sup>19</sup> See Table D.4 for further details.

<sup>20</sup> See Appendix 2 of Department of Social Development (2013) for details of this equivalence scale.

## 3.2 Uncertainties and limitations

These projections are necessarily subject to a number of uncertainties and limitations. First, there is naturally considerable uncertainty surrounding any demographic or macroeconomic forecasts such as those we make use of in producing these poverty projections. The current macroeconomic situation suggests that the degree of uncertainty surrounding some assumptions (such as employment rates and real earnings growth) is greater than normal. No projections can be immune from these uncertainties, although we do quantify the sensitivity of our results to key macroeconomic assumptions (see Chapter 5).

Second, as always with survey data, there is likely to be sampling error in the FRS from year to year. This is particularly important when considering our projections for poverty at the level of constituent nations; while there are over 25,000 households in the FRS as a whole, our Scotland projections are based on 4,116 households and our Northern Ireland projections on 1,888. It is important to note that sampling variation will affect not only the base data underlying our projections, but the future HBAI measures of poverty we are trying to project. 2010–11 provided a clear example of this kind of difficulty: an improvement in the FRS's ability to pick up benefit and tax credit income among families with children seems to have played a role in causing absolute child poverty to stay constant in 2010–11, rather than increasing as we had previously projected.<sup>21</sup> This was surprising given that the FRS had previously been getting worse rather than better at recording tax credit expenditure over time. As there is no clearly discernible trend in the amount of benefit and tax credit expenditure recorded by the FRS, we do not assume that the FRS gets any better or worse at recording benefit and tax credit expenditure in our projections for future years.

Third, with the techniques employed here, we cannot directly account for behavioural responses to direct tax and benefit reforms (although we indirectly account for some such responses if they are already incorporated in the official forecasts of variables such as employment and demographics that we make use of). Relevant kinds of behavioural responses include labour supply changes or fertility changes as a result of different state support for families with children (see Brewer, Ratcliffe and Smith (2011)).

Finally, our projections may turn out to differ from actual poverty rates because of new policies that are announced. The exercise here is not to predict future policy changes, but to produce our best estimate of what would happen if policy did not change.

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<sup>21</sup> See Cribb, Joyce and Phillips (2012) and Brewer, Browne and Joyce (2011).

## CHAPTER 4

### Results

In this chapter, we first outline our poverty projections under current policies (Sections 4.1–4.3) and then isolate the impact of tax and benefit reforms implemented during this parliament on these projections (Section 4.4).

Throughout, we present results for both absolute and relative poverty measures. Absolute poverty is defined as having a household income of less than 60% of the 2010–11 median, and relative poverty as having a household income of less than 60% of the contemporary median. These are the measures defined in the Child Poverty Act (2010). Currently, the absolute poverty line is uprated according to the Retail Prices Index (RPI) in order to keep it constant in real terms. However, it is widely believed the RPI systematically overstates the inflation faced by households, as a result of deficiencies in the formula used for calculation.<sup>22</sup> In addition, it has been shown that this problem has been exacerbated by changes to the methodology in 2010, and so the RPI's overstatement of inflation is likely to be more significant going forwards than it was in the past.<sup>23</sup> This would imply that the official statistics will underestimate real income growth going forwards and overstate increases (and understate falls) in absolute poverty. A further discussion of the effects of using the RPI to uprate the absolute poverty line can be found in Section 4.3.

We report results with household incomes measured before and after housing costs have been deducted (BHC and AHC). Throughout the chapter we report poverty levels as the percentage of the relevant population below a given poverty line, and changes in those levels as percentage point differences. This facilitates comparison between our projections for Northern Ireland and the rest of the UK. Our projections for the numbers of different groups in poverty in the UK, and for the path of median income, can be found in Appendix A. All years are financial years, because the Family Resources Survey (the survey of household incomes on which official poverty statistics are based) covers financial years; thus '2009' refers to 2009–10 etc.

#### 4.1 The path of poverty to 2013

The period from 2010 to 2013 is dominated by large falls in income right across the income distribution. Median income is projected to have fallen by 2.6% in 2011, with further slight falls in 2012 and 2013.

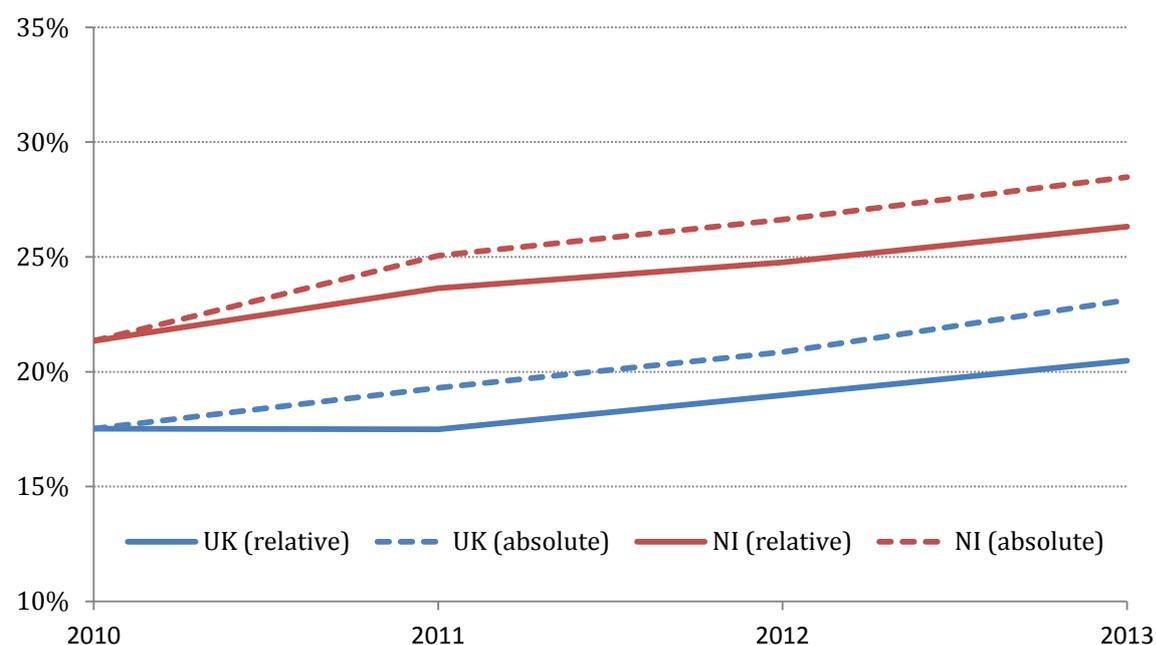
Figures 4.1 and 4.2 show our projections for child poverty respectively through to 2013 under current policies. Some of our key results are as follows (all figures are for incomes measured BHC, similar figures for incomes measured AHC are available in Appendix A):

- We project that both relative and absolute child poverty in Northern Ireland will increase significantly over the period. Relative child poverty is expected to rise by 5.0ppts between 2010 and 2013, and absolute child poverty is expected to rise by 7.1ppts across the same period. The fact that absolute poverty is projected to rise by more than relative poverty can be explained by our projections for median income; falling median incomes mean the relative poverty line is below the absolute poverty line throughout.
- At the UK level, we estimate that relative child poverty in the UK stayed flat in 2011, before rising in 2012 and 2013. Our UK projections are for relative child poverty to increase from 17.5% in 2010 to 20.5% in 2013, and for absolute child poverty to rise by 5.6ppts across the period.

<sup>22</sup> See Levell (2012).

<sup>23</sup> See Miller (2011).

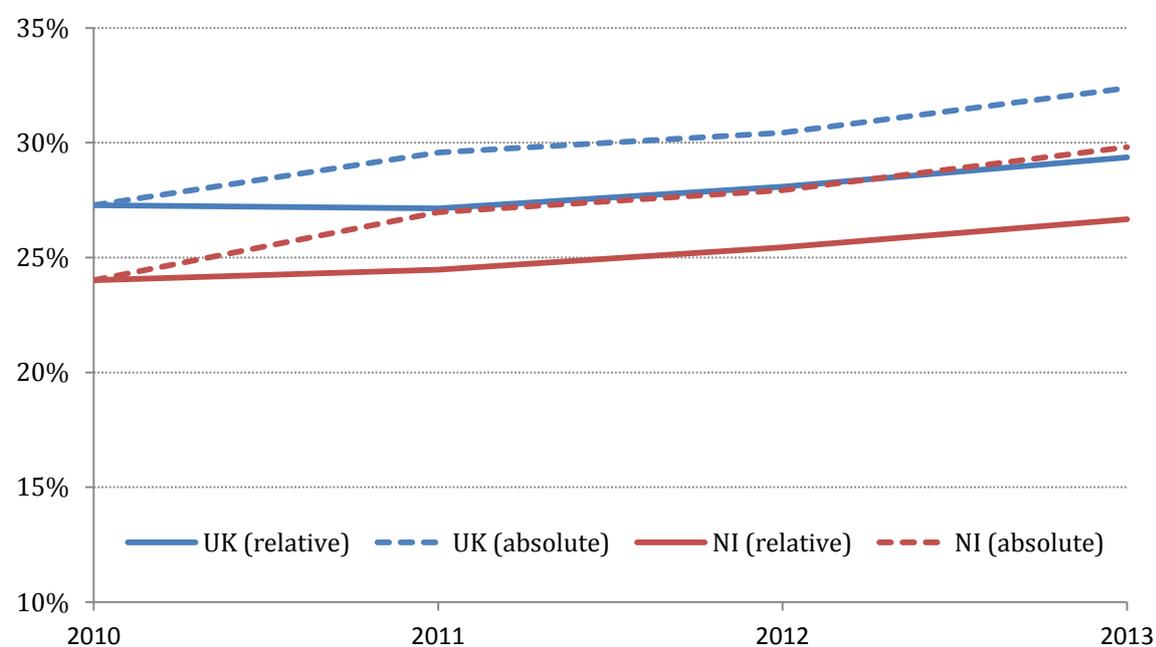
Figure 4.1 BHC child poverty to 2013 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured before housing costs (BHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

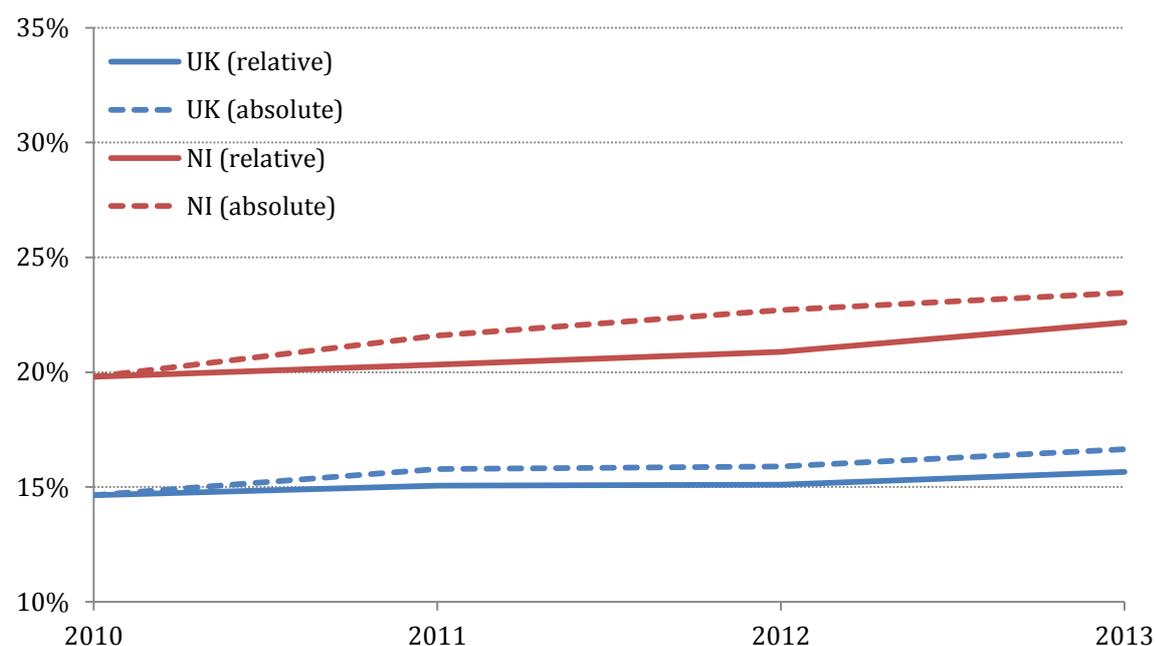
Figure 4.2 AHC child poverty to 2013 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured after housing costs (AHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

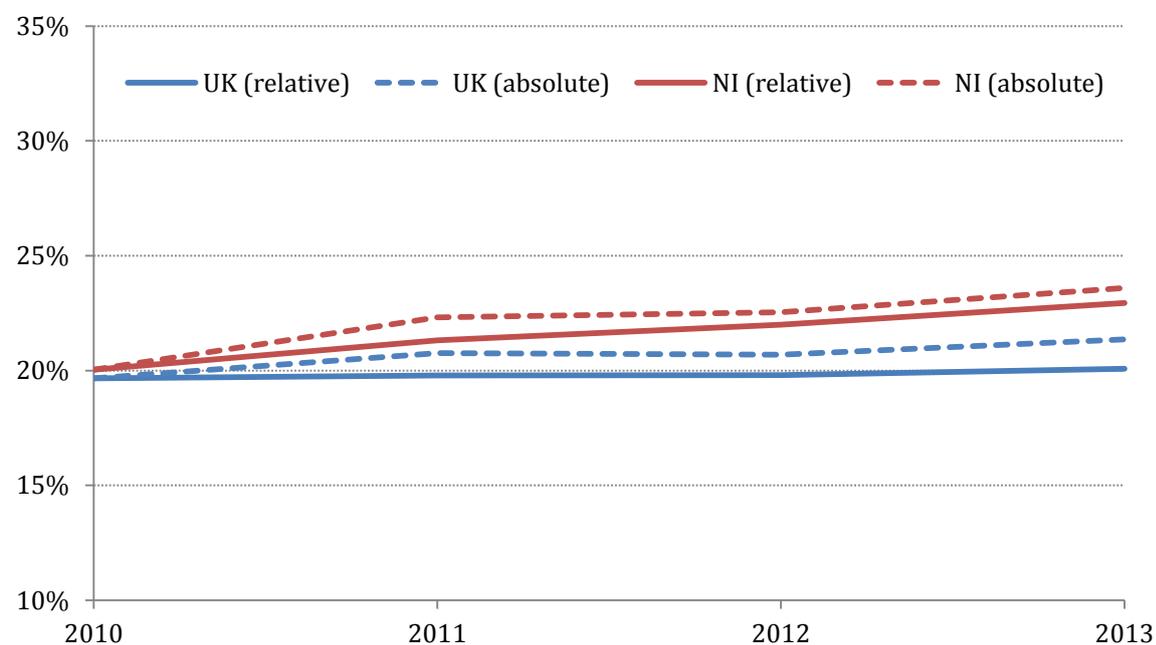
Figure 4.3 BHC working-age non-parent poverty to 2013 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured before housing costs (BHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Figure 4.4 AHC working-age non-parent poverty to 2013 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured after housing costs (AHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

The clear large projected increases in absolute child poverty between 2010 and 2013 are unsurprising. Both earnings and benefit income are expected to fall in real terms across the period (or, at least, increase in nominal terms by less than RPI inflation). Since these are the two major components of household incomes, it is unsurprising that we expect the incomes of a growing number of households with children to fall below a fixed poverty line. Relative child poverty is also forecast to increase as the incomes of low-income households with children are projected to fall more quickly than median incomes. This is mainly the result of the cuts to benefits being introduced over this period. Note, though, that this is the opposite pattern to the one already observed during and immediately after the recession, when relative child poverty fell as benefits outpaced earnings. Nevertheless, our projections suggest that relative child poverty will still be below its 2008–09 level in 2013–14.

Why do we project that child poverty will rise faster in Northern Ireland than in the UK? One potential explanation is that benefits and tax credits make up a larger share of household income for low-income households in Northern Ireland relative to those in the rest of the UK. All else equal, fiscal consolidation will therefore naturally have a larger effect on the incomes of families with children in Northern Ireland.

Figures 4.3 and 4.4 show our projections for working-age non-parent (WANP) poverty through to 2013. Some of our key results are as follows:

- Among working-age non-parents in Northern Ireland, we project that relative poverty will have increased by 2.4ppts, and absolute poverty have increased by 3.6ppts between 2010 and 2013.
- Similarly, we estimate that relative and absolute WANP poverty in the UK rose in 2011, will stay roughly constant in 2012, and rise again in 2013. Our projections are for relative WANP poverty to increase by 1.0ppts between 2010 and 2013 and for absolute WANP poverty to increase by 2.0ppts across the period.

The broad picture for WANP poverty to 2013 is similar to that for child poverty, with both absolute and relative poverty rising across the period, albeit at a somewhat slower rate. This similarity masks the very different relationships between recent trends and our projections in the two cases. Our projections for WANP poverty are simply for the current upward path of poverty among this group to continue, whereas with child poverty our projections imply that 2010 was a turning point, after which much of the progress towards the targets in the Child Poverty Act will be unwound.

## 4.2 The effect of Universal Credit on poverty between 2014 and 2016

Incomes are projected to stabilise between 2014 and 2016, with median income growth of 0.3% in 2015 and 0.1% in 2016. Figures 4.5 and 4.6 show our projections for child poverty from 2010 to 2016, with incomes measured BHC and AHC respectively. Some of the key results are as follows (all figures are for incomes measured BHC, similar figures for incomes measured AHC are available in Appendix A):

- We project that relative child poverty in Northern Ireland will continue its rise in 2014 and 2015 before stabilising in 2016. The rate of increase projected between 2013 and 2016 is much slower than that between 2010 and 2013; relative child poverty is projected to increase by 1.6ppts from 2013 to 2016, compared with 5ppts between 2010 and 2013. Absolute child poverty in Northern Ireland is projected to increase by 0.9ppts across the period.
- We project a similar path for relative child poverty in the UK. Relative child poverty is projected to increase by 1.1ppts from 2013 to 2016, with absolute child poverty expected to increase by 0.9ppts. Again, the projected increases are substantially smaller than between 2010 and 2013.
- We project that the median income will be almost exactly the same in 2016 as it is in 2013. Therefore, the relative poverty line does not move substantially in real terms throughout the period, explaining the similarity between changes in absolute and relative poverty in the UK.

Figures 4.7 and 4.8 show our projections for working-age non-parent (WANP) poverty from 2010 to 2016. Some of the key results are as follows:

- WANP poverty in Northern Ireland is projected to increase substantially between 2013 and 2016, with relative WANP poverty increasing by 2.8ppts and absolute WANP poverty by 2.3ppts.
- This is in contrast to our projections for WANP poverty in the UK. We project relative and absolute WANP poverty to rise again in 2014, but then to stay flat in 2015 and 2016, with total rises across the period of only 0.4 and 0.6ppts respectively.

Part of the explanation for the slower increases projected in relative poverty among the two groups is the introduction of Universal Credit from 2014. This is illustrated in Figures 4.9 and 4.10, which show the effect of Universal Credit on relative BHC poverty among children and WANPs respectively. The effects we capture here are those on entitlements and take-up rates, not on behaviour: changes in labour supply behaviour resulting from the introduction of Universal Credit may reduce poverty further.<sup>24</sup> In each case the central solid line is our actual projection, the dotted line is our projection of what poverty would have been without Universal Credit, and the dashed line is our projection of poverty if all working-age families were immediately transferred to Universal Credit without transitional protection. The gap between the dotted and the dashed lines can therefore be thought of as the long-run impact of Universal Credit on poverty. Some of the key results are as follows:

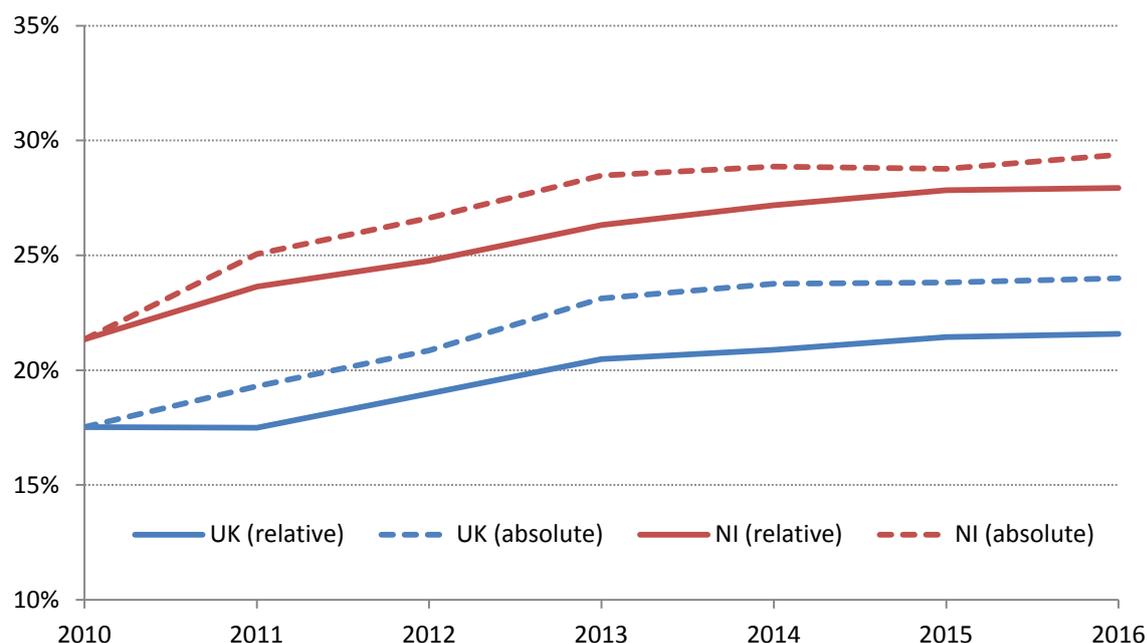
- Universal Credit is projected to reduce relative poverty among both children and WANPs in Northern Ireland. We project that by 2016, relative child poverty in Northern Ireland will be 1.5ppts lower than it would have been had Universal Credit not been introduced. Relative WANP poverty is projected to be 1.2ppts lower in Northern Ireland than it would have been without Universal Credit by 2016.
- The projected effect of Universal Credit on relative child poverty in the UK is much larger. By 2016, we project that relative child poverty will be 2.2ppts lower than it would have been in a world with no Universal Credit. The long-run effect of Universal Credit on relative child poverty in the UK is estimated to be a reduction of 2.7ppts. Relative WANP poverty in the UK is expected to be 0.7ppts lower in 2016 than it would have been had Universal Credit not been introduced, the same as the estimated long-run impact.

The effect of Universal Credit on our poverty projections illustrates how sensitive poverty is to the take-up rates of means-tested benefits. Despite having a negligible effect on benefit entitlements,<sup>25</sup> Universal Credit is projected to reduce income poverty rates among both children and working-age adults because take-up of means-tested support is expected to rise following the introduction of Universal Credit as a result of the integrated nature of the programme. Projections for poverty under the assumption of full take-up of benefits and tax credits are presented in Appendix C.

<sup>24</sup> See Appendix D for further details of our modelling of Universal Credit.

<sup>25</sup> See Browne and Roantree (2013).

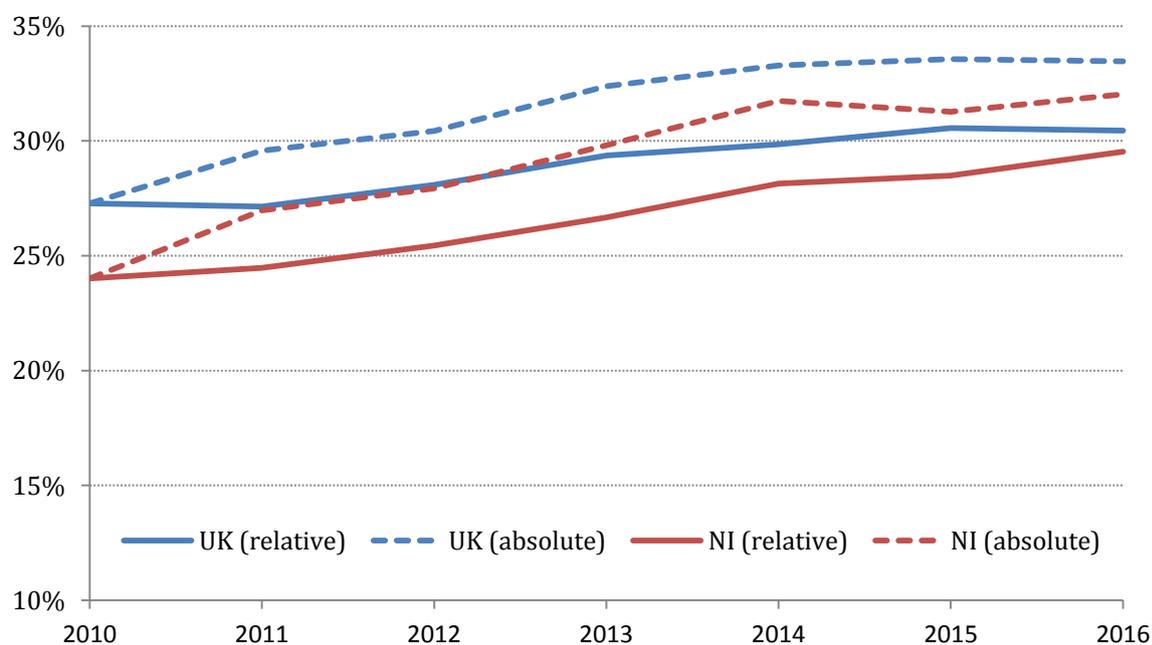
Figure 4.5 BHC child poverty to 2016 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured before housing costs (BHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

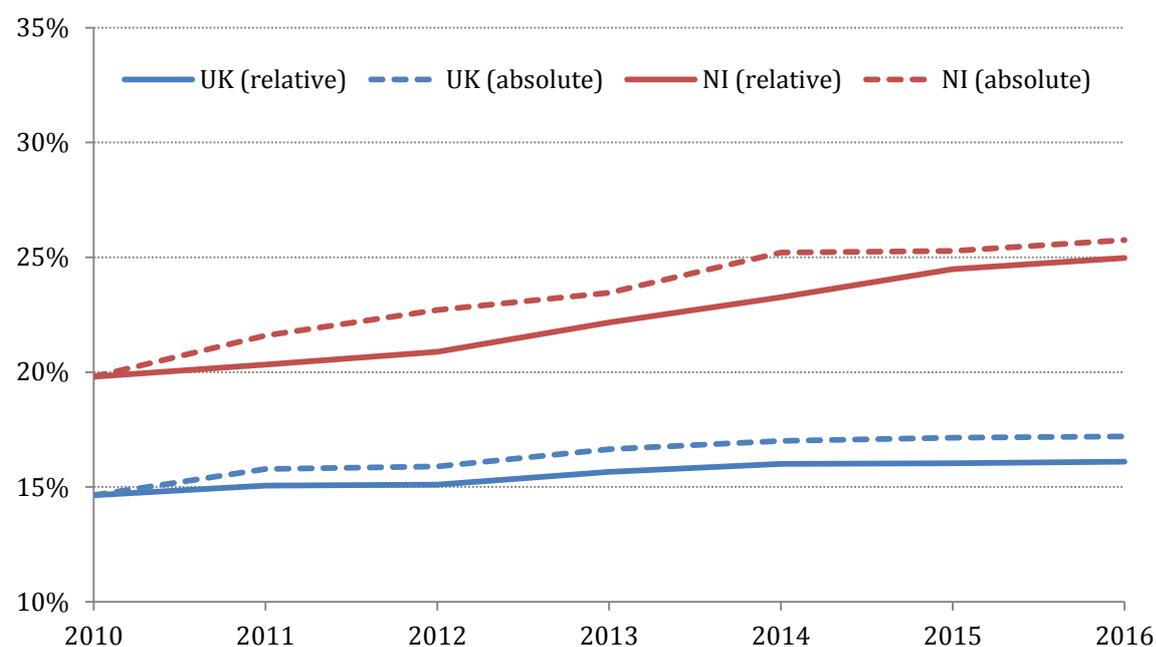
Figure 4.6 AHC child poverty to 2016 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured after housing costs (AHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

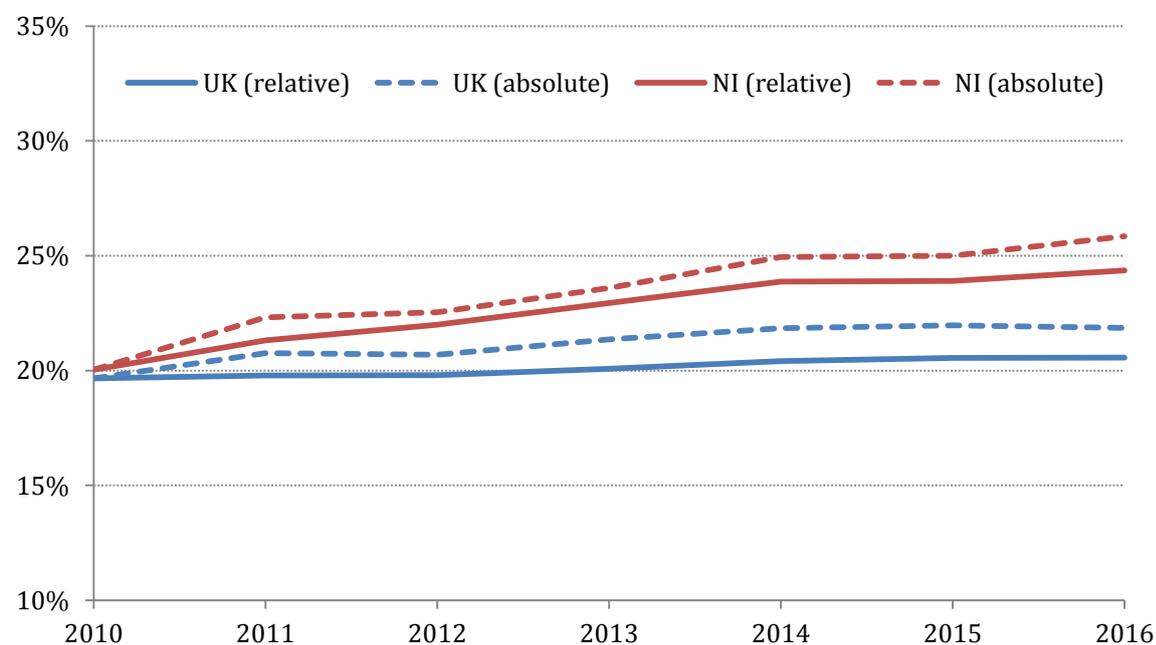
Figure 4.7 BHC working-age non-parent poverty to 2016 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured before housing costs (BHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

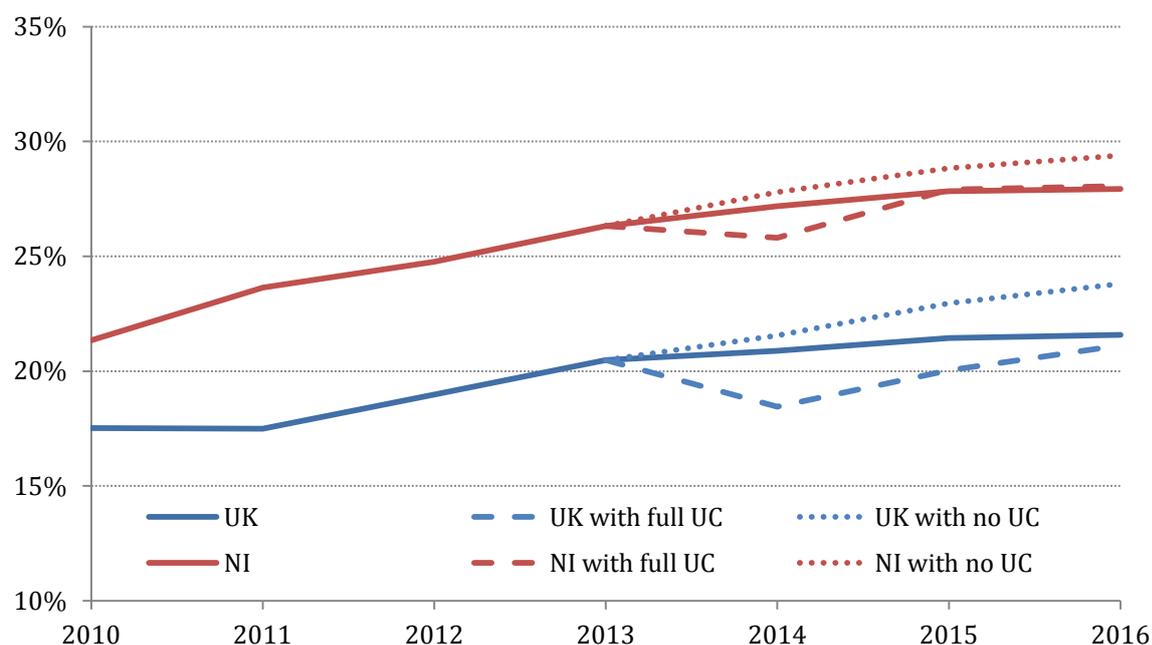
Figure 4.8 AHC working-age non-parent poverty to 2016 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured after housing costs (AHC). Years refer to financial years.

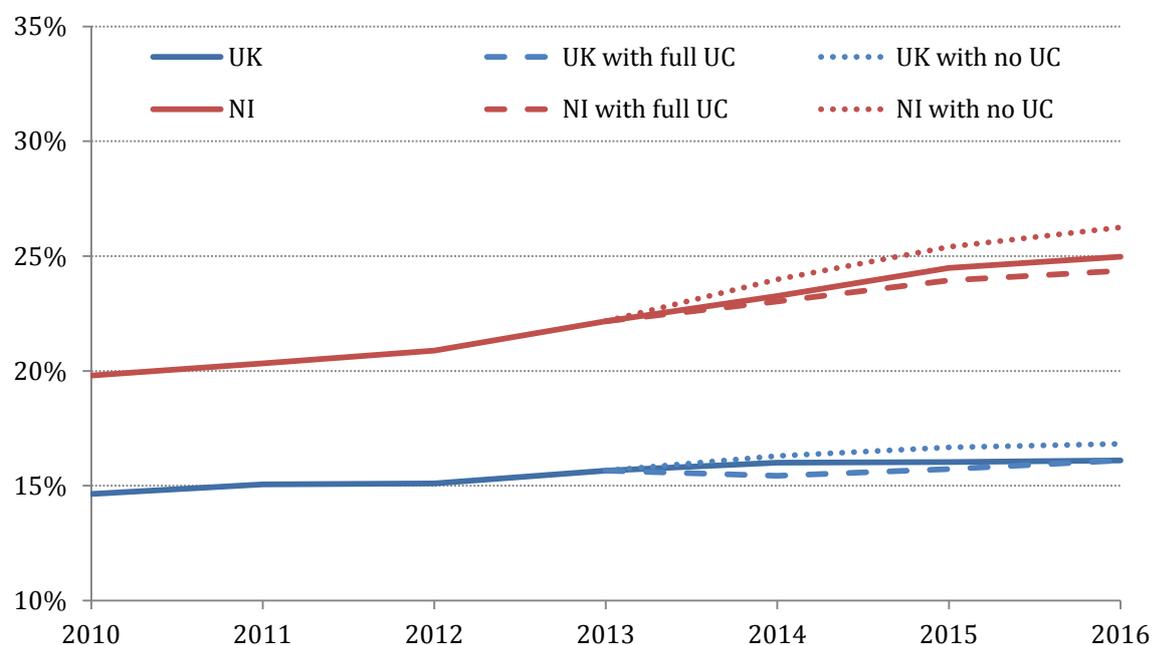
Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Figure 4.9 The effect of Universal Credit on BHC child poverty (UK and Northern Ireland)



Notes: Poverty line is 60% of median before-housing-costs (BHC) income. Years refer to financial years.  
 Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Figure 4.10 The effect of Universal Credit on BHC WANP poverty (UK and Northern Ireland)



Notes: Poverty line is 60% of median after-housing-costs (AHC) income. Years refer to financial years.  
 Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

### 4.3 Poverty in 2020

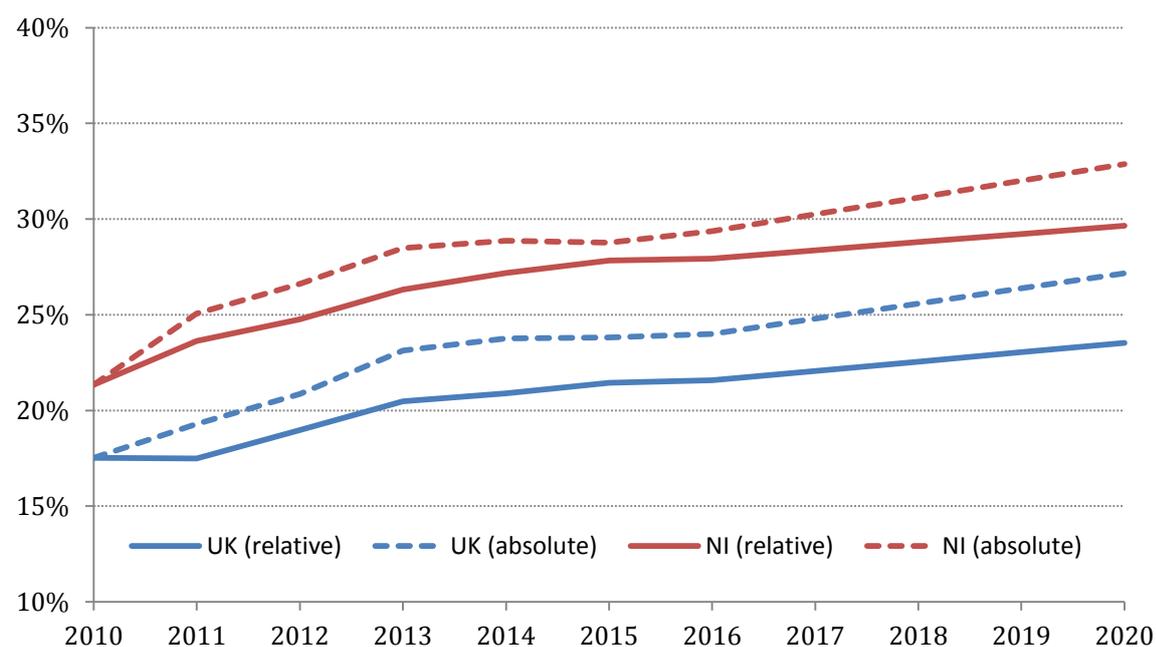
In addition to projecting poverty in each year between 2011 and 2016, we also project poverty in 2020, the year that the targets in the Child Poverty Act relate to. Clearly, the uncertainty surrounding our projections increases as we look further into the future, particularly with regard to the macroeconomic forecasts that underpin our projections. Therefore, even more than with the previous results, these should not be seen as precise forecasts of incomes and poverty rates in 2020. Rather, their purpose is to give a sense of the likely long-run trends in income poverty as the economy returns to normal.

Figures 4.11 to 4.14 present our projections for child and working-age non-parent poverty from 2010 through to 2020. Some of the key results are as follows (all figures are for incomes measured BHC, similar figures for incomes measured AHC are available in Appendix A):

- Between 2016 and 2020, we project that child poverty in Northern Ireland will continue to increase. Over the decade as a whole, we project that relative child poverty will increase by 8.3ppts and absolute child poverty by 11.5ppts.
- We project that median income in the UK will fall by 1% in real terms (relative to RPI inflation) between 2016 to 2020, ending the decade 4.5% below its 2010 level.
- Similarly, we project continued increases in child poverty in the UK between 2016 and 2020. The total projected rise across the decade is 6.0ppts, from 17.5% in 2010 to 23.5% in 2020. This implies a reversal of the reduction in child poverty using the relative low-income measure seen in the previous decade, as relative child poverty in the UK is projected to be higher in 2020 than it was in 2000. Between 2010 and 2020, we project a rise in absolute child poverty of 9.6ppts.
- We project that WANP poverty in Northern Ireland will also increase between 2016 and 2020, albeit at a slower rate than child poverty. Relative WANP poverty is projected to increase by 6.0ppts across the decade, while absolute poverty increases by 8.0ppts.
- These increases are much larger than those projected in UK WANP poverty; we expect relative WANP poverty in the UK to increase by 2.6ppts between 2010 and 2020, with absolute WANP poverty projected to increase by 4.0ppts across the decade.

The long-run trend towards higher rates of relative poverty among both children and working-age non-parents is expected. When the economy is growing in line with its long-run trend, earnings grow in real terms whereas benefits are increased in line with inflation each year. Under current indexation rules, then, in the absence of discretionary increases to benefit entitlements (such as were seen under the last Labour Government) households at the median will see their incomes rise faster than those of lower-income households, who receive a larger share of their income from benefits and a smaller share from earnings.

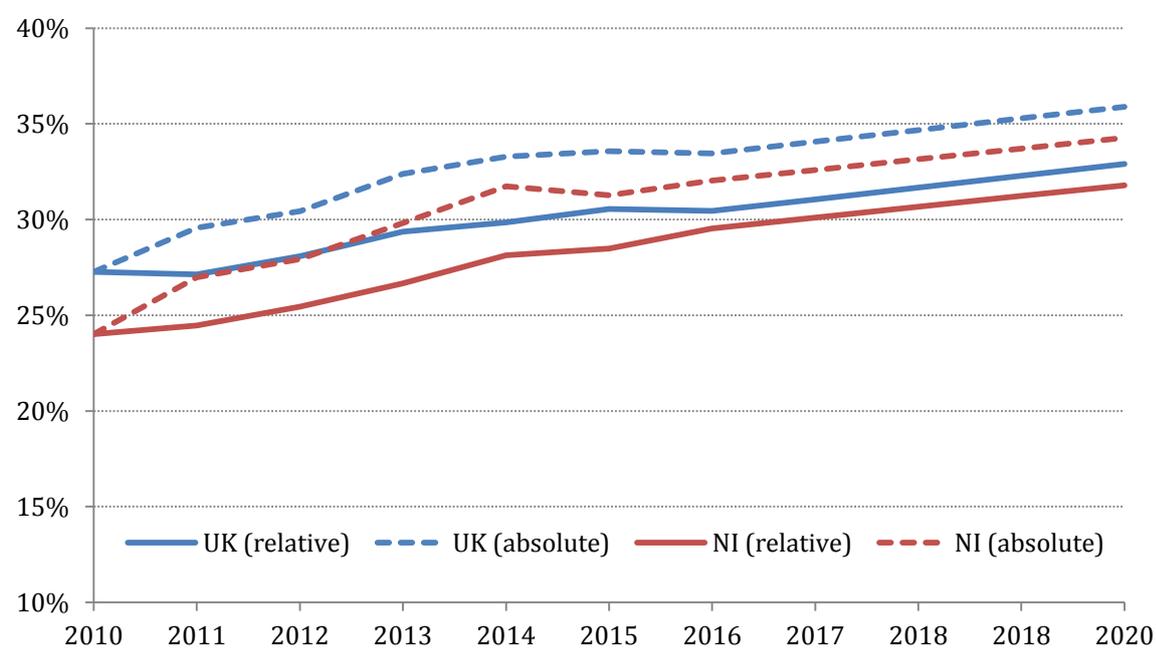
Figure 4.11 BHC child poverty to 2020 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured before housing costs (BHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

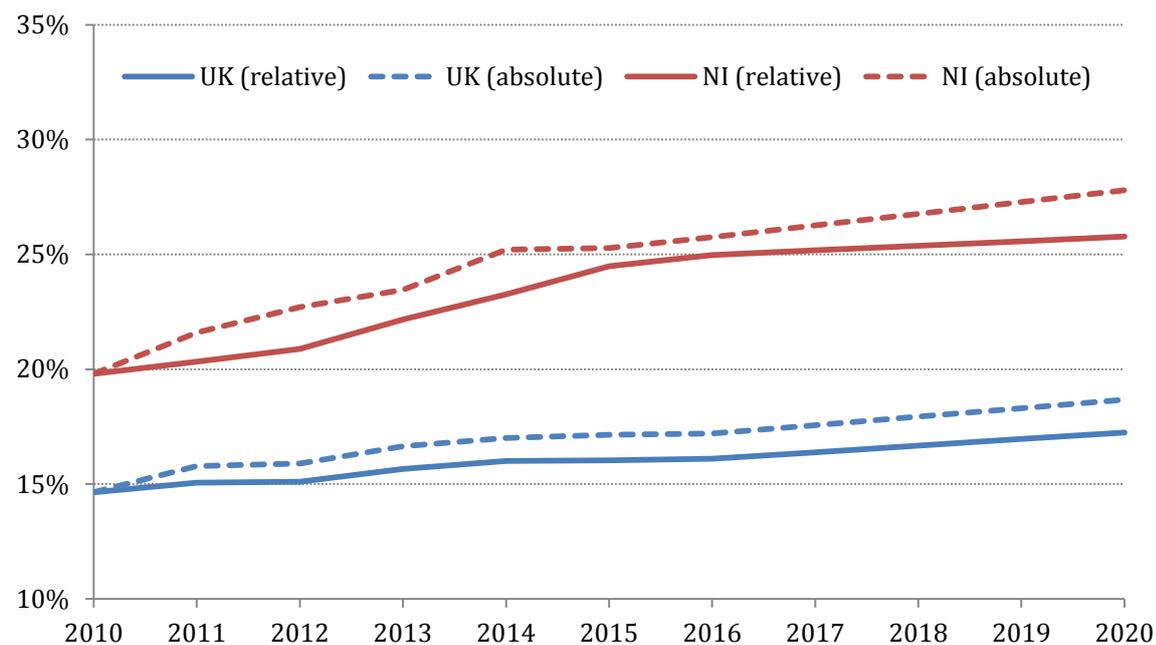
Figure 4.12 AHC child poverty to 2020 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured after housing costs (AHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

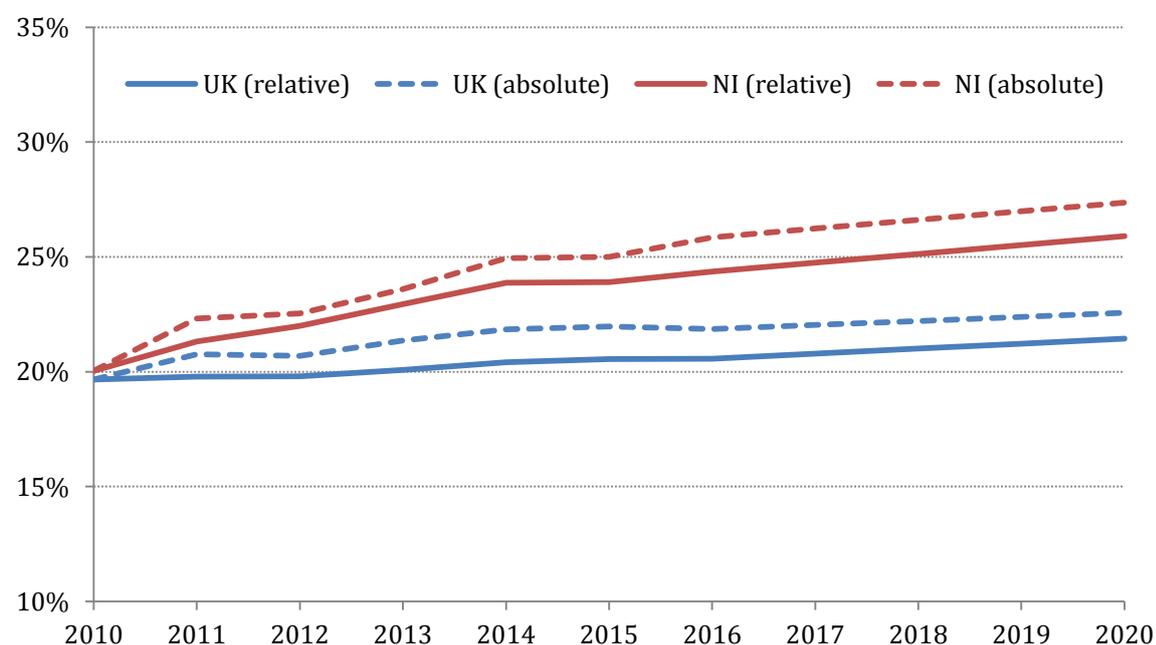
Figure 4.13 BHC working-age non-parent poverty to 2020 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured before housing costs (BHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Figure 4.14 AHC working-age non-parent poverty to 2020 (UK and Northern Ireland)



Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Incomes measured after housing costs (AHC). Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

What is unexpected is that median incomes should be projected to fall and rates of *absolute* poverty should be projected to increase between 2016 and 2020 despite relatively strong projected economic growth and no more austerity measures being introduced during this period. A large part of the explanation is the use of the Retail Prices Index (RPI) to deflate future incomes (to enable a real terms comparison of incomes between years). As discussed at the beginning of this chapter, it is generally agreed that the RPI overstates inflation, and that this has got worse following changes in the way clothing prices were sampled in 2010. According to the latest forecasts from the OBR, RPI inflation will be between 3.5% and 4% in each year from 2016 to 2020. As a result, any household that sees a nominal year on year increase in their income of less than the RPI inflation is considered worse off in real terms by the official income measure. Since working-age benefits are now uprated in line with the CPI inflation,<sup>26</sup> which is forecast to be 2% a year between 2016 and 2020, those households dependent on benefits for the majority of their income will almost certainly have falling real incomes according to the current measure. In fact, our projection is for a downward trend in the real median income relative to RPI inflation. This is the result of nominal earnings growth being forecast to be less than a percentage point higher than RPI inflation, combined with fiscal drag resulting from the CPI-indexation of tax thresholds.

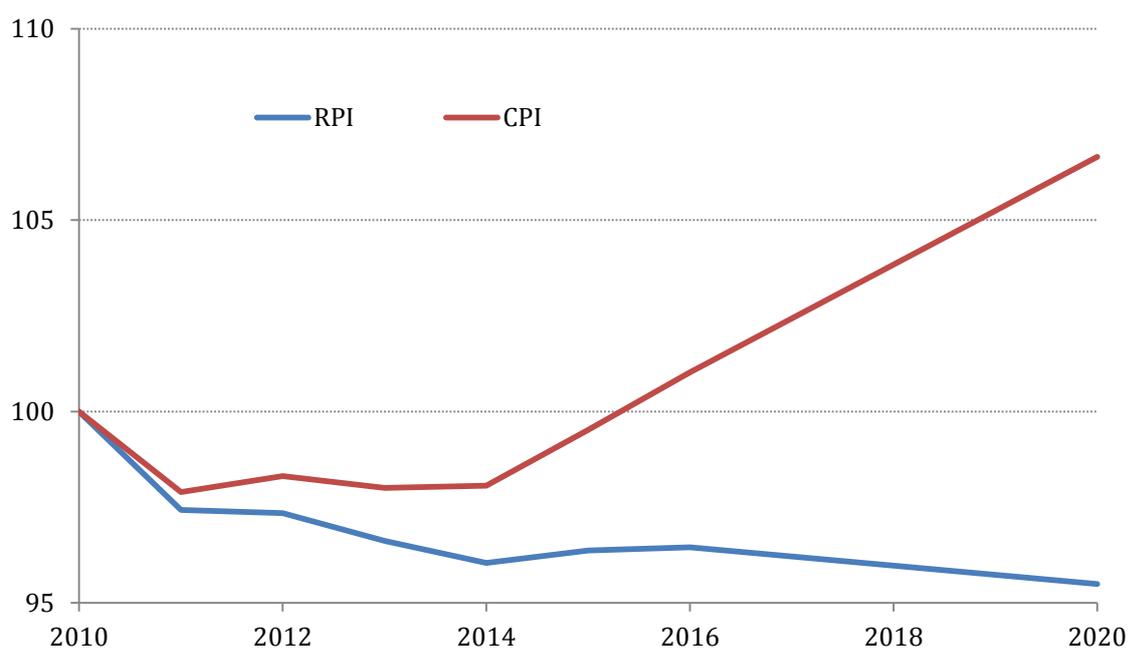
The choice of inflation measure used to compare household incomes over time makes a significant difference to our projections of median incomes and absolute poverty rates. To give a sense of this, we present a comparison of projected median incomes and absolute child poverty in the UK between 2010 and 2020 (Figures 4.15 and 4.16 respectively) according to the official measure (using the RPI as the measure of inflation), and a variant where the CPI is used to deflate incomes. Note that it would not be sensible to simply use the CPI in place of the RPI to deflate incomes, as it excludes certain important housing costs including mortgage interest payments, buildings insurance and property transaction costs (though it includes rents). The ONS will soon start producing two new measures of inflation: CPIH, which adds housing costs into the CPI; and RPIJ, which will use a different formula to compute average price changes and result in a measure more similar to CPI inflation. Either of these indices would probably be sensible replacements if the UK Government were to move away from using the RPI to deflate household incomes in the future. However, since forecasts for both of these indices are unavailable, we cannot produce projections based on either of these indices.

In terms of the effect this has on measured child poverty, when we use the RPI to deflate household incomes and uprate the absolute poverty line, the absolute poverty line is above the relative poverty line throughout the decade, and rises faster than the relative poverty line between 2016 and 2020. Hence we project that absolute poverty will be higher than relative poverty throughout the decade, and will rise by 3.2% between 2016 and 2020. However, when we use the CPI as our measure of inflation, real median income will grow by 5.5% between 2016 and 2020 and end the decade 6.6% above its 2010 level. Similarly, whereas the incomes of poorer households with children increase by less than RPI inflation in our projections throughout the period from 2010 to 2020, they increase more quickly than CPI inflation from 2014 onwards, leading to a significant decline in absolute child poverty when the CPI is used to uprate the absolute poverty line. The result is that while our projection for the official absolute low-income measure of child poverty is for a rise of around 10ppts across the decade, absolute child poverty will only be 1.7ppts higher in the variant where the CPI is used to uprate the absolute poverty line.

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<sup>26</sup> The default indexation before April 2011 was ROSSI uprating for most out of work benefits and RPI for the others.

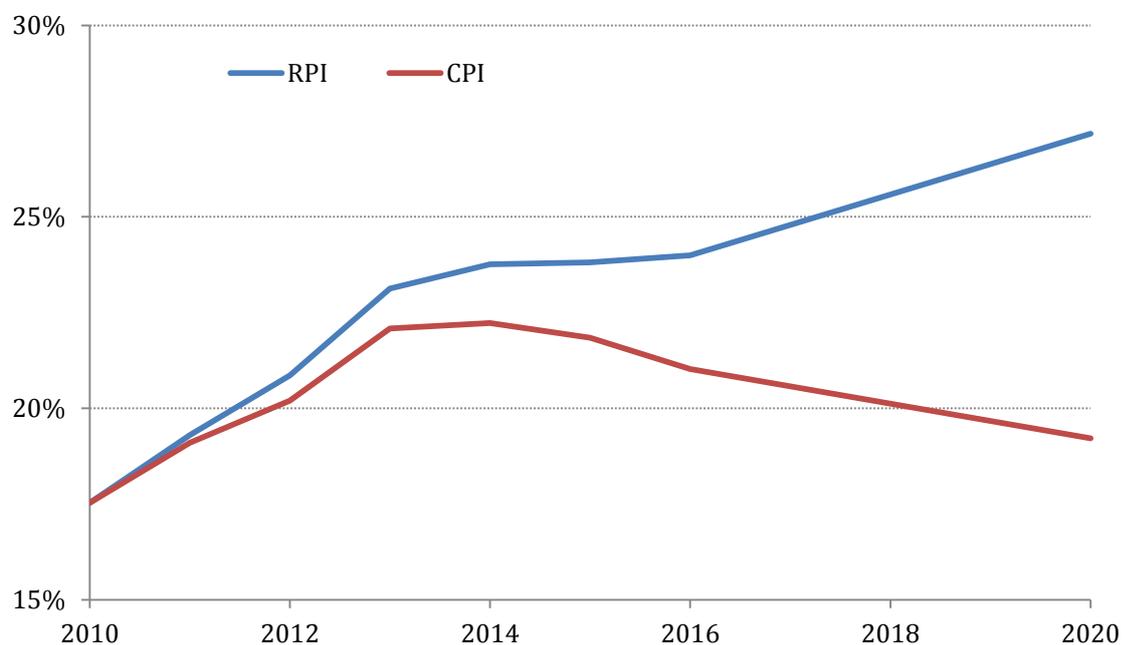
Figure 4.15 The trajectory of real median income according to RPI and CPI (2010=100)



Notes: Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Figure 4.16 BHC absolute child poverty to 2020 according to RPI and CPI



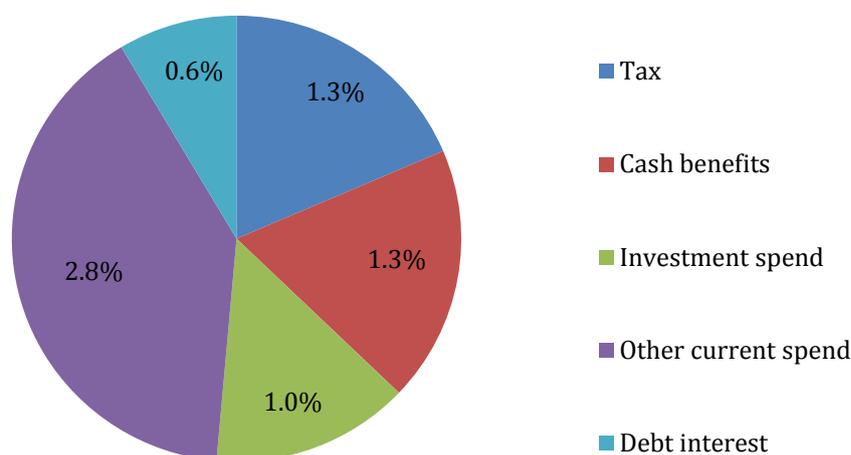
Notes: Poverty line is 60% of median before-housing-costs (BHC) income. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

## 4.4 The effect on poverty of tax and benefit reforms since 2010

One important factor affecting household incomes at the moment is the large post-recession fiscal consolidation, designed to reduce an unsustainable budget deficit. This inevitably involves ‘takeaways’ from households, including tax rises and welfare cuts amounting to 2.6% of national income by 2015–16. These measures that directly reduce household incomes represent around a third of the overall fiscal tightening package between 2010–11 and 2015–16, as shown in Figure 4.17. Welfare cuts in particular are likely to affect income-based measures of poverty. Understanding trends in income poverty in the years ahead therefore requires understanding the impacts of these changes. In this section, we repeat the simulations presented so far in this chapter, except that the assumed tax and benefit systems are those that would have been in place if all the parameters in the April 2010 tax and benefit system had simply been updated in line with default indexation rules. By comparing the results of these simulations with those in the previous sections, we can quantify the direct impact of the reforms introduced since then on poverty between 2011 and 2016, and in 2020.<sup>27</sup>

Figure 4.17 The composition of fiscal tightening in the UK (% of GDP)



Source: Emmerson, Keynes and Tetlow (2013).

It is very important to recognise what this exercise does and does not reveal. The tax and benefit systems that would have been in place if no tax and benefit reforms had been introduced are *not* the same as the systems that would have been in place if there had been a different administration in Westminster or Stormont – the previous UK Government had announced that it would introduce certain changes in 2011 or later, most of which were retained by the current coalition. And given the UK’s fiscal position, it is highly likely that *any* incoming government would have had to announce further changes after the 2010 general election to reduce the deficit. Thus, just as the title of this section suggests, we are quantifying the direct impact of *all* reforms introduced since April 2010: we are *not* comparing reforms actually introduced with those that might have been introduced by another administration (and, indeed, there is no way we could credibly do so, since we do not know what a hypothetical administration would have done).

<sup>27</sup> Note that as the projections in this report were produced before Budget 2013, we do not include tax and benefit reforms announced in Budget 2013 in this analysis. Updated projections will be produced in Summer 2013 that include the impact of these policy changes.

Note also that these simulations do not account for the impact of tax and benefit changes on macroeconomic conditions, both those observed since 2010 and those forecast by the OBR.<sup>28</sup> In reality, different employment and earnings levels in the absence of reforms would have an impact on poverty (though the nature of that impact, particularly on relative poverty, would depend on the *distribution* of employment and earnings effects). Since the nature of these macroeconomic effects is unclear, we ignore these possibilities here. However, we do examine the sensitivity of our poverty forecasts to assumptions about earnings and employment in Chapter 5.

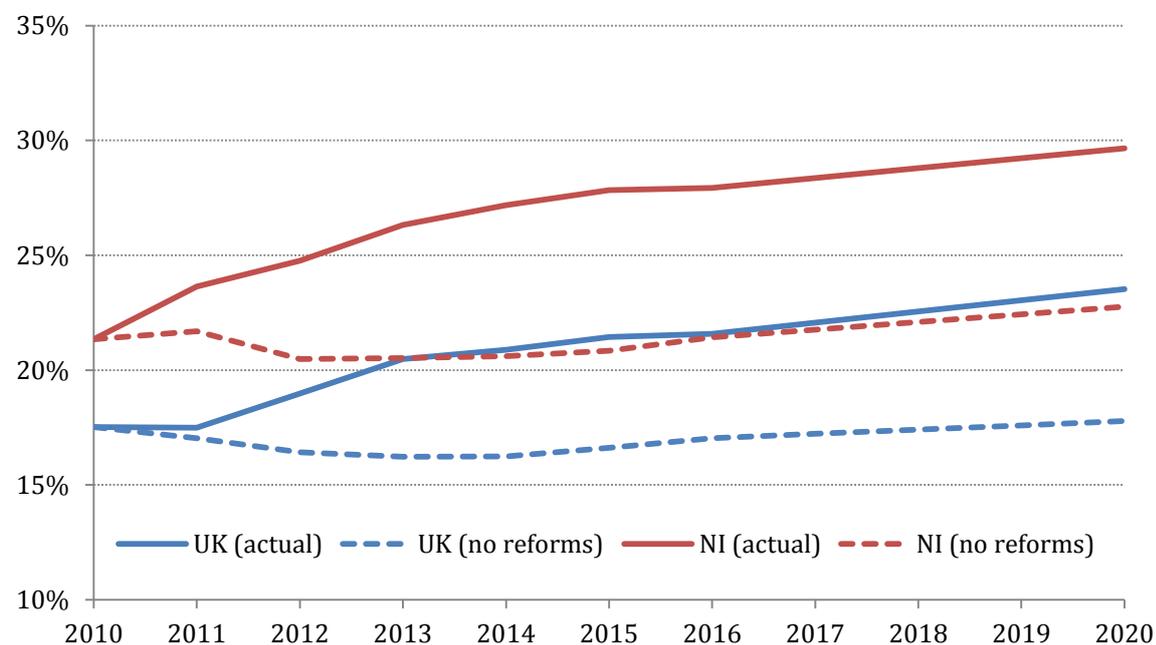
Figures 4.18 to 4.21 present our projections of the path of poverty between 2010 and 2020 with and without tax and benefit reforms introduced since April 2010. Some of the key results are as follows (all figures reported are when incomes are measured BHC):

- We project that in the absence of reforms, the path of median income would have been almost identical from 2010 to 2013. After that point, however, median income begins to grow again (albeit slowly) and ends the decade only 1.9% lower than in 2010, compared to 4.5% lower in our central projections. This is likely because large increases in the income tax personal allowance have offset the impact of other measures that have reduced incomes for the median household between 2010 and 2013, but no further increases in the personal allowance are currently planned whereas the switch to CPI indexation of benefits and most tax thresholds continues to have an impact on median incomes in future years.
- We project that, whereas we project a large increase in relative child poverty in Northern Ireland in our central scenario, in the absence of tax and benefit reforms, it would have been lower in 2013 than in 2010. Reforms since April 2010 also explain the large majority of the projected increase in absolute child poverty. In 2013, relative child poverty is projected to be 5.8ppts higher and absolute child poverty 5.4ppts higher than in the absence of reforms.
- The projected impact of reforms is similar in the UK. We project that tax and benefit reforms introduced in April 2011 had a negligible effect on relative child poverty in 2011, but that subsequent reforms increased relative child poverty in 2012 and 2013 when, in the absence of reforms, it would have fallen. Reforms explain almost all of the projected increase in absolute child poverty in the UK between 2010 and 2013. The cumulative effects are that in 2013 relative child poverty is projected to be 4.2ppts higher than in the absence of reforms, and absolute child poverty 4.7ppts higher.
- In the long run, our projections show the poverty-reducing effect of the introduction of Universal Credit being outweighed by the impact of other reforms, in particular the switch to CPI-indexation of benefits. The impact of reforms since April 2010 on child poverty in Northern Ireland increases each year. In 2020, relative child poverty is projected to be 6.9ppts higher as a result of reforms, and absolute child poverty 8.8ppts higher. For the UK, these figures are 5.7ppts and 8.3ppts respectively.
- We project that the impact of the tax and benefit reforms introduced since April 2010 on working age non-parent (WANP) poverty will be much smaller than their effect on child poverty. In Northern Ireland, reforms add 1.0ppts to relative WANP poverty in 2013, with absolute WANP poverty almost unaffected. In the UK, reforms add 0.8ppts to relative WANP poverty in 2013, and 0.7ppts to absolute WANP poverty.
- Significant differences appear between our projections for the effect of tax and benefit reforms on WANP poverty in Northern Ireland and the UK in the long run. Reforms are projected to add 2.7ppts to relative WANP poverty in 2020 (and 1.2ppts to relative WANP poverty in the UK) and 4.0ppts to absolute WANP poverty (and 2.0ppts to absolute WANP poverty in the UK).

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<sup>28</sup> Office for Budget Responsibility (2012b).

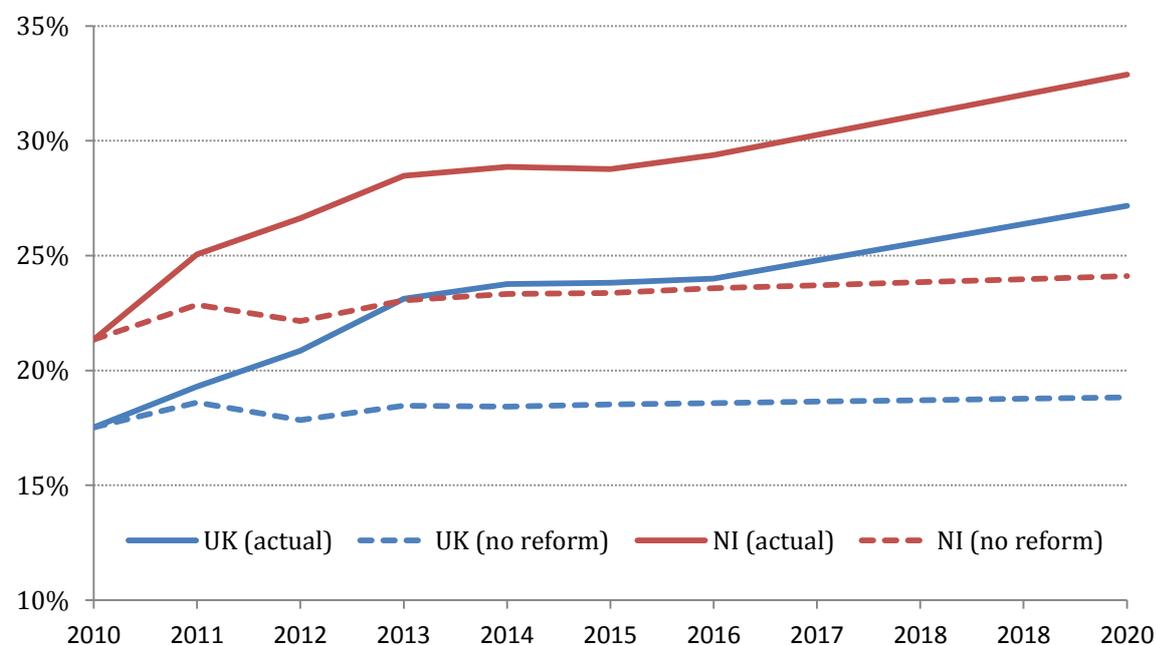
Figure 4.18 The effect of tax and benefit reforms on relative child poverty to 2020 (UK and Northern Ireland, incomes measured BHC)



Notes: Poverty line is 60% of median before-housing-costs (BHC) income. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

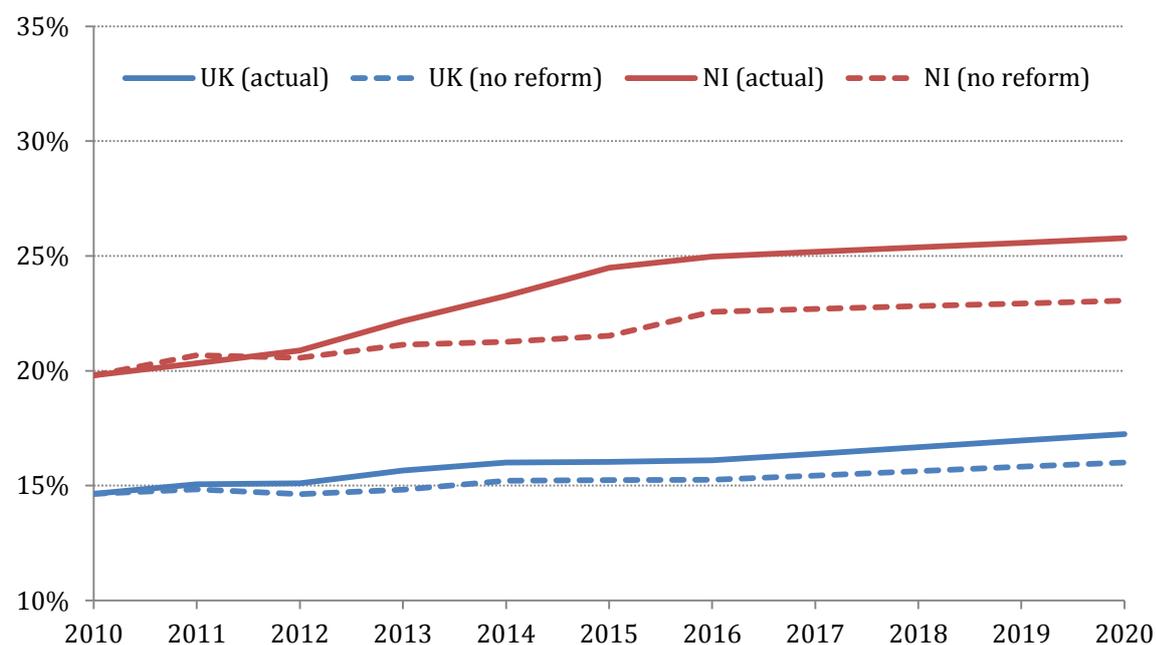
Figure 4.19 The effect of tax and benefit reforms on absolute child poverty to 2020 (UK and Northern Ireland, incomes measured BHC)



Notes: Poverty line is 60% of 2010–11 median before-housing-costs (BHC) income in real terms. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

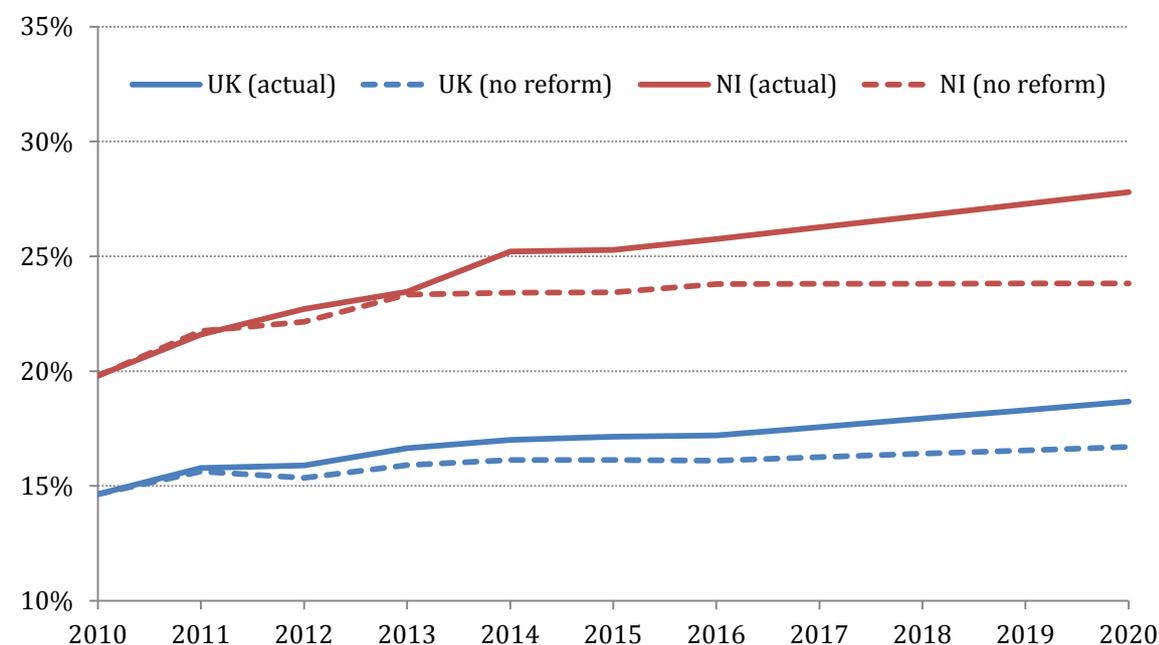
Figure 4.20 The effect of tax and benefit reforms on relative working-age non-parent poverty to 2020 (UK and Northern Ireland, incomes measured BHC)



Notes: Poverty line is 60% of median before-housing-costs (BHC) income. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Figure 4.21 The effect of tax and benefit reforms on absolute working-age non-parent poverty to 2020 (UK and Northern Ireland, incomes measured BHC)



Notes: Poverty line is 60% of 2010–11 median before-housing-costs (BHC) income in real terms. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

It is useful to disentangle two effects that the tax and benefit reforms introduced since April 2010 are projected to have on poverty between 2010 and 2020. The first can be characterised as a 'level effect'; in the short run, poverty will be significantly higher than it would otherwise have been. This is chiefly the result of the discretionary cuts to benefit entitlements due to be implemented during this parliament. The second effect is on the long term trend of poverty. The UK Government's decision to switch to CPI-indexation of benefits in April 2011 impacts the rate of growth in benefit entitlement in all future years, meaning that the impact of the reform compounds upward over time. The result of this policy is that, despite the impact of Universal Credit, the overall impact of reforms introduced since April 2010 is to increase the level of income poverty in each and every year from 2010 to 2020, and to increase the rate at which poverty increases over time, among both children and WANPs.

## CHAPTER 5

### Sensitivities

In this chapter, we investigate the sensitivity of our poverty projections in 2015 to alternative scenarios for total employment and average earnings growth to those outlined in the Office for Budget Responsibility's (OBR) forecasts, in an attempt to reflect the macroeconomic uncertainty that clearly exists. We also consider the impact of changing our assumption about the *distribution* of earnings growth: projections in Chapter 4 allowed earnings growth to vary by industry but not within each industry, implicitly assuming that earnings inequalities do not widen or narrow within industries.

#### Total employment and average earnings

We consider 'optimistic' and 'pessimistic' macroeconomic scenarios, where both total employment and average earnings are higher and lower (respectively) than the OBR's forecasts. In the 'optimistic' scenario, we assume that employment is 400,000 higher and that average earnings are 4% higher in 2015 than the OBR expects. In the 'pessimistic' scenario, we assume that employment is 400,000 lower and that average earnings are 4% lower in 2015 than the OBR expects.<sup>29</sup> To give a sense of quite how 'optimistic' and 'pessimistic' these scenarios are, the deviations from the OBR forecasts of earnings growth and employment they incorporate are at least as large as the revisions to those forecasts between November 2010 and December 2012.<sup>30</sup> In other words, in the 'optimistic' scenario the 2015 economy is where the OBR expected it to be in 2010, and in the 'pessimistic' scenario the deterioration of macroeconomic conditions since the 2010 forecast is twice as bad as the OBR currently expects.

#### Differential earnings growth

We also consider what would happen if the rate of average earnings growth were as the OBR expects, but earnings growth across the distribution were not uniform. In other words, we assume that earnings in 2015 are lower in some earnings decile groups, and higher in others, than they would be under our central scenario (which does allow for variation in earnings growth by industry, but not within industries); and we do this such that average earnings remain the same as under our central assumptions. We consider both progressive and regressive patterns of earnings growth. For each decile group of the earnings distribution, the assumed percentage deviations from the level of earnings implied by our central assumptions are given in Table 4.1.<sup>31</sup>

Table 5.1: Differential earnings growth scenarios

Scenario	<i>Assumed % deviation in earnings relative to our central assumptions, by decile group of the earnings distribution</i>									
	1	2	3	4	5	6	7	8	9	10
Progressive	+6.5	+5.5	+4.5	+3.5	+2.5	+1.5	+0.5	-0.5	-1.5	-2.5
Regressive	-6.5	-5.5	-4.5	-3.5	-2.5	-1.5	-0.5	+0.5	+1.5	+2.5

<sup>29</sup> The OBR's forecast for employment in 2015 is 30.0 million.

<sup>30</sup> See Office for Budget Responsibility (2010, 2012b).

<sup>31</sup> Note that in previous work (Brewer *et al.* 2009), when testing the sensitivity of our results to differential earnings growth, we used the actual pattern of differential earnings growth observed between 2001 and 2006. However, given recent macroeconomic events, there is reason to suspect that past patterns will be a poor guide to the near future. Therefore, here we simply choose markedly progressive and regressive scenarios to document the sensitivity.

Table 5.2: Projections of BHC child poverty rates in 2015: sensitivity analysis

Scenario	UK		NI	
	Relative	Absolute	Relative	Absolute
Baseline	21.4	23.8	27.8	28.8
High employment and earnings	22.2	22.8	27.6	27.6
Low employment and earnings	20.4	25.0	26.9	30.3
Progressive earnings growth	21.7	23.6	27.8	28.8
Regressive earnings growth	21.1	24.1	27.6	29.4

Note: The 'scenarios' are defined in the text.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Table 5.3: Projections of BHC working-age non-parent poverty rates in 2015: sensitivity analysis

Scenario	UK		NI	
	Relative	Absolute	Relative	Absolute
Baseline	16.0	17.2	24.5	25.3
High employment and earnings	15.9	16.2	24.1	24.2
Low employment and earnings	16.1	18.3	24.0	26.8
Progressive earnings growth	16.0	16.8	23.6	25.0
Regressive earnings growth	16.1	17.6	24.0	26.0

Note: The 'scenarios' are defined in the text.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Tables 5.2 and 5.3 show the results of these sensitivity tests for the cases of relative and absolute BHC income poverty in 2015, comparing them with the results obtained under our central assumptions (see Section 4.2). The tables show the following:

- Higher employment and average earnings act to *increase* relative child poverty and have very little effect on poverty among working-age non-parents. The former result is explained by the fact that higher employment and average earnings tend to raise the median income (and hence the poverty line) by more than it increases the households incomes of low-income families with children, because they are less likely to be in work. Note that, by controlling for employment by reweighting the data, we have effectively assumed that the demographic composition of the employed population remains constant when total employment changes. Clearly, if employment changes by more among particular groups, this could have different implications for poverty.
- The effect of increasing employment by 400,000 and average earnings by 4% is a decrease of around 1 percentage point in poverty among both children and working-age non-parents.
- Counter-intuitively, relative child poverty is higher in the progressive earnings scenario and lower in the regressive earnings scenario (relative working-age non-parent poverty is almost unchanged in both). The explanation is that progressive earnings growth raises the median income to a greater extent than it increases the incomes of households in poverty, while regressive earnings growth lowers the median income more than it reduces the incomes of households in poverty. This occurs because the median household is in the bottom half of the earnings distribution (there are fewer workers in the bottom half of the income distribution than the top half). Therefore, the median

household gains a lot under a progressive pattern of earnings growth, whereas households lower down the income distribution (who are less likely to be in work) gain less.

- The progressive and regressive earnings scenarios have the expected effect on absolute poverty, with progressive earnings growth reducing absolute poverty and regressive earnings growth increasing it. However, the effects of these substantial changes to the distribution of earnings growth are small, with absolute poverty among both groups varying by less than a percentage point between the two scenarios.
- The sensitivity of our projections to changing macroeconomic conditions is similar when we examine Northern Ireland separately. It is important to note, however, that these sensitivities do not reflect the possibility of variation due to sampling error, which will be greater for our Northern Ireland projections due to the smaller sample size.

## CHAPTER 6

### Conclusion

In this report, we have produced projections of relative and absolute income poverty in Northern Ireland among children and working-age adults for each year between 2011–12 and 2016–17 and for 2020–21, and put these in the UK context. (Figures for England and Wales, and for Scotland, are available in Appendix A).

In the short run, we project a sharp increase in child poverty in Northern Ireland. Relative child poverty is expected to increase by 5.0ppts in Northern Ireland between 2010–11 and 2013–14 (for the UK, this figure is 3.0ppts), with absolute poverty increasing by 7.1ppts in the same period (compared to 5.6ppts for the UK). We project smaller rises in working-age non-parent poverty, again with absolute poverty rising faster than relative poverty. This unusual pattern is the result of falling median incomes reducing the relative poverty line, while the absolute poverty line increases in line with RPI inflation; poor households do worse in terms of changes to their absolute living standards than they do compared to those at the median, whose incomes are also falling.

Our projections for the period between 2013–14 and 2016–17 are for the increases in relative and absolute poverty to either slow down or stop altogether as Universal Credit is phased in, but with no significant falls in either measure of poverty among children or working-age non-parents. Beyond 2016–17, we project continuing increases in relative and absolute poverty among both groups. The cumulative effect of these projections is that relative child poverty is projected to be 8.3ppts higher in 2020–21 than 2010–11. Relative child poverty in the UK is projected to be 6.0ppts higher, reversing all of the fall in relative child poverty seen between 2000–01 and 2010–11. Relative working-age non-parent poverty is projected to increase by 6.0ppts across the decade (compared to 2.6ppts in the UK).

It is surprising that absolute poverty is projected to keep rising beyond 2016–17 despite a recovering economy. The key explanation is that, while the absolute poverty line is increased in line with RPI inflation (which is forecast to be between 3.5% and 4% per year), most benefit entitlements will by default rise in line with CPI inflation (forecast at 2% per year). The problem is, however, deeper than one of using one inflation measure to uprate benefits and another to deflate household incomes when making real-terms comparisons. It is increasingly recognised that the RPI systematically tends to overstate the level of inflation faced by households, and that this has got worse since a change in the way clothing prices were sampled in 2010. When we consider a variant where the CPI is used to uprate the absolute poverty line, absolute child poverty starts falling in 2015–16, though remains slightly above its 2010–11 level in 2020–21.

An important factor affecting household incomes at the moment is the large post-recession fiscal consolidation, designed to help reduce an unsustainable budget deficit. This inevitably involves ‘takeaways’ from households, including tax rises and welfare cuts amounting to 2.6% of national income by 2015–16. Welfare cuts in particular are likely to affect income-based measures of poverty. Understanding trends in income poverty in the years ahead therefore requires understanding the impacts of these changes. Our central projections account for most tax and benefit reforms announced up to and including Autumn Statement 2012, including those announced but not yet implemented. We estimate the direct impact of those reforms on poverty by also projecting what poverty would have been if no reforms had been introduced since April 2010. We show that the reforms introduced since April 2010 account for almost all of the increase in absolute child poverty projected over the next few years; relative child poverty would actually have fallen in the absence of reforms. The increase in working-age non-parent poverty as a result of reforms is projected to be significantly smaller. In both cases, the impact of the reforms on poverty rates is larger in Northern Ireland than in the rest of the UK.

A significant structural reform to the tax and benefit system is being introduced from October 2013 as most means-tested benefits for those of working age are being replaced with a single payment called

Universal Credit. We estimate that in the long run, Universal Credit will reduce relative child poverty by 1.3ppts in Northern Ireland and 2.7ppts in the UK. However, the poverty-reducing effect of Universal Credit is outweighed by the impact of other tax and benefit changes that act to increase poverty; the estimated effect of tax and benefit reforms introduced since April 2010 on poverty continues to rise between 2016–17 and 2020–21.

The Child Poverty Act 2010 sets the UK Government legally binding targets to reduce relative child poverty to 10% and absolute child poverty to 5% by 2020–21. Our 2020–21 projections for these indicators under current policies are 23.5% and 27.2% respectively. It therefore seems almost certain that the targets will be missed by a substantial margin. It is not the case that tax and benefit reforms introduced since 2010–11 have made it impossible for these targets to be hit: even without these changes, they would still have been missed by a considerable distance. We recommend that the UK Government either reveals a credible plan for meeting the targets that it has signed up to, or that it sets different objectives which reflect its view of what is both desirable and achievable and explains how it plans to meet those – ideally, verified using a quantitative modelling exercise such as this one.

## APPENDIX A

### UK poverty and median income projections

Table A.1: Projections of relative income poverty and median income in the UK

	<i>Children</i>		<i>Working-age adults</i>		<i>Working-age parents</i>		<i>Working-age non-parents</i>		<i>Median income (2013 prices)</i>	
	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>		
	<b><i>Incomes measured before deducting housing costs</i></b>									
2011	2.3	17.5	5.7	15.5	2.2	16.2	3.5	15.1	£454 p.w.	
2012	2.5	19.0	5.9	15.9	2.3	17.3	3.6	15.1	£453 p.w.	
2013	2.7	20.5	6.2	16.5	2.5	18.1	3.8	15.7	£450 p.w.	
2014	2.8	20.9	6.3	16.8	2.5	18.3	3.8	16.0	£447 p.w.	
2015	2.9	21.4	6.4	16.9	2.5	18.4	3.8	16.0	£449 p.w.	
2016	3.0	21.6	6.5	17.0	2.5	18.5	4.0	16.1	£449 p.w.	
2020	3.4	23.5	7.4	18.1	2.8	19.8	4.6	17.2	£445 p.w.	
	<b><i>Incomes measured after deducting housing costs</i></b>									
2011	3.5	27.1	7.9	21.5	3.3	24.5	4.6	19.8	£391 p.w.	
2012	3.7	28.0	8.1	21.7	3.4	25.1	4.7	19.8	£391 p.w.	
2013	3.9	29.4	8.3	22.2	3.5	25.8	4.8	20.1	£386 p.w.	
2014	4.0	29.9	8.3	22.4	3.5	26.0	4.8	20.4	£382 p.w.	
2015	4.1	30.6	8.5	22.6	3.6	26.4	4.9	20.5	£382 p.w.	
2016	4.2	30.4	8.7	22.6	3.6	26.2	5.1	20.6	£383 p.w.	
2020	4.7	32.9	9.6	22.6	3.9	27.8	5.8	21.4	£387 p.w.	

Notes: Poverty line is 60% of median income. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Table A.2: Projections of absolute income poverty in the UK

	<i>Children</i>		<i>Working-age adults</i>		<i>Working-age parents</i>		<i>Working-age non-parents</i>	
	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>
	<b><i>Incomes measured before deducting housing costs</i></b>							
2011	2.5	19.3	6.1	16.5	2.4	17.7	3.7	15.8
2012	2.7	20.9	6.3	16.9	2.5	18.6	3.8	15.9
2013	3.0	23.1	6.7	17.9	2.7	20.1	4.0	16.6
2014	3.2	23.8	6.8	18.3	2.8	20.4	4.0	17.0
2015	3.2	23.8	6.9	18.3	2.8	20.4	4.1	17.2
2016	3.3	24.0	7.0	18.4	2.8	20.5	4.2	17.2
2020	3.9	27.2	8.2	20.0	3.1	22.6	5.0	18.7
	<b><i>Incomes measured after deducting housing costs</i></b>							
2011	3.9	29.6	8.4	22.9	3.6	26.5	4.8	20.7
2012	4.0	30.4	8.6	23.0	3.7	27.0	4.9	20.7
2013	4.3	32.4	9.0	23.9	3.8	28.3	5.1	21.4
2014	4.5	33.3	9.1	24.4	3.9	29.0	5.2	21.8
2015	4.5	33.6	9.2	24.5	3.9	29.0	5.3	22.0
2016	4.6	33.5	9.3	24.4	3.9	28.9	5.4	21.9
2020	5.1	35.9	10.3	25.2	4.2	30.3	6.1	22.6

Notes: Poverty line is 60% of 2010–11 median income in real terms. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

## APPENDIX B

### Poverty projections at the level of constituent nations

Table B.1: Projections of income poverty rates in England and Wales

	<i>Children</i>		<i>Working-age adults</i>		<i>Working-age parents</i>		<i>Working-age non-parents</i>	
	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>
	<b><i>Incomes measured before deducting housing costs</i></b>							
2011	17.3	19.1	15.4	16.4	16.1	17.7	15.0	15.7
2012	18.9	20.8	15.8	16.8	17.3	18.7	15.0	15.7
2013	20.5	23.1	16.5	17.8	18.2	20.1	15.5	16.5
2014	20.9	23.7	16.8	18.2	18.3	20.5	15.9	16.8
2015	21.3	23.8	16.7	18.2	18.4	20.5	15.8	16.9
2016	21.5	23.9	16.8	18.2	18.6	20.5	15.9	16.9
2020	23.4	27.0	18.0	19.9	19.8	22.6	17.1	18.4
	<b><i>Incomes measured after deducting housing costs</i></b>							
2011	27.7	30.1	21.8	23.2	25.1	27.1	19.9	20.9
2012	28.6	31.0	22.0	23.3	25.7	27.6	19.9	20.8
2013	30.0	32.9	22.4	24.1	26.4	28.8	20.2	21.4
2014	30.4	33.8	22.7	24.7	26.5	29.5	20.4	21.9
2015	31.1	34.0	22.9	24.7	26.9	29.5	20.6	22.0
2016	30.8	33.8	22.7	24.5	26.6	29.4	20.5	21.8
2020	33.3	36.2	23.8	25.3	28.2	30.7	21.5	22.5

Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Table B.2: Projections of income poverty rates in Scotland

	<i>Children</i>		<i>Working-age adults</i>		<i>Working-age parents</i>		<i>Working-age non-parents</i>	
	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>
	<b><i>Incomes measured before deducting housing costs</i></b>							
2011	17.6	19.1	14.6	15.6	15.3	16.5	14.2	15.2
2012	17.6	19.4	14.8	15.8	15.4	16.7	14.5	15.3
2013	18.3	21.1	15.1	16.5	15.7	17.7	14.8	15.9
2014	18.8	22.2	15.5	17.3	15.9	18.4	15.3	16.7
2015	20.2	22.3	16.1	17.5	16.6	18.4	15.8	17.1
2016	20.5	23.0	16.0	17.5	16.5	18.3	15.8	17.1
2020	22.7	27.2	16.9	19.1	17.5	21.0	16.7	18.3
	<b><i>Incomes measured after deducting housing costs</i></b>							
2011	21.4	24.3	18.7	19.9	19.2	21.3	18.4	19.1
2012	22.7	24.8	18.9	19.9	19.7	21.4	18.5	19.2
2013	23.4	27.1	19.0	21.0	20.1	23.1	18.4	20.0
2014	24.0	27.9	19.6	21.6	20.7	23.7	19.1	20.6
2015	25.5	29.1	20.0	21.9	21.3	24.2	19.4	20.8
2016	26.3	29.6	20.2	21.9	21.4	24.1	19.7	20.9
2020	28.4	32.7	20.6	23.0	23.1	25.8	19.7	21.9

Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Table B.3: Projections of income poverty rates in Northern Ireland

	<i>Children</i>		<i>Working-age adults</i>		<i>Working-age parents</i>		<i>Working-age non-parents</i>	
	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>	<i>Relative</i>	<i>Absolute</i>
	<b><i>Incomes measured before deducting housing costs</i></b>							
2011	23.6	25.1	20.1	21.3	19.7	20.9	20.3	21.6
2012	24.8	26.6	20.7	22.6	20.6	22.3	20.9	22.7
2013	26.3	28.5	21.9	23.7	21.5	23.5	22.2	23.9
2014	27.2	28.9	22.9	24.7	22.3	23.9	23.3	25.2
2015	27.8	28.8	23.9	24.6	22.9	23.6	24.5	25.3
2016	27.9	29.4	24.1	25.0	22.8	23.9	25.0	25.7
2020	29.7	32.9	25.3	27.7	24.6	27.4	25.8	27.8
	<b><i>Incomes measured after deducting housing costs</i></b>							
2011	24.5	27.0	21.1	22.5	20.7	22.8	21.3	22.3
2012	25.4	27.9	21.8	23.0	21.6	23.7	22.0	22.5
2013	26.7	29.8	22.8	24.2	22.5	25.2	22.9	23.6
2014	28.1	31.7	23.8	25.8	23.7	27.1	23.9	24.9
2015	28.5	31.3	23.9	25.6	23.9	26.6	23.9	25.0
2016	29.5	32.0	24.5	26.4	24.7	27.3	24.4	25.9
2020	31.8	34.3	26.3	28.0	27.0	29.0	25.9	27.4

Notes: Relative poverty line is 60% of median income. Absolute poverty line is 60% of 2010–11 median income in real terms. Years refer to financial years.

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text

## APPENDIX C

### Poverty projections under full take-up and without applying any ‘correction’ to simulated incomes

The purpose of the results in this appendix is primarily to illustrate the importance, when modelling poverty, of accounting for non-take-up of means-tested benefits and tax credits and of making some adjustment for the fact that tax and benefit microsimulation output does not perfectly replicate the survey data on which it is based (see Section 3.1 for further details). We also show how our results change when we use the original FRS survey weights (isolating the effect of our reweighting to take account of demographic changes) and how they change when we apply uniform earnings growth, rather than allowing variation by industry according to Oxford Economics forecasts. These adjustments are not included in the sensitivity analysis in Chapter 5, since we do not think that ignoring non-take-up or the discrepancy between TAXBEN and HBAI-measured poverty approximates a realistic alternative ‘scenario’ for the path of poverty as measured by HBAI. Rather, this appendix is intended mostly for the benefit of analysts and modellers.

Tables C.1 and C.2 restate our 2015–16 central projections of relative and absolute BHC income poverty under current policies, and compare them with the projections obtained when:

- applying no ‘correction’ to simulated incomes;
- assuming full take-up and applying no ‘correction’ to simulated incomes;
- using the original survey weights rather than the weights we calculate to match projected control totals for the 2015–16 population;
- applying uniform earnings growth rather than allowing variation by industry according to Oxford Economics forecasts.

Note that it makes little sense to consider the case where full take-up is assumed but the ‘correction’ to simulated incomes continues to be applied. This is because the necessary correction would itself be changed by the fact that full take-up is assumed (since this would change the discrepancies between TAXBEN-simulated income and HBAI-measured incomes in 2010–11, the base year), obscuring the effect of assuming full take-up.

**Table C.1: Projections of relative BHC income poverty in 2015–16 when applying no corrections to simulated income, under full take-up and with original survey weights**

	<i>Children</i>		<i>Working-age non-parents</i>		<i>Median income (2013 prices)</i>
	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>	
Baseline	2.9	21.4	3.8	16.0	£449 p.w.
a. No income correction	2.5	18.6	3.8	16.0	£453 p.w.
b. Full take-up and no income correction	2.2	16.2	3.5	14.4	£460 p.w.
c. With original survey weights	2.8	21.4	3.7	16.2	£455 p.w.
d. Without industry-level variations in earnings growth	2.9	21.7	3.9	16.0	£450 p.w.

Source: Authors’ calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

Table C.2: Projections of absolute BHC income poverty in 2015–16 when applying no corrections to simulated income, under full take-up and with original survey weights

	<i>Children</i>		<i>Working-age non-parents</i>	
	<i>Millions</i>	<i>%</i>	<i>Millions</i>	<i>%</i>
Baseline	3.2	23.8	4.1	17.2
a. No income correction	2.9	21.3	4.1	16.8
b. Full take-up and no income correction	2.3	17.3	3.6	14.8
c. With original survey weights	3.0	22.8	3.9	16.9
d. Without industry-level variations in earnings growth	3.2	23.4	4.1	17.1

Source: Authors' calculations based on Family Resources Survey, 2010–11, using TAXBEN and assumptions specified in the text.

## APPENDIX D

### Further details of assumptions and modelling procedures

This appendix provides more details on our methodology, as outlined in Chapter 3. Section D.1 provides further details on some of the more technical aspects of how we simulate future HBAI incomes. Section D.2 describes how we account for some of the preannounced changes to the tax and benefit system that cannot be straightforwardly modelled in TAXBEN. Section D.3 lays out how we model the increases in the state pension age over the period for which poverty is projected.

#### D.1 Further details on simulating future HBAI incomes

##### Uprating rules

In order to simulate the net income of households in future years we need to uprate both private sources of income and the parameters of the tax and benefit system. Table D.1 lays out the assumptions we make about nominal growth in private sources of income over time. Table D.2 lists the default indexation rules in the public finance baseline, which we use to create expected future tax and benefit systems. Table D.3 contains the Office for Budget Responsibility forecasts for all the relevant macroeconomic variables.

Table D.1: Uprating assumptions for private sources of income

<i>Rule</i>	<i>What it's used to uprate</i>
In line with RPI	Scholarship income Income from government training schemes Allowances paid other than from spouse Council Tax
In line with nominal earnings	Water and sewerage rates Private pensions income Employment income Self-employment income Maintenance payments Allowances from absent spouse
In line with nominal GDP	Imputed capital from savings, annuities, property, stocks and shares, and bonds

Table D.2: Default uprating rules under current policies

<i>Rule</i>	<i>What it's used to uprate</i>
In line with RPI to previous September until 2015, then in line with CPI, increase rounded up to nearest £10	Starting rate limit for savings income Income tax personal allowance <sup>a</sup> Income tax married couple's allowance
In line with RPI to previous September until 2015, then in line with CPI, increase rounded up to nearest £100	Basic rate limit Threshold for withdrawal of older person's income tax allowances
Aligned with the higher rate threshold <sup>b</sup>	National insurance upper earnings limit National insurance upper profits limit

<i>Rule</i>	<i>What it's used to uprate</i>
In line with CPI to previous September, rounded to nearest 5p	Child Benefit Severely disabled premiums on Income Support and Housing Benefit Incapacity Benefit Carer's Allowance Disability Living Allowance Attendance Allowance Severe Disablement Allowance Local Housing Allowance rates (from April 2013) <sup>c</sup> Most Income Support rates Most Housing Benefit applicable amounts Non-dependant deductions for Income Support, Housing Benefit and Second Adult Council Tax Rebate
In line with CPI to previous September, rounded to nearest £5	Per-child element of Child Tax Credit Disabled and severely disabled elements of Child Tax Credit First tax credit threshold for those not entitled to Working Tax Credit All Working Tax Credit amounts
In line with CPI to previous September, rounded to nearest £1	Thresholds for non-dependant deductions for Income Support, Housing Benefit and Second Adult Council Tax Rebate National Insurance primary threshold
Increased by the maximum of May to July 3-month average earnings, CPI inflation to previous September, and 2.5%, rounded to nearest 5p	Basic State Pension
In line with May to July 3-month average earnings	Pension Credit guarantee amounts Benefits cap
Frozen	Winter Fuel Payments to pensioners Income Support and Housing Benefit disregards Family element of Child Tax Credit First tax credit threshold National Local Housing Allowance caps Income tax age-related allowances

a. The indexation of the personal allowance will switch to CPI when it reaches £10,000, currently forecast to be April 2015.

b. The higher rate threshold is the sum of the income tax personal allowance and the basic rate limit.

c. Until April 2013, Local Housing Allowance rose in line with rents.

Table D.3: Office for Budget Responsibility forecasts

	Used to uprate private incomes				Used to uprate the tax and benefit system <sup>f</sup>			
	RPI <sup>a</sup>	CPI	Average nominal earnings growth <sup>b</sup>	Nominal GDP growth <sup>c</sup>	CPI to previous September	RPI to previous September	Rossi to previous September <sup>d</sup>	Nominal earnings growth, previous Q2 <sup>b,e</sup>
2012–13	3.1%	2.6%	2.6%	2.3%	–	–	–	–
2013–14	2.9%	2.5%	2.2%	3.6%	–	–	–	–
2014–15	2.8%	2.1%	3.0%	4.2%	2.6%	3.1%	3.6%	2.0%
2015–16	3.2%	2.0%	3.9%	4.4%	2.2%	2.7%	3.1%	2.6%
2016–17	3.5%	2.0%	4.0%	4.8%	2.0%	3.1%	3.3%	3.7%
2017–18	3.7%	2.0%	4.0%	4.9%	2.0%	3.4%	3.3%	4.0%
2018–19	3.8%	2.0%	4.2%	5.6%	2.0%	3.7%	3.2%	4.0%
2019–20	3.6%	2.0%	4.2%	5.6%	2.0%	3.8%	3.0%	4.2%
2020–21	3.5%	2.0%	4.3%	5.6%	2.0%	3.6%	3.0%	4.2%

a. From 2018–19, the RPI figures are for September as whole year forecasts are not available.

b. Figures for 2018–19 onwards are our own estimates, based on the Office of Budget Responsibility long-run estimate of 4.4% and their forecasts for the output gap.

c. Beyond 2017–18, we assume nominal GDP growth consistent with the output gap closing in 2020–21, as forecast by the OBR.

d. We use Q3 forecasts for Rossi up to 2017–18 then annual forecasts, as September forecasts are not available.

e. We use forecast Q2 earnings growth as the best estimate of the May to July 3-month average.

f. Actual tax and benefit parameters for 2012–13 and 2013–14 are available so there is no need to create systems by uprating previous years' systems.

Sources: Office for Budget Responsibility (2012b); Table 4.1 from main document, economy supplementary tables 1.4 and 1.5.

## The HBAI definition of income

As discussed in Chapter 3, we need to create a measure of disposable income that is as close as possible to that used when calculating official poverty statistics (the precise definition is given in Department for Work and Pensions (2010a)). To construct something broadly equivalent to this, we add together various sources of private (i.e. pre-transfer) income, subtract estimated tax liabilities, add estimated receipt of benefits and tax credits, and then subtract various ‘deductions’ from income. Table D.4 gives details of the various components of income.

Table D.4: Creating the HBAI definition of BHC income from TAXBEN

These are added together:	Gross employment income Gross self-employment income Imputed income from company cars and other benefits in kind Free school meals Savings income Pensions income Income from property Any other unearned income Maintenance payments from absent spouse Benefits
These are subtracted:	Expenses incurred in the course of employment Self-employment net losses Direct taxes Council Tax Contributions to personal pensions Maintenance payments made Parental contributions to students

## D.2 Accounting for welfare reforms that are more difficult to model precisely

The UK Government has announced various direct tax and benefit reforms that are due to be implemented by 2020. Many of them simply involve changing the values of basic parameters of the tax and benefit system, such as the income tax personal allowance or Child Tax Credit amounts. These reforms can be straightforwardly modelled using TAXBEN. But some of the reforms are more difficult to model precisely, because their impact on particular families will depend upon characteristics of those families that are not perfectly measured in the FRS data. For example, the impact of migrating Incapacity Benefit (IB) claimants onto Employment and Support Allowance (ESA) will depend on who fails the medical test in ESA, which we cannot predict at the individual level. These hard-to-model reforms (all of which are net takeaways from households) have the potential to affect significantly assessments of the likely path of poverty in the near future. Therefore, in this work, we do attempt to account for those reforms that we judge can be modelled in a reasonably precise way, such that modelling them is very likely to lead to more accurate conclusions about poverty than ignoring them entirely. Below, we outline the policy changes that we take account of even though they cannot be straightforwardly modelled using TAXBEN. (Note that most of these reforms are due to be implemented in 2013 or later: Local Housing

Allowance reforms are the only ones that can have any impact on our poverty projections up to and including 2012.) First, we provide a full list of the future reforms that we model.

## All the reforms that we model

### Benefits and tax credits:

- Uprate all benefits and tax credits with CPI from April 2011.
- Increase the child element of Child Tax Credit by £180 above indexation in April 2011.
- Increase the first and second tax credit taper rates to 41% in April 2011.
- Remove the baby element of Child Tax Credit in April 2011.
- Taper the family element of Child Tax Credit immediately after the child element is withdrawn from April 2012.
- Remove the 50-plus element of Working Tax Credit in April 2012.
- Increase the Working Tax Credit working hours requirement for couples with children from 16 to 24 hours in April 2012.
- Reduce the proportion of costs covered by the childcare element of Working Tax Credit from 80% to 70% in April 2011.
- Freeze the basic and 30-hour elements of Working Tax Credit at 2010–11 rates from 2011–12 to 2013–14 inclusive, and then uprate by 1% for two years from April 2014.
- Freeze the couple and lone parent elements of Working Tax Credit in 2012–13.
- Freeze Child Benefit at 2010–11 rates from 2011–12 to 2013–14 inclusive, and then uprate by 1% for two years from April 2014
- Taper Child Benefit away from families containing someone earning more than £50,000 in January 2013.
- Uprate the Basic State Pension by the maximum of CPI inflation, earnings growth and 2.5% from April 2012, and uprate with RPI inflation in April 2011.
- Increase minimum guarantee for Pension Credit by the cash increase in Basic State Pension in April 2011, April 2012 and April 2013.
- Freeze maximum award of Savings Credit at 2010–11 rates from 2011–12 to 2014–15 inclusive, with reductions in April 2012 and April 2013.
- Time-limit contributory Employment and Support Allowance to one year from April 2012.
- Local Housing Allowance: remove the £15 excess that can be claimed above rent, set local reference rates at the 30<sup>th</sup> percentile of local rents rather than the median, cap all rates at the four-bedroom rate and introduce national caps on all local reference rates in April 2011 (new claimants) or January to December 2012 (existing claimants); increase the age below which single people can only claim the shared-room rate from 25 to 35 in April 2012; change default annual uprating of local reference rates to CPI from April 2013; uprate local reference rents by 1% in 2014 and 2015.
- Uprate Housing Benefit deductions for non-dependants with CPI from April 2011 (previously frozen in nominal terms).
- Reduce Housing Benefit awards for those of working age under-occupying social housing from April 2013.
- Reform eligibility assessment for Disability Living Allowance in April 2013.
- Cap total household benefit payments at the level of average earnings for working households from April 2013.
- Introduce Universal Credit from October 2013, with 1% uprating of disregards in 2014 and 2015.
- Uprate the following benefits by 1% each year for the three years from April 2013: Jobseeker's Allowance; Employment and Support Allowance; Income Support; applicable amounts for Housing Benefit; Maternity Allowance; Statutory Sick Pay; Statutory Maternity Pay; Statutory Paternity Pay;

and Statutory Adoption Pay. The disability, carers and pensioners premia in these benefits, and the Support component of Employment and Support Allowance, are excluded.

- Uprate Child Tax Credit and Working Tax Credit by 1% each year for the three years from April 2013, excluding disability elements. The basic and 30 hour elements in Working Tax Credit will remain frozen in 2013–14 as previously set out.

### Personal taxes:

- Increase the income tax personal allowance above indexation: cash increases of £1,000 in April 2011, £630 in April 2012 and £1,335 in April 2013.
- Freeze age-related allowances and restrict them to existing recipients from April 2013
- All reductions in the basic-rate limit and necessary adjustments to keep the upper earnings/profits in line with the higher rate threshold: £2,500 in April 2011, £630 in April 2012 and £2,125 in April 2013.
- Uprate higher rate threshold by 1% in 2014 and 2015, and keep the upper earnings limit and upper profit limit aligned.
- Increase primary threshold in 2011–12 by £21 above alignment with where the personal allowance would have been under the previous government's plans.
- Increase all National Insurance rates by 1 percentage point in April 2011.
- Uprate some direct tax thresholds in line with CPI from April 2012, with all direct tax thresholds updated in line with CPI from April 2016.

### Other:

- Cancel extension of free school meals to primary-school children with parents in receipt of Working Tax Credit with a gross income lower than the first tax credit threshold for those not entitled to Working Tax Credit from September 2010.
- Abolish Sure Start Maternity Grant for second and subsequent children in April 2011.
- Funding for English councils who freeze Council Tax in 2011–12 and 2012–13.

## Reforms which are more difficult to model precisely

### Reforms to Local Housing Allowance

Local Housing Allowance (LHA) is Housing Benefit for private renters, and is currently undergoing a number of reforms:

- As of April 2011 (for new claimants) or January to December 2012 (for existing claimants),<sup>32</sup> the maximum amount of LHA that someone can claim is equal to their 'LHA rate' or their actual rent (whichever is lower), rather than their LHA rate or their rent plus £15 per week; LHA rates are set at the 30<sup>th</sup> percentile of local rents rather than the median (50<sup>th</sup> percentile); LHA rates in every area are capped at the four-bedroom rate; and no LHA rates can exceed certain national caps (of £250 per week for the shared-room rate and the one-bedroom rate, £290 for the two-bedroom rate, £340 for the three-bedroom rate and £400 for the four-bedroom rate).
- As of April 2012, single people under the age of 35 are only eligible for the shared-room rate (currently, the age threshold is 25).

<sup>32</sup> Existing claimants will not be affected by the changes until the anniversary of their LHA claim, when they will lose entitlement to the £15 excess, and they will not be affected by the other reforms until nine months *after* the anniversary of their claim. We can model this phase-in accurately, as we observe the date on which an LHA claim started in the FRS data.

- From April 2013, LHA will be updated annually in line with the consumer price index (CPI), rather than with local rents (they will be subject to the 1% cap in April 2014 and April 2015).

LHA rates are set within Broad Rental Market Areas (BRMAs). In the FRS data available to us, we do not observe which BRMA people are in. However, we do observe the local authority (LA) that they are in, and we are able to map BRMAs to LAs. Since we know current LHA rates in each BRMA (and we also know what those rates would currently be if they were set at the 30<sup>th</sup> percentile of local rents, as will be the case from April 2011), we are able to model very precisely the impact of LHA reforms on anyone who lives in an LA that contains a single BRMA, since we know exactly how much LHA they should currently be receiving. This applies to about one third of LAs. In cases where there is more than one BRMA falling within an LA, we take the median of the BRMA rates in that LA. Clearly, this involves some loss of precision, but there is no reason to suspect that it biases poverty forecasts in a particular direction.

Note that we do not account for possible effects of the LHA reforms on the general level of rents, or on the housing costs of particular individuals who might move to a property with a lower level of rent as a result of the reforms. By lowering household costs, such 'second-round' effects would tend to *increase* household incomes when measured after housing costs (AHC). But they could in principle *decrease* household incomes measured before housing costs (BHC) if a household moves to a home (as a result of the reforms) with a level of rent that is less than the Housing Benefit they were receiving previously: in that case, Housing Benefit would fall to the new rent level or below. Similarly, if tenants find that rents fall for a given quality of property because of the reform, then an apparent decline in income measured BHC might not be accompanied by a decline in living standards.

## Reforms to Disability Living Allowance

The UK Government's plans to replace DLA with a benefit called Personal Independence Payment (PIP). Part of the change will mean a new assessment process to determine eligibility, and the UK Government has said that it expects the numbers in receipt of PIP to be about 20% lower than the numbers receiving DLA, as a result. We therefore know the number of losers (20% of DLA recipients) and the number of gainers (none), and we know that those who lose will lose all of their DLA. Although we do not know which DLA recipients will lose, our judgement is that we have enough information about the distribution of losses that an attempt to model the policy will lead to more accurate conclusions than a decision to ignore it entirely. We therefore remove DLA from a random 20% subset of DLA recipients. The implicit assumption is that the probability of losing DLA entitlement as a result of these reforms is unrelated to household income. We assume that entitlements to PIP match existing entitlements to DLA for those who continue to receive DLA/PIP.

## Shift from Incapacity Benefit to Employment and Support Allowance

We need to take account of the fact that, between 2011–12 and 2014–15, existing claimants of IB will be reassessed to determine whether they are entitled to ESA and, if so, which level of the benefit they are entitled to.<sup>33</sup> Evidence from the first pilot areas where individuals were reassessed (Aberdeen and Burnley) shows that 30% of those individuals were placed in the Support Group, 38% were placed in the Work-Related Activity Group and 32% were found to be fit for work and so lost entitlement to disability benefits.<sup>34</sup> However, many new claimants of these benefits have successfully appealed against the initial decisions made at their Work Capability Assessment. Therefore, in both the case of new claimants claiming ESA and existing IB claimants being moved across to ESA, we assume that the proportion of

<sup>33</sup> There are two levels of entitlement to ESA, depending on whether individuals are placed into the Work-Related Activity Group or the Support Group. Members of the Work-Related Activity Group are expected to attend work-focused interviews designed to help them prepare for work. Those in the Support Group receive a higher level of benefit and are not expected to look for work.

<sup>34</sup> See [http://research.dwp.gov.uk/asd/asd1/adhoc\\_analysis/2011/ib\\_reassessment.pdf](http://research.dwp.gov.uk/asd/asd1/adhoc_analysis/2011/ib_reassessment.pdf).

successful appeals is the same for those who are transferred from IB to ESA as for new claimants, meaning that we assume 31% are placed in the Support Group, 43% in the Work-Related Activity Group and only 26% lose entitlement altogether. We assume that the rate of reassessment is constant (i.e. 25% of those on IB in 2010–11 are reassessed for ESA in each year between 2011–12 and 2014–15).

## Universal Credit<sup>35</sup>

From April 2014, the UK Government intends to stop new claims of out-of-work benefits, tax credits, Housing Benefit and Council Tax Benefit and make new claimants claim Universal Credit instead. Although the draft regulations for Universal Credit have been published<sup>36</sup>, some important decisions have yet to be taken, meaning that we have had to make assumptions about the policy itself and its implementation:

- No policy has been announced on how support for mortgage interest provided through Income Support will be replaced under Universal Credit. We assume that those entitled to Universal Credit receive the same amount of support for mortgage interest as they do under the current system.
- The UK Government and the Northern Ireland Executive have not decided who will be entitled to the benefits-in-kind provided under the current system to those on out-of-work benefits (e.g. free school meals and free prescriptions). Although most of these are not included in the HBAI definition of income, the value of free school meals is, so an assumption has to be made. As in the previous case, we assume that families receive free school meals only if they would have been eligible under the pre-Universal-Credit tax and benefit system. Again, it is unlikely that this rule could be implemented in practice when Universal Credit is introduced but since the UK Government wishes to spend around the same amount of money on passported benefits as at present, this seems a relatively neutral assumption to make. Once we have final decisions on these issues, our results will therefore change very slightly.
- We have to make assumptions about the speed at which families will be moved from the existing benefits and tax credits to Universal Credit. Existing claimants will gradually be moved across to Universal Credit between April 2014 and October 2017, but there will be no cash losers at the point of transition. However, this transitional protection may expire once a family's circumstances change. We therefore allow some families that we calculate as being entitled to less in benefits once we have moved them across to Universal Credit to keep their previous level of entitlement. We also give some families in both 2014–15 and 2015–16 no transitional protection at all – these correspond to those whose transitional protection expires between 2014–15 and 2015–16, and new claimants of Universal Credit. We do not allow for any transitional protection to apply in 2020–21: this effectively assumes that no one is entitled to transitional protection at this point, either because their circumstances have changed sufficiently for it to expire or because cash increases in Universal Credit rates mean that they receive more in cash terms than they did at the point of transition. Table D.5 shows the proportion of families we assign to various states in our 2014–15, 2015–16 and 2016–17 simulated populations.

<sup>35</sup> For more details, see Browne and Roantree (2013).

<sup>36</sup> See <http://www.dwp.gov.uk/policy/welfare-reform/universal-credit/>

Table D.5: Assumed proportions of families on Universal Credit in 2014–15, 2015–16 and 2016–17

<i>Situation</i>	<i>2014–15</i>	<i>2015–16</i>	<i>2016–17</i>
On existing set of means-tested benefits	75%	50%	25%
On Universal Credit with full transitional protection	20%	20%	20%
On Universal Credit without transitional protection	5%	15%	27%
On Universal Credit with transitional protection at 2014–15 cash entitlement	N/A	15%	13%
On Universal Credit with transitional protection at 2015–16 cash entitlement	N/A	N/A	15%

## Reforms that we do not account for

There are some reforms that we do not account for, because we cannot identify with any precision the groups of people affected or the distribution of losses among those who lose. These are outlined below:

- The amount by which gross income can increase within a year before tax credit entitlements are reduced was decreased in April 2011 and will be cut again in April 2013; furthermore, since April 2012, tax credit entitlements within a year have only increased if gross income falls by more than £2,500; and tax credit payments may only be backdated by one month (rather than three months) after a change of circumstances. It is expected that these reforms will save £1.2 billion per year by 2013–14 (HM Treasury 2010b). But we do not know how many losers from these reforms are expected and, since we do not have data about within-year income fluctuations, there is no way for us to identify the likely group of affected tax credit recipients (or how much they would lose by).
- Between November 2008 and October 2011, the maximum age of youngest child at which non-working lone parents can claim Income Support rather than Jobseeker's Allowance (or Employment and Support Allowance if they have a disability or health condition) was reduced from 16 to 5 (in several stages). The rates of Income Support and Jobseeker's Allowance are the same, but the policy means that those affected have to take steps to look for work or lose their benefit entitlement. As a result, the incomes of some lone parents with a youngest child of the relevant age may go down because of lost benefit income, and the incomes of others may go up because of labour supply responses. The latter (behavioural) effects cannot be modelled straightforwardly with static microsimulation techniques, although the expected impact on total employment will have been incorporated in the OBR's employment forecast, which we make use of.
- From 2013–14, support for local taxes will be designed and administered by the devolved administrations in Northern Ireland, Wales and Scotland and local authorities in England. As well as localising support, the UK Government is reducing the total funding provided by 10%, saving £485 million in 2013–14 (HM Treasury 2010a). Although the schemes that will be in place for 2013–14 have recently been announced, we do not yet incorporate them in our analysis due to modelling constraints. Instead we assume that the current system remains in place for all claimants. In 2013–14, this assumption is correct for Wales, Scotland, Northern Ireland and 18% of English local authorities,<sup>37</sup> all of whom have decided to find the 10% saving required entirely from other expenditure. There is no guarantee, however, that this will remain the case in future years. We continue to ignore this reform when Universal Credit is introduced: we assume that the 'default

<sup>37</sup> See <http://counciltaxsupport.org/the-story-so-far/>

scheme' for local authorities in England applies throughout Great Britain and that a similar rate rebate replacement scheme exists in Northern Ireland.<sup>38</sup>

It is important to note that the decision to ignore these policies does not have a neutral impact on our results. All of the policies listed above that we are not modelling are welfare cuts. Hence, the direct impact of these reforms would be to reduce the incomes of some people on benefits which would increase absolute poverty, and be likely to increase relative poverty as it is likely that these policies would affect those with low incomes by more than those at the median.

### D.3 Modelling rises in the state pension age

Between April 2010 and March 2016, the age at which women become entitled to the State Pension is rising by one month every two months from its pre-2010 level of 60, and will increase to 65 by November 2018. The state pension age (SPA) will rise from 65 to 66 for both men and women between December 2018 and April 2020. This changes the sample of people who are of working age, which is clearly important when forecasting working-age poverty. But it also has implications for household incomes.

It is straightforward to model the direct impact on incomes of increasing the SPA in TAXBEN. But a couple of other issues remain. First, the maximum age at which individuals can receive Incapacity Benefit or Employment and Support Allowance (IB/ESA) is being raised as well, so that it remains in line with the SPA.<sup>39</sup> We only observe entitlement to IB/ESA in the 2008–09 base data for those who were of eligible age in that year (i.e. women aged under 60 or men aged under 65). Thus, we have to estimate the probability of entitlement in future years for women aged between 60 and 65 and men aged 65. We estimate these probabilities from the sample of 58- and 59-year-old women and 63- and 64-year-old men in the base data by probit regression.<sup>40</sup> The predictors we use are education, Council Tax band, region, housing tenure, partnership status, employment status of the partner (if applicable) and local authority disability status. We use these to generate predicted entitlement probabilities, and we randomise entitlements for the relevant individuals using those probabilities (the probabilities average about 10% for the relevant women and 15% for the relevant men).

A second issue is that households that include 60- to 65-year-old women and 65-year-old men in the future may look different from the corresponding households in 2010–11 (our base data), because these individuals (or other members of their household) may respond to whether or not they are entitled to the State Pension by changing their labour supply. Indeed, the age profile of employment probabilities exhibits a clear discontinuity at the SPA.<sup>41</sup> Ignoring this issue would be very likely to lead to underestimates of the incomes of those affected.

We estimate an equation linking work status (employed/not employed) for women aged 51 to 65 and men aged 56 to 65 to a number of predictors by probit regression. The predictors are education, region, housing tenure, Council Tax band, local authority disability status, entitlement to Disability Living Allowance, a cubic in age and an indicator variable for being below the SPA. We do this separately for single women, single men, men in couples and women in couples (for those in couples, we also include an indicator variable for whether or not the partner works). Having estimated this equation, we generate predicted employment probabilities for those not below SPA in the scenario where they *are* below SPA. Aggregating these predicted probabilities gives the predicted proportion of those directly affected by the SPA change who will be in work after that change. We then identify those affected individuals who are not

<sup>38</sup> This scheme counts Universal Credit as income in the means test for Council Tax support but add rents to earnings disregards.

<sup>39</sup> Similarly, the minimum age at which individuals can claim Attendance Allowance is rising. The direct impact of this is straightforward to model, by removing entitlement to Attendance Allowance from all individuals of the relevant age.

<sup>40</sup> Note that there is not a discernible age profile in entitlement probabilities for women in their mid to late 50s. Thus, it seems reasonable to estimate entitlement probabilities using these control groups.

<sup>41</sup> See, for example, Figure 4.9 in Office for National Statistics (2009b).

working in the 2010–11 data who have the highest predicted probabilities of being in work when below SPA (the most ‘marginal’ individuals), with the number we identify being calibrated so as to match our aggregate employment prediction (this involves increasing the employment rate by about 8ppts for the affected women and about 20ppts for the affected men). We then allocate these people gross earnings and a weekly number of hours worked. We do this using nearest-neighbour propensity score matching, with those just below SPA in the base data being the control group (again, separately for single women, single men and for people in couples).<sup>42</sup> Propensity scores are estimated by probit regression using an equation linking SPA status (above/below SPA) to the same set of predictors as in the employment equation above (but excluding the cubic in age).

There are some implicit assumptions here. First, there are no anticipation effects or dynamic effects on employment of raising the SPA: increasing the SPA does not affect the employment probabilities of those below the original SPA or of those above the new SPA. Second, employment responses come only through the individuals directly affected by the SPA change, rather than through other members of their household. In practice, the husbands of those affected might also respond by retiring later (Banks, Blundell and Casanova 2007). Third, the reason why there is a discontinuity in the age profile of employment probabilities at SPA is because of the SPA itself, rather than some other factor. If this is not true, the actual behavioural response may be smaller.

Note that the OBR’s total employment forecasts, which we make use of, will already have accounted for the rise in SPA. Therefore, this adjustment does not affect our assumption about total employment: it simply affects our implicit assumption about the composition of the working population (most directly, with respect to age), because we reweight the data (see Chapter 3) after having modelled this behavioural response.

Having allocated the additional IB/ESA entitlements and gross earnings, we run the modified base data through TAXBEN in the normal way.

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<sup>42</sup> This seems reasonable as there is not a discernible age profile in earnings or hours worked among workers just below SPA.

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