The cumulative impact of tax and welfare reforms

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Data from the Family Resources Survey, Living Cost and Food Survey and Labour Force Survey are Crown Copyright and are provided by kind courtesy of the ESDS Data Archive at the UK Data Service, University of Essex.

Executive summary

Introduction

In 2017, the Equality and Human Rights Commission ('the Commission') commissioned Aubergine Analysis and Landman Economics to work with the National Institute of Economic and Social Research (NIESR) to carry out a cumulative impact assessment (CIA) of the distributional impacts of tax and spending decisions on people sharing different protected characteristics. The assessment sought to answer: how much per year are individuals and households expected to lose as a result of tax and welfare reforms? How many households gain and lose from the reforms in total, and by how much? How many adults and children will fall below an adequate standard of living due to changes to taxes and social security? This report considers all these questions in detail.

This report develops earlier work in the same area by the Commission (EHRC, 2012; 2015) and by NIESR and Landman Economics on cumulative impact assessment (Reed and Portes, 2014). The Commission's 2015 report, *Future fair financial decision-making*, made a number of recommendations for the UK Government's approach to future Spending Reviews (and tax and spending decisions more broadly) in the context of the Public Sector Equality Duty (PSED). A key focus of those recommendations was that HM Treasury (HMT) should extend its analysis of the aggregate distributional impacts of tax and spending decisions to analyse the aggregate impact of decisions on people sharing different protected characteristics – that is, carry out a CIA (EHRC, 2015). At the time of writing (February 2018), HMT had not acted on this recommendation.

The project forms part of the Commission's detailed programme of work on welfare reform, including a comprehensive literature review by NIESR on recent welfare reforms and welfare to work programmes (Hudson-Sharp *et al*., 2018).

Methodology

This report provides in as much detail as possible (given data availability) an analysis of all policy changes made between May 2010 and January 2018, which will have been implemented by the financial year 2021–22 (the end of the current Parliament, if it runs to a full term). We model changes announced by the 2010–15 Conservative–Liberal Democrat Government, the 2015–17 Conservative majority Government, and the Conservative minority administration elected in June 2017, whether or not they had been implemented by January 2018. The research uses the tax-transfer model (TTM), a microsimulation model developed by the Institute for Public Policy Research, Landman Economics and the Resolution Foundation. The TTM uses data from two UK datasets, the Family Resources Survey (FRS) and the Living Costs and Food Survey (LCF).

We model reforms to the following parts of the tax and welfare systems:

- Income tax
- National Insurance Contributions (NICs)
- Indirect taxes (VAT and excise duties)
- Means-tested and non-means-tested social security benefits
- Tax credits
- Universal Credit (UC)
- National Living Wage (NLW) (this is not formally part of the tax–benefit system, but is modelled here).

While most results in this summary are for Great Britain as a whole, the analysis in the full report produces separate results for England, Scotland and Wales.

We produce results both at household level (as other analyses, such as that produced by HMT, usually do) and individual level (which many other analyses do not). The latter enables us, in particular, to focus in more detail on gendered impacts, although, importantly, results are in some cases sensitive to specific assumptions about how incomes are shared within households. We also examine the impact on the right to an adequate standard of living, as measured by relative poverty and the Minimum Income Standard measure published by the Joseph Rowntree Foundation (JRF) (2017).

Key findings

Our analysis shows that, overall, changes to taxes, benefits, tax credits and Universal Credit (UC) announced since 2010 are regressive, however measured – that is, the largest impacts are felt by those with lower incomes. Those in the bottom two deciles will lose, on average, approximately 10% of net income, with much smaller losses for those higher up the income distribution.

Moreover, the analysis shows that the changes will have a disproportionately negative impact on several protected groups, including disabled people, certain ethnic groups, and women:

- Negative impacts are particularly large for households with more disabled members, and individuals with more severe disabilities, as well as for lone parents on low incomes.
- For some family types, these losses represent an extremely large percentage of income. For example, for households with at least one disabled adult and a disabled child, average annual cash losses are just over £6,500 – over 13% of average net income.
- The impact of changes to direct taxes and benefits is to reduce the income of Bangladeshi households by around £4,400 per year on average.
- At an individual level, women lose on average considerably more from changes to direct taxes and benefits than men. Women lose about £400 per year on average, and men only £30, although these figures conceal very substantial variation within both genders.
- Lone parents in the bottom quintile (bottom fifth) of the household income distribution lose around 25% of their net income, or one pound in every four, on average.
- On average, disabled lone parents with at least one disabled child fare even worse, losing almost three out of every ten pounds of their net income. In cash terms, their average losses are almost £10,000 per year.
- Around one and a half million more children are forecast to be living in households below the relative poverty line as a result of the reforms.

These negative impacts are largely driven by changes to the benefit system, in particular the freeze in working-age benefit rates, changes to disability benefits and

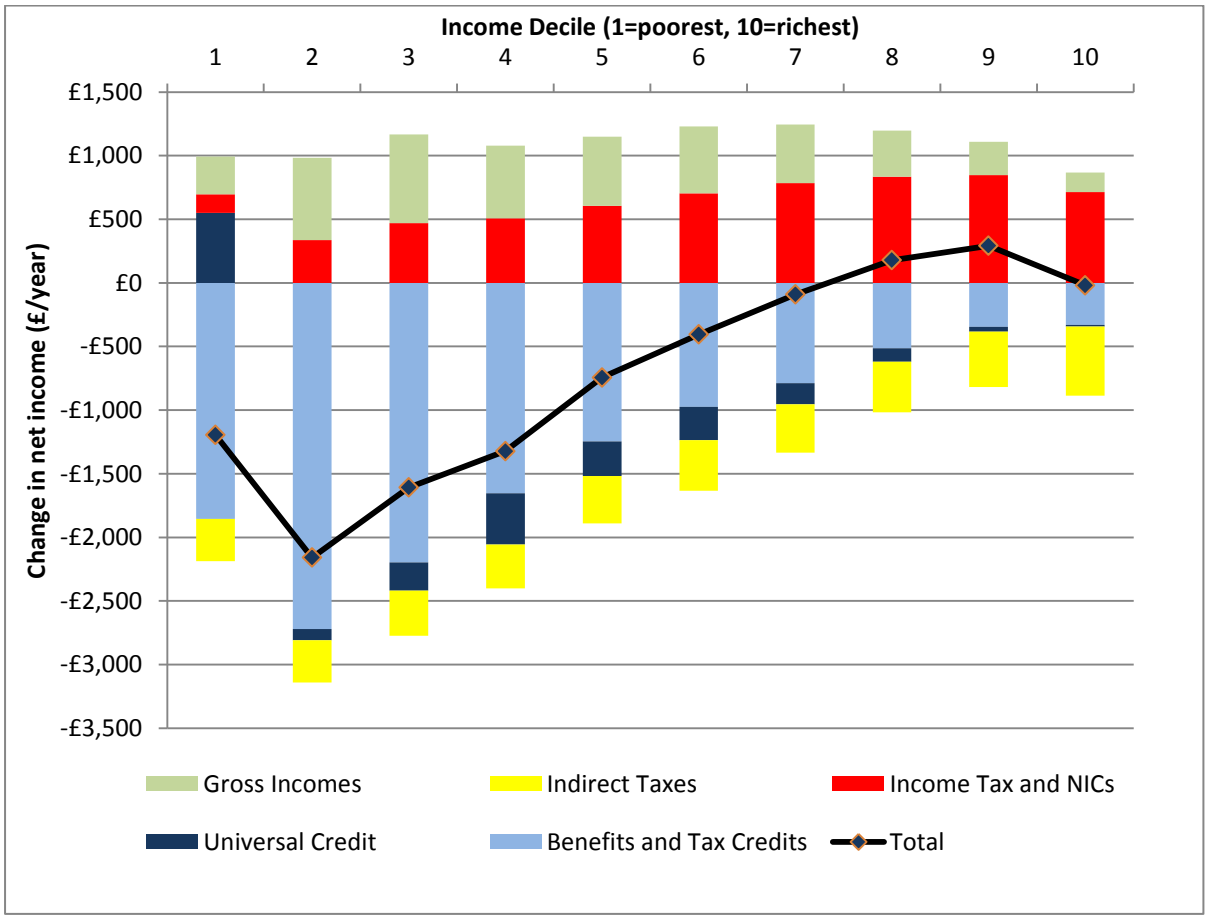
reductions in UC rates. The changes are also likely to lead to significant increases in the number of children (in particular) below a minimum acceptable standard of living.

Our review of progress since the Commission's 2015 report also suggests that considerable work still needs to be done to ensure that equality considerations are fully incorporated into decision-making by HMT, and more broadly across the UK Government.

Distributional effects of tax and welfare changes by household income decile

We first examine the impacts of changes to taxes and benefits by household income. Figure 1 shows the impact of reforms by household income decile in cash terms (changes in annual disposable income).

Figure 1 Cash impact of tax and welfare reforms by household net income decile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model using FRS pooled dataset 2012–13 to 2015–16, and LCF pooled dataset 2010 to 2015–16.

Overall, the second decile – those households just above the bottom of the distribution – lose most on average from the reforms. Cash losses are smaller higher up the distribution. The eighth and ninth decile gain on average from the reforms, while the top decile sees very small average losses (approximately £20 per year). The losses therefore fall almost entirely on the bottom six deciles (lower and middle income households). Cash losses for the bottom decile are smaller than for the second decile mainly due to the impact of UC, which is projected to have a higher take-up rate than the tax credits and benefits it replaces, in turn leading to gains for some of the poorest households.

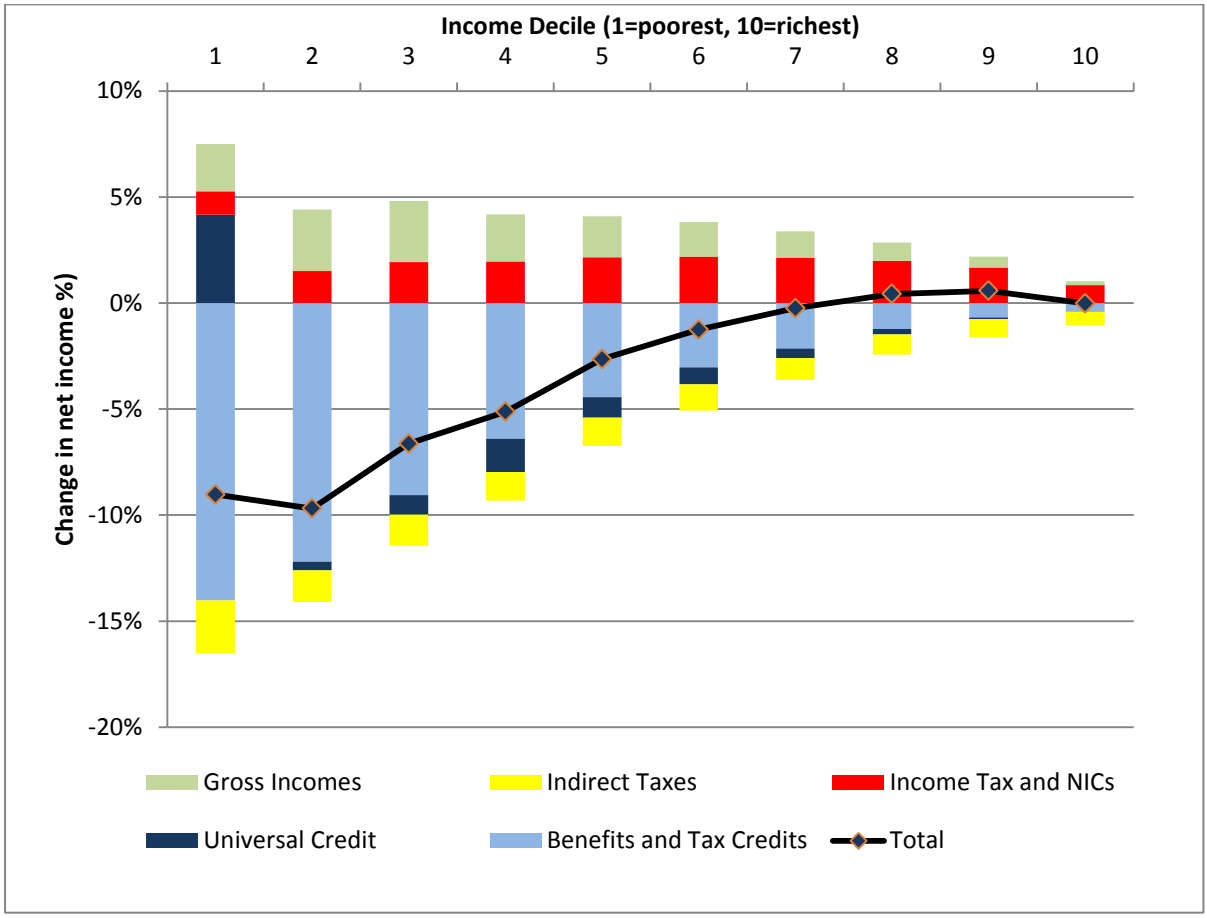
The overall pattern of average gains and losses by type of reform is:

- Substantial losses on average from cuts to benefits and tax credits
- Further losses from the introduction of UC to replace tax credits and means-tested benefits (except for the bottom decile)
- Gains from changes to income tax and NICs (largely due to the real-term increase in the tax-free personal allowance since 2010)
- Gains from the introduction of the NLW
- Losses from changes to indirect taxes (largely due to the increase in VAT to 20% in 2011).

Figure 2 shows changes in net income by household decile as a percentage of average net income for each decile, rather than in cash terms. Overall, the reforms are regressive across most of the income distribution, with the bottom two deciles losing 9–10% of net income on average, and relatively small impacts at the top of the income distribution. The distributional results by household income decile for Scotland and Wales show somewhat less negative overall impacts in the bottom half of the income distribution than the analysis for England.

Our analysis differs from similar Treasury analyses (see, for example, HM Treasury, 2017), for a number of reasons. In particular, we do not include the distributional impacts of benefits-in-kind from public services; we include reforms introduced between 2010–11 and 2014–15, and we exclude some reforms which HMT models (and vice-versa).

Figure 2 Percentage impact of tax and welfare reforms by household net income decile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model using FRS pooled dataset 2012–13 to 2015–16, and LCF pooled dataset 2010 to 2015–16.

Distributional effects by protected characteristics

Analysis of the impact of reforms to taxes and transfer payments by protected characteristic produces the following key findings:

- Analysis by ethnicity of adults in the household shows that Bangladeshi households have average losses of around £4,400, and Pakistani households have average losses of around £2,700. Chinese households are the only ethnic group to experience average net gains.

- Analysis by disability status of adults and children in each household shows that households with at least one adult defined in the FRS as 'core disabled'[1] and at least one disabled child lose around £6,500 per year on average from the reforms (excluding reforms to indirect taxes). This amount is equivalent to one-seventh of their total net income.
- Breaking down the impact of the reforms by household disability 'score'[2] reveals average losses of around £3,150 per year for households with a score of six or more. In general, households with greater numbers of disabilities lose more on average than households with fewer disabilities.
- Breaking down the results by demographic type reveals that households with children are the largest average losers from the reforms. In particular, lone parents lose an average of £5,250 – almost one-fifth of their total net income. Couples with children lose £3,000 per year on average.
- Households with three or more children see particularly large losses (around £5,600).
- Analysing the results by the average age of adults in the household reveals that the largest losses are for households with adults of average age 35–44, and the smallest for average age 65–74. However, the differences by average age are not as large as for other protected characteristics.

Overall, groups with particularly large losses from the reforms tend to be those who are most reliant on means-tested transfer payments – benefits, tax credits and (where rolled out) UC. Groups who gain tend to be those who are less reliant on means-tested transfers and who benefit from the cuts to income tax (notably the increase in the tax-free personal allowance) and the introduction of the NLW for employees aged 25 and over.

Intersectional impacts of reforms

Researchers and policymakers are increasingly interested in the **intersectional** impact of policies, looking across more than one characteristic (including Equality Act 2010 protected characteristics) at once. An example of intersectional analysis is simultaneous analysis of household disability status and household demographic

[1] The FRS uses a nine-way classification of disability that enables a 'core' and a 'wider' group of disabled people to be identified.
[2] The disability 'score' is a measure based on the number of functional disabilities experienced by adults and children in FRS households. Functional disabilities cover difficulties with vision, learning, dexterity and memory (for the full list, see Section 3.4).

type. These ‘two-way’ analyses are very important for looking at **multiple disadvantages** which households and/or individuals might face due to the combination of two or more sets of protected characteristics.

Our intersectional analysis of distributional impacts shows in particular that:

- Lone parents in the bottom quintile of the household income distribution suffer particularly large average losses from the reforms – equivalent to approximately 25% of their net income, or one pound in every four.
- Lone parents who are FRS core disabled with at least one disabled child fare even worse on average, losing almost three out of every 10 pounds of their net income. In cash terms, their average losses are almost £10,000 per year.
- Couples with children in a similar position (at least one FRS core disabled adult, and at least one disabled child) also experience substantial average losses: slightly under one in every five pounds of net income – an average cash loss of almost £8,000 per year.
- Lone parents with six or more functional disabilities (see note 2) lose over £11,000 on average from the reforms, which is slightly more than 30% of their net income.
- Taken across the whole income distribution, women lose an average of around £400 from the reforms, compared with £30 for men.
- For couples, the assumption about which partner receives UC (when rolled out) is crucial for the pattern of results. If we assume that UC is paid to the partner with the highest weekly earnings in every couple, women’s losses average around £3,650 in the bottom decile of the income distribution and £3,850 in decile 2. If we assume a 50/50 split of UC between partners, the equivalent figures are that women lose around £1,450 in decile 1 and £2,100 in decile 2.
- Women aged 35–44 lose over £2,200 per year from the reforms on average, compared with less than £550 for men.
- The pattern of losses for FRS core disabled men and women across the income distribution is similar, with larger losses for men and women in the bottom third (approximately £1,700).
- An intersectional analysis by disability and ethnicity shows that the greatest losers from the reforms are disabled women of ‘mixed ethnicity’ (with average losses of almost £2,300 per year) and disabled women of ‘other ethnic groups’

not elsewhere specified in the categorisation (with average losses of £2,350 per year).

- Analysis of the reforms by individual disability 'score' and age group shows that average losses from the reforms are greater for disabled adults in the 18–44 age group than for older adults; over-75s with a disability score of 6 or more lose slightly over £600 on average from the reforms, compared with almost £5,400 for under-25s in the same group.

Distributional impact of specific reforms

We also present distributional results for a range of specific policies, specifically:

- The **two-child limit** on payments of Housing Benefit, tax credits and UC for new claimants and new children of existing claimants from 2017 onwards.
- The transfer of Disability Living Allowance (DLA) claimants to Personal Independence Payment (PIP).
- The **freeze in the rates of most working-age benefits, tax credits and UC for four years from 2016–17 onwards** (that is, the rates of these payments are not being uprated in line with inflation for four years).
- The **removal of the spare room subsidy ('bedroom tax')** – reductions in Housing Benefit for households in social housing deemed to have 'spare' bedrooms.
- **Reductions in the work allowances in UC** – the amounts that UC claimants can earn before their UC starts to be tapered away at 63% for every £1 increase in gross earnings.
- **A package of reforms soon to be introduced in Scotland**, including changes to income tax rates, increased Carer's Allowance and the Best Start Grant for low-income mothers.

Our key findings regarding the impact of these policies are:

- In England and Wales, four of the five policies analysed – the post-2015 uprating freeze on transfer payments; the cuts to work allowances in UC; the two-child limit on Housing Benefit, tax credits and UC; and the removal of the spare room subsidy ('bedroom tax') – have their largest impacts at or near the bottom of the income distribution. Overall, households in England in decile 2

of the income distribution lose around £1,100 per year on average from the reforms. This is equivalent to over 5% of their net income.

- The uprating freeze, the two-child limit, and the cuts to UC work allowances have an especially large impact on Pakistani and Bangladeshi households in England, with Bangladeshi households losing an average of almost £2,150 from the reforms, and Pakistani households losing almost £1,900 on average.
- Households with a disability score of 6 or more in England lose an average of£520 per year from the DLA–PIP reassessment process, and around £1,200 from the five reforms modelled here.
- The cuts to UC work allowances have the largest negative impact for households with children. Lone parents suffer particularly badly from this policy, with average losses of slightly over £500 per year.
- Households in Wales and England with three or more children lose at least £900 per year on average by 2021–22 from the two-child limit on most benefits, tax credits and UC introduced in 2017.
- The impact of the package of Scotland-specific reforms is much more progressive than any of the other reforms featured here, with households in the top decile losing over £1,000 per year on average, compared with less than £50 on average in deciles 1 to 4.
- Couples and Multiple Benefit Unit households are the largest average losers by household demographic type from the package of Scottish reforms, with average losses of between £300 and £400 per year.

Impact of reforms on the number of adults and children in households below an adequate standard of living

The report estimates the number of households, adults and children who fall below an adequate standard of living as a result of the reforms to taxes and transfer payments. The right to an adequate standard of living is a key consideration for evaluating the human rights of the tax and welfare reforms in Britain since 2010.

This report uses two measures of an adequate standard of living, defined as follows:

- The UK Government's relative poverty line, as used in its *Households Below Average Income* (HBAI) publication (DWP, 2017). We use the After Housing Costs (AHC) definition of income in this summary: a household is defined as

being in poverty if its disposable income (adjusted to take account of household size) is below 60% of median AHC household incomes.

- The Minimum Income Standard (MIS): a measure of income adequacy developed by researchers at the University of Loughborough for the Joseph Rowntree Foundation (JRF, 2017).

Table 1 shows the number and proportions of children and adults living in households, as well as the number and proportions of households, below the AHC relative poverty line, before and after the reforms. The results forecast that child poverty will increase substantially by 2021–22 as a result of the tax and welfare reforms between 2010 and 2017, resulting in around 1.5 million extra children being in poverty (an increase of over 10 percentage points). While the number of adults in poverty and the overall household poverty rate also rise, these increases are far smaller – around 700,000 (1.4 percentage points) for adults and 400,000 (1.4 percentage points) for households. This reflects the fact that the cuts to benefits and tax credits, and the adverse impacts of UC, are felt disproportionately by households with children.

The forecast increases in child poverty for Wales and Scotland (around 8 percentage points for both countries) are smaller than for England (just under 11 percentage points).

These forecasts are consistent with other analyses, for example those by Hood and Waters (2017) for the UK, and Reed and Stark (2018) for Scotland.

Table 1 Estimated AHC relative poverty rates for households, children and adults before and after reforms, 2021–22: England, Scotland and Wales

Poverty measure	Numbers (millions)			Percentage of group		
	Baseline	Reform	Change	Baseline	Reform	Change
England						(pp)
Households	4.49	4.90	+0.41	18.4%	20.1%	+1.7
Children	4.01	5.37	+1.36	31.4%	42.1%	+10.7
Adults	9.09	9.77	+0.68	20.3%	21.8%	+1.5
Scotland						
Households	0.39	0.41	+0.02	15.9%	16.8%	+0.8
Children	0.24	0.32	+0.08	25.1%	33.1%	+8.0
Adults	0.67	0.70	+0.03	16.1%	16.9%	+0.8
Wales						
Households	0.25	0.27	+0.02	17.6%	18.6%	+1.0
Children	0.20	0.25	+0.05	29.6%	37.4%	+7.7
Adults	0.46	0.49	+0.03	18.3%	19.3%	+1.0
Great Britain						
Households	5.14	5.59	+0.45	18.2%	19.7%	+1.6
Children	4.44	5.94	+1.49	30.9%	41.3%	+10.4
Adults	10.22	10.96	+0.74	19.9%	21.3%	+1.4

Note: The reason that the change figure does not always match the difference between the baseline and reform percentages is due to rounding.

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Other key findings from our analysis of the impact of tax and welfare reforms from 2010 to 2018 on the rate of poverty forecast for 2021–22 are as follows:

- The child poverty rate for children in lone-parent households in Great Britain is forecast to increase from slightly over 37% to slightly over 62% as a result of the reforms – an increase of almost 25 percentage points.
- By household ethnic group, the largest percentage point increases in child poverty are forecast to be for Pakistani households (over 19 percentage points), Black households (slightly under 14 percentage points), Bangladeshi

households (slightly under 14 percentage points) and 'other Asian' households (12.5 percentage points).[3]

- Child poverty for households containing disabled children is forecast to increase by 18.5 percentage points.
- The increase in the rate of child poverty is forecast to be much higher for households with three or more children (16.5 percentage points) than for households with two or fewer children.

Winners and losers from reforms

As well as estimating the average distributional impact of the tax and welfare reforms by decile and protected group, we also calculate the proportion of winners and losers from the overall reform package. The analysis shows nearly half (47.3%) of households in Great Britain lose from the changes to direct taxes, benefits, tax credits, UC and the NLW (calculated using data from the FRS).

Overall, just over half of households in Great Britain (52.2%) gain from the announced reforms to direct taxes, transfer payments and the increases in the NLW (the remainder neither gain nor lose). However, the proportion of winners and losers differs considerably within particular groups:

- Poorer households are far more likely than richer households to lose from the reforms. More than seven in ten households from the bottom fifth of the net income distribution lose from the reforms. Meanwhile, four in five households in the ninth decile gain from them.
- Almost four in five couples with no children gain from the reforms, but less than one in seven lone parents, and less than one in six single pensioners, gain from the reforms.
- The majority of households with no children gain from the reforms, whereas more than three-quarters of household with three children lose.
- The majority of White people gain from the reforms, but three-quarters of Pakistani households lose from them.

[3] Household ethnic groups are defined in terms of the ethnicity or ethnicities of the adults in the household. So, for example, a 'Black' household is one where all the adults in the household are Black.

- Three-fifths of households with a household disability 'score' of zero gain from the reforms, whereas seven out of ten households with a score of six or more lose.

The report also analyses the size distribution of gains and losses from the reforms. Key findings are as follows:

- The size distribution of gains and losses reveals that more than three-fifths of lone parent households lose at least 10% of their net incomes from the reforms, and almost two-fifths lose more than 20% of their net incomes.
- Over two-fifths of households with three or more children lose at least 10% of net income from the reforms, while over a fifth lose more than 20%.

Impact of the reforms on work incentives

In this report, we do not attempt to quantify the impact of changes to financial incentives resulting from the reforms on employment rates. However, our analysis of trends in employment rates for different household types suggests that it is highly implausible that improvements in the financial incentives to work are the main driver of differences in employment rates between different demographic sub-groups. To a large extent, the increase in employment since 2010 has been 'a rising tide which lifts all boats', that is, all groups have benefited, regardless of demographic characteristics.

Our analysis of the impact of tax and welfare reforms according to the work status of adults in different households shows substantial reductions to in-work support to families with children on average. This does not improve financial incentives to work, and has also been one of the factors driving substantial increases in in-work poverty for households with children in recent years (Hick and Lanau, 2017).

Finally, regardless of which factors actually drove the increase in measured employment, over a third of lone parents (a group that has seen large cuts to means-tested transfer payments) were still not in employment in 2017. The lack of evidence that these cuts have significantly increased employment rates, and the fact that employment rate increases appear to have largely been driven by other factors, make the cuts hard to justify.

Implications of our findings

Our analysis shows that the changes to taxes and transfer payments (benefits, tax credits and the introduction of UC) announced since 2010 are, overall, regressive, however the changes are measured. Consequently, the largest impacts are felt by those with lower incomes. This is true even when increases in gross earnings from the NLW are taken into consideration.

Moreover, the reforms will have a disproportionately negative impact on several protected groups, including disabled people, certain ethnic groups, and women, and particularly negative impacts on intersectional groups who experience multiple disadvantages (for example, lone parents with disabled children).

These reforms took place against a background of a clear and overarching UK Government commitment to deficit reduction; changes to taxes and benefits are obviously an inevitable consequence of this. However, the precise mix of reforms implemented was not inevitable, nor was the impact on vulnerable protected groups that emerged.

The UK is a State Party to the International Covenant on Economic, Social and Cultural Rights (ICESCR), which includes the right to social security. The UN Committee on Economic, Social and Cultural Rights has observed that benefits must be 'adequate in amount and duration' to ensure an adequate standard of living; moreover, any reductions (driven, for example, by wider economic policy considerations) should be temporary, necessary and proportionate (Office of the High Commissioner for Human Rights, 2016). The UK Government's published impact assessments alone do not indicate that these obligations have been taken into account; nor do they indicate that the Government paid due regard to the Public Sector Equality Duty (PSED) and the impact of reforms on vulnerable groups.

The Commission's report *Future fair financial decision-making* (EHRC, 2015) made a number of recommendations including that:

- Improvements were needed to the quality of data used for impact assessment
- HMT should extend its existing analysis of the aggregate distributional impacts of tax and spending decisions to analyse the aggregate/cumulative impact of decisions on people sharing different protected characteristics
- The coverage and evidence in HMT's assessment of the impact of the Spending Review on equalities (published alongside each main Spending Review) should be improved

- Spending Review measures should be monitored to understand their impact on protected groups more fully.

The UK Government's response to the EHRC's report has been disappointing. We do not question the good faith, commitment and hard work of officials in HMT and elsewhere in the UK Government on these issues. However, despite high-level commitments to ensuring that equality considerations are properly taken into account in financial decisions, and some indication that progress has been made internally on data quality and availability issues, there is little concrete evidence that the specific recommendations have been properly considered or acted upon. The published Impact on Equalities Analysis and the distributional analysis to accompany the 2015 Spending Review do not appear to represent any significant progress from comparable documents produced in 2010.

The continuing lack of evidence of an assessment of the cumulative impact on protected groups does not appear consistent with the PSED. However, the recent Race Disparity Audit, while not directly related, shows that the analytical capacity required to address equality issues is available within the UK Government. Going forwards, the principles underlying the audit need also to be applied to policymaking.

Policy recommendations

Mitigating the negative impacts of reforms

There is a clear need for the UK Government to consider how to mitigate these large negative impacts, particularly given the disproportionate impacts for some protected groups, and the lack of evidence that these impacts, and possible mitigations, have been considered by HMT**. We therefore recommend that, as a matter of urgency, the UK Government reviews the level of welfare benefits to ensure that they provide an adequate standard of living for households who rely partially or wholly on transfer payments.**

Specific reforms that have a particularly adverse impact on living standards for particular groups include, but are not limited to, many of the specific reforms analysed in Chapter 6. These include:

- The four-year uprating freeze on most benefits, tax credits and UC parameters for working age adults and families from 2016–17 onwards, which has a disproportionate impact on lone-parent families with low incomes.

- The two-child limit for Housing Benefit, tax credits and UC which came into force in April 2017. This has, by design, a particularly large impact on households with more than two children, but also has a disproportionate impact on some ethnic groups.
- Reductions to work allowances in UC.
- The spare room subsidy ('bedroom tax') for social sector housing tenants deemed to have excess bedrooms.
- The reassessment of the caseload of DLA payments for PIP (we note, however, that these impacts will be substantially mitigated as a result of the recent High Court judgment against the UK Government). This has a disproportionate impact on disabled people, especially the most severely disabled.

We therefore recommend that the UK Government reviews these specific measures, with a view to mitigating their impact overall and, in particular, on protected groups.

Improving the transparency of decision-making

We make the following recommendations to HMT:

- In advance of the next Spending Review, HMT should publish a detailed explanation of the process by which it will ensure that the Spending Review process is fully compliant with the PSED.
- HMT should convene an independent advisory group, based on the model of the 2010 Independent Challenge Group, to advise on the equality impact of the next Spending Review. The Independent Challenge Group provided internal advice on the likely impacts of the Spending Review and had both internal and external representation.
- All fiscal events (Budgets and Spending Reviews) should be accompanied by an equality impact assessment (EIA). This should incorporate a CIA of the impact on protected groups, showing how distributional impacts vary across groups. In addition, the EIA should discuss and explain any major disparities in outcomes that adversely impact protected groups.
- HMT should prepare a CIA for each fiscal event, as well as analyse the impact of key individual tax or social security measures. These analyses should be conducted, where possible, both at the individual level and for households

and families, showing clearly the assumptions made. The analyses should incorporate intersectional analysis which should disaggregate groups by combinations of different protected characteristics, recognising that this will be constrained by the sample size of the data being used to conduct the assessment.

The Scottish and Welsh Governments should also publish EIAs of the key individual tax and social security measures that they plan to introduce.

Improving data for cumulative impact assessments

We make the following recommendations to improve the quality of data for CIAs:

- We were unable to provide impact assessments for some protected characteristics (for example, sexual orientation), due to non-availability of data to End User Licence researchers. The UK Government should therefore assess what steps could be taken to make such data available.
- The FRS questionnaire should be revised to enable impact assessment of at least some of the welfare reforms which cannot currently be modelled due to data limitations. In particular, information about which benefit claimants have been sanctioned and why (and also about sanctions under UC) should be included in the FRS dataset.
- Where sample size constraints are a barrier to accurate impact assessment (for example, for the LCF, and for some of the intersectional analysis using the FRS), the UK Government should consider allocating more resources to data collection. This would increase the sample size of these datasets to high-enough levels for robust analysis.
- The Welsh Government should allocate additional resources to enable a boost sample for the FRS and LCF in Wales. The current sample size of the FRS and LCF is too small to allow robust analysis of some of the protected characteristics (in particular, ethnicity).
- The LCF questionnaire should be amended to include a disability question or questions similar to those in the FRS. This would enable the impact of changes to indirect taxes on households to be assessed according to household disability status.
- Increases in sample size, and the addition of a disability question to the LCF, could be accomplished more easily as part of the forthcoming changes to the LCF data collection protocol (through which the LCF is being merged into the

Household Finances Survey (HFS) from 2017-18). Expanding the sample size of the LCF expenditure sub-sample within the HFS, and including a disability question or questions in the content of the core HFS data module, will make LCF more fit for purpose for future CIA work.

1 | Introduction

1.1 Background

The research in this report forms part of a staged programme of work to examine the potential impacts on different groups protected under the Equality Act 2010 of implemented and proposed welfare reforms (in England and Wales) and social security reforms (in Scotland), and related government spending decisions, including those of the devolved governments. These reforms include, among others, the Welfare Reform Act 2012, the Welfare Reform and Work Act 2016, and the Social Security (Scotland) Act 2017. The programme of work also covers changes to the taxation system implemented in successive Finance Bills.

The aim of the research is to inform the Equality and Human Rights Commission's ('the Commission's') work and the wider public debate about the impact of tax and spending decisions on equality and human rights. In particular, in the run up to the next Spending Review – scheduled for 2019 – the Commission wished to produce a quantified and objective assessment of the baseline impact of UK Government tax and spending policies, implemented and planned, over the full 2010–22 period. This assessment will also help enable any necessary improvements and mitigations to be put into place.

The objective of this research is to highlight where improvements are required to policy, systems and practices, to understand and alleviate disproportionate impacts on protected groups, and to ensure the reforms do not contribute to deepening inequalities. This project builds on and extends earlier work carried out by, and for, the Commission between 2012 and 2015. This earlier work resulted in several publications, including: *Cumulative Impact Assessment* (Reed and Portes, 2014); *Making fair financial decisions*; *Fair financial decision-making: 2014 progress report*; and *Future fair financial decision-making* (EHRC, 2012; 2014; 2015).

Future fair financial decision-making made a number of recommendations for the Government's approach to future Spending Reviews (and tax and spending decisions more broadly) in the context of the Public Sector Equality Duty (PSED).

These are discussed in detail in Chapter 2. A key recommendation made by the Commission was that HM Treasury (HMT) should conduct a cumulative impact assessment (CIA) of tax and spending decisions. At the time of writing, HMT had yet to follow this recommendation. This research assesses the extent to which HMT has addressed the recommendations as a whole.

This research has been conducted in tandem with a detailed evidence review by the National Institute of Economic and Social Research (NIESR) of the impact of welfare reform and welfare to work programmes (Hudson-Sharp *et al*., 2018), and the two projects have strongly influenced each other.

1.2 Previous research

Reed and Portes (2014) found that modelling CIA by equality group is feasible and practicable (at least for the protected characteristics for which sample size information is available in household survey data), subject to several significant caveats, relating both to data constraints and methodological issues. The Commission (EHRC, 2015) set out improvements made since its report of its Section 31 Assessment of HMT's 2010 Spending Review (EHRC, 2012). Building on the analysis set out in Reed and Portes (2014), the Commission identified additional areas for improvements, including extending HMT's distributional impact analysis to include the cumulative impact of decisions on people sharing different protected characteristics.

Reed and Portes examined 30 different changes to taxation (direct and indirect) and benefits introduced from the June 2010 budget to the 2013 Autumn Statement, including all changes to be implemented by the end of 2015. Their report also included the impact of changes to public spending across selected UK Government departments: health; education (covering early years, schools and further/higher education); housing; transport; domiciliary social care; and other services (for example, services for unemployed people such as the Work Programme). Universal Credit (UC) was not included in the main analysis because it was not expected to be fully rolled out until late 2017 (although the research did present some preliminary analysis of the impacts). The research covered four protected characteristics: age, disability, ethnicity and gender.

The report showed the separate and combined impact of tax, welfare and other public spending changes as a proportion of total household living standards by

income decile, and the cash equivalent impact of specified public spending changes by family type, ethnicity and disability. Key findings were that:

- The impacts of tax and welfare reforms were more negative for families containing at least one disabled person, particularly a disabled child, than for other families, and these negative impacts were particularly strong for low income families. This is not surprising, given the significant reductions to welfare for working-age people and the high proportion of welfare expenditure on disabled people of working age, particularly those on low incomes.
- Women lost more than men from the direct tax and welfare changes. This is mainly because women receive a larger proportion of benefits and tax credits relating to children, and these constitute a large proportion of the welfare reforms between 2010 and 2015. It should be noted that these results are sensitive to the precise assumption of the 'sharing rule' being used within households.
- Households containing younger adults fare better than other households; although the impact of benefit changes is relatively uniform across age groups, these households benefit more from changes to direct taxation (the increase in the personal allowance) than any other group.
- In terms of public services (as opposed to tax and welfare), Black and Asian households lost out more than other ethnic groups. This is largely due to their greater use of further and higher education, which saw significant spending reductions, and (for Black households) use of social housing.

1.3 Methodology

As discussed in more detail in Chapter 3, the research uses the tax-transfer model (TTM), a microsimulation model developed since 2008–09 by the Institute for Public Policy Research, Landman Economics and the Resolution Foundation. The TTM uses data from two UK datasets: the Family Resources Survey (FRS) and the Living Costs and Food Survey (LCF).

This report updates and substantially extends the analysis of Reed and Portes (2014), particularly in the following respects:

- **Time period.** This report covers the period from 2010 to 2022, which includes the 2010–15 Coalition Government; the Conservative Government in office

between the May 2015 and June 2017 general elections; and, prospectively, the 2017–22 Parliament.

- **Coverage**. This report includes measures which were legislated for in 2010–15 but not fully introduced, and which were not included in the earlier report (in particular UC and the replacement of Disability Living Allowance (DLA) with Personal Independent Payment (PIP)). The report also includes measures introduced after 2015, such as the National Living Wage (NLW), the two-child limit on Housing Benefit, tax credit, and UC payments.
- **Methodological and data improvements.** By pooling three years of data, we have substantially increased the sample sizes for our analyses, enabling a more detailed analysis of a number of dimensions. In addition, several technical improvements (explained in Chapter 3) have been made to the Landman Economics model.
- **Human rights implications.** The right to an adequate standard of living is recognised as a human right in international human rights instruments, in particular the International Covenant on Economic, Social and Cultural Rights (ICESCR), to which the UK is a signatory. ICESCR is understood to establish a minimum entitlement to food, clothing and housing at an adequate level. This report therefore looks at the impact of government policy changes on the right to an adequate standard of living, as measured by both relative income poverty and the Minimum Income Standards (published by the Joseph Rowntree Foundation).

1.4 Structure of the report

Chapter 2 outlines the progress made since the Commission's 2015 report, *Future fair financial decision-making*. Chapter 3 discusses the methodology used to model reforms to tax and transfer payments. Chapter 4 considers cumulative assessment of the impact of reforms at the household level, focusing on 'one-way' analysis of the distributional impacts by household income decile and protected characteristics. Chapter 5 looks at the intersectional impact of reforms, focusing on 'two-way' analyses according to income distribution, household demographic type, gender, race, disability and age. The chapter includes both household-level and individual-level analysis. Chapter 6 assesses the impact of a range of specific reforms introduced as part of the overall package of tax and welfare reforms. These include

the four-year freeze to uprating most benefits and tax credits; reductions in the work allowances in UC; the spare room subsidy (‘bedroom tax’); and forthcoming reforms to benefits and the income tax system that are specific to Scotland. Chapter 7 analyses the impact of reforms on the number of households, children and adults below an adequate standard of living in Great Britain and each of its component countries. Chapter 8 looks at the number of households winning and losing in cash terms from the overall package of reforms, and the distribution of the size of gains and losses. Chapter 9 considers the impact of the reforms on the financial incentive to work for adults in households. Finally, Chapter 10 presents our conclusions and policy recommendations.

2 | Progress since *Future fair financial decision-making*

2.1 Introduction

This chapter summarises the key recommendations of the Commission's report, *Future fair financial decision-making* (EHRC, 2015), and explains the extent to which these recommendations were addressed by HM Treasury (HMT) within the context of the 2015 Spending Review. The chapter also sets out key developments since the Spending Review, including the recommendations of the Women and Equalities Committee and the Treasury Committee, and the HMT response to these.

2.2 *Future fair financial decision-making*: key recommendations

The Commission's report built on earlier work by Landman Economics and the National Institute of Economic and Social Research (NIESR) (Reed and Portes, 2014) and by the Commission itself (EHRC, 2012; 2014). The report's key recommendations were that:

- **The quality of data should be improved**. The report recommended that the Treasury engage in detailed discussions with other UK Government departments, with the goal of clarifying expectations, in particular about what sort of data were required to enable HMT and other departments to take decisions in accordance with the Public Sector Equality Duty (PSED). The report also called for HMT to take the lead in ensuring that there was a common and agreed approach across the Government about different types and sources of acceptable data and evidence.
- **HMT's approach to impact assessment should be reviewed**. The key recommendation here was that HMT should extend its existing analysis of the aggregate distributional impacts of tax and spending decisions to analyse the aggregate/cumulative impact of decisions on people sharing different

protected characteristics. The Commission noted that the cumulative impact assessment (CIA) work undertaken by Landman Economics and NIESR showed that such analysis, while technically challenging, was entirely possible with existing data. The CIA work showed that, using a similar methodology to that used by HMT and the Institute for Fiscal Studies, it was feasible to estimate the cumulative impact of changes to taxes and benefits. Estimating the impact of changes to public spending was more complex and required several further assumptions but was also shown to be feasible (albeit subject to caveats). The Commission also recommended that existing cross-departmental groups should highlight and share information on 'aggregate' impact as they are working through policy and spending measures.

- **The coverage of evidence and analysis in HMT's assessment of the impact of the Spending Review on equalities, published alongside the main Spending Review, should be improved**. The Commission's Section 31 Assessment, which evaluated the extent to which HMT complied with the PSED in conducting the 2010 Spending Review, noted that the statement published alongside the 2010 Spending Review was extremely light on detail, included little or no data, and was at best selective in its coverage. The Commission recommended that such assessments in future should be more comprehensive and explain how judgements about the equality impacts of measures were taken.
- **Monitoring should take place**. The Commission recommended that Spending Review measures (in particular those likely to have a disproportionate impact on protected groups) should be monitored to improve understanding of where mitigations are needed and to provide feedback on data which can inform the next round of spending decisions.

2.3 The 2015 Spending Review

The November 2015 Spending Review provided an opportunity for the UK Government (and HMT in particular) to respond to these recommendations. In advance of the Spending Review, the Treasury, working with the Government Equalities Office, engaged with other Government departments to build capacity on relevant PSED compliance issues, including data quality. Moreover, both during and since the Spending Review, HMT has encouraged a greater focus on equality-related issues by departments.

While these improvements to internal processes and data-gathering are welcome, considerably less progress has been made in terms of providing publicly available results from impact assessments or related analyses. The Commission made a number of specific proposals relevant to the Impact on Equalities Analysis (IEA) and the 'Impact on households: distributional analysis' documents published alongside the 2015 Spending Review (HM Treasury, 2015a). However, the analytical content of these documents failed to consider the key recommendations above. In particular:

- Neither the IEA (which HMT emphasises is not, formally, an Equality Impact Assessment (EIA) nor the distributional analysis addressed the EHRC's key recommendation regarding CIA. There was no attempt to assess the aggregate impact of measures announced in the Spending Review, or of any subset of measures (such as changes to taxes and benefits, excluding the more methodologically difficult issues relating to public spending programmes). Nor was there any explanation for this omission. This is particularly disappointing given that the methodological objections originally raised by HMT were largely addressed by the Landman/NIESR CIA report, while both the EHRC and Landman/NIESR had offered to provide methodological help and guidance.

- The IEA was also almost entirely qualitative and highly selective in its coverage. For example, the section on 'Race' consists of three sentences, and refers to only one policy measure ('protecting the pupil premium at current rates'). Given that the Spending Review contained a large number of measures which are almost certain to have a disproportionate impact on ethnic minorities (to take just one example, changes to Housing Benefit), it is difficult to regard this as a serious, objective assessment. Similarly, the section on 'Disability' describes a number of measures that are argued to be of benefit to disabled people, but does not mention changes to welfare benefits, except to state euphemistically that: 'the Government has taken difficult decisions on welfare reform.' (para 2.19).

  Little or no evidence in either the distributional analysis or the IEA suggests that HMT has responded in any meaningful way to the Commission's recommendations for the public presentation of information about the impact of tax and spending decisions on protected groups. HMT notes that, for tax measures, the published Tax Information Notes do cover equality issues, but the treatment of such issues is again uneven, subjective and qualitative at best, as noted by the Treasury Committee report on the November 2017 Budget (House of Commons Treasury Committee, 2018).

In January 2016, the Women and Equalities Committee wrote to the Minister for Women and Equalities, asking questions relating to the conduct of the 2015 Spending Review. The Committee noted in its Report (Women and Equalities Committee, 2017: para 11) that: 'the evidence presented in answer to the following questions' was weak:

- 'how the Treasury took into account EHRC recommendations in its 2015 equalities impact analysis (question 1)'
- 'how equalities impact analysis improved between the 2010 Spending Review and the 2015 Spending Review (question 2)'
- 'how the Treasury took into account departments' equalities impact submissions to inform policies (question 5).'

The Committee concluded (para 15) that:

> The Treasury's response to our written questions on the equalities analysis did not fully answer those questions. In the absence of this information and any ministerial evidence, we are unable to form a view of how robust the equalities analysis was or how far the Treasury and the Government complied with the Public Sector Equality Duty in relation to the 2015 Spending Review. The lack of information provided to us demonstrates a concerning lack of transparency. The promotion of transparency is a central aim of the Public Sector Equality Duty requirements, but the Government's current position does not engender confidence that these requirements are being complied with.

In response, the Government stated (House of Commons Women and Equalities Committee, 2016: Government Response, para 6):

> In the case of the 2015 Spending Review and Autumn Statement, advice on the nature and scale of equality impacts was an integral part of the policy advice provided to ministers on different measures as they were developed. Advice was also provided on the scope for mitigating significant negative differential impacts of measures. Care was taken to ensure that all those involved in the process knew of their responsibilities to cover equality impacts. The internal Treasury governance and support on this work ensured that it was done to a standard that met both the Government's legal and policy commitments on equalities. The Treasury Spending Review guidance to other Government departments set out clear expectations to departments on their own input to the Spending Review.

> HM Treasury makes available a range of information in line with its commitment to transparency and accountability. This approach is also shared by other Government departments as part of their normal policy work. To accompany the Spending Review and Autumn Statement 2015, the Government published an assessment of equality impacts. This was aimed at promoting transparency and goes beyond any legal requirements. However, it is important to understand the status of this publication. It does not represent the sum-total of the more detailed confidential advice on equality impacts that formed part of the policy advice to ministers as measures were developed.

While helpful, this response essentially asks the Commission, stakeholders and the wider public to take HMT's claim that its internal, non-published work fully meets both the requirements of the PSED and the UK Government's legal and policy commitments on trust, with little or no supportive evidence or published documentation. We in no way question the good faith of HMT Ministers or officials, but the low quality and selective coverage of the IEA means that substantial improvements in the nature, quantity and quality of published information are required if HMT's claims are to be convincing and credible.

2.4 Developments since the 2015 Spending Review

The Commission (EHRC, 2015) also recommended that CIAs be prepared for fiscal events other than Spending Reviews, including Budgets. However, the distributional analysis prepared in the 2017 Budgets failed to include any assessment of the impact of changes to taxes and benefits on protected groups, nor did it include any IEA or other form of EIA.

More positively, the Cabinet Office published in October 2017 the Race Disparity Audit (and a revised version in February 2018), which presents 'an overview of disparities that have most impact across all aspects of people's lives' (Cabinet Office, 2018). This analysis helps to understand and assess differences between ethnic groups, and to identify public services where disparities are diminishing and those where work is needed to develop effective strategies to reduce disparities between ethnic groups.

More broadly, at the time of writing the Government Statistical Service (2018) is conducting an audit of inequalities data and analysis across Britain, including, in particular, inequalities for the protected characteristics, with input from across

government and beyond. Both HMT and other government departments should be able to benefit from this.

The Race Disparity Audit, and the broader ONS work, is tackling a different set of questions from those examined by the Commission's work on financial decision-making, and the audit does not attempt to assess the impact of policies. However, much of the data presented in the audit could, in principle, also be used for an EIA in the context either of policy-making or of monitoring and evaluating the impact of policies. Moreover, the underlying principle – that the response of the UK Government and public services to apparently unfair disparities should be, in the words of the current Prime Minister, to 'explain or change' them – is entirely consistent with the principle of the PSED as applied to policy-making.

2.5 Treasury Committee recommendation

In its report on the November 2017 Budget, the Treasury Committee echoed the key recommendations of the Commission and the Women and Equalities Committee on impact analysis, recommending:

> The Treasury should use ONS and HMRC data to produce and publish robust equalities impact assessments of future Budgets, including the individual tax and welfare measures contained within them. A deficiency of data in respect of some protected characteristics is not a reason for failing to produce an analysis in respect of others for which data is available. Nor should the risk of misinterpretation or methodological complexity preclude the publication of an Equalities Impact Assessment. Details on methodology and guidance on interpretation can be set out alongside the analysis, just as they are with the existing distributional analysis. (House of Commons Treasury Committee, 2018: section 7)

At the time of writing, the Treasury had not responded to the Committee's report.

2.6 Conclusion and assessment

The UK Government's response to the Commission's 2015 report has been disappointing. We do not question the good faith, commitment and hard work of officials in HMT and elsewhere in the UK Government on these issues. However,

and despite high-level commitments to ensuring that equality considerations are properly taken into account in financial decisions, and some indications that progress has been made internally on data quality and availability issues, little or no concrete evidence exists that the specific recommendations have been properly considered or acted upon. The published IEA and distributional analysis to accompany the 2015 Spending Review do not appear to represent any significant progress from comparable documents produced in 2010.

The lack of evidence of an assessment of the cumulative impact on protected groups does not appear to be consistent with the PSED. However, the recent Race Disparity Audit, while not directly related, shows that the analytical capacity required to address equality issues is available within the UK Government. In future, the principles underlying the audit also need to be applied to policymaking.

3 | Modelling reforms to tax and transfer payments

3.1 Introduction

This chapter explains the authors' methodology for modelling reforms to the personal and household tax system and transfer payments system (known as the social security system in Scotland and the welfare system in England and Wales), and explains how the model has been developed and improved since our earlier report (Reed and Portes, 2014).

3.2 The tax-transfer model

The IPPR/Resolution Foundation/Landman Economics tax-transfer model (referred to hereafter as the 'tax-transfer model', or TTM) was originally developed in 2008–09 by Landman Economics for the Institute for Public Policy Research (IPPR). The TTM was subsequently shared with researchers at the Resolution Foundation, who provided additional funding for improvements to the model's functionality and performance. The model is now used by all three organisations to model the effects of reforms to the tax and transfer payment system in England, Scotland and Wales. Broadly speaking, the following parts of the system are modelled:

- Income tax
- National Insurance Contributions (NICs)
- Council Tax
- Indirect taxes (for example, VAT; excise duties; Insurance Premium Tax)
- Means-tested and non-means-tested benefits
- Tax credits
- Universal Credit (UC), which at the time of writing was being rolled out to all families in the UK, replacing tax credits and most means-tested benefits.

In Scotland, the TTM models the following reforms to the tax and transfer payment system which are specific to Scotland:

- Additional funding from the Scottish Government to mitigate the impacts of the 'bedroom tax'
- Increases in the multipliers for Council Tax bands E, F, G and H
- The Council Tax Reduction Scheme for low-income households
- An increase in Carers' Allowance to the level of Jobseeker's Allowance (from summer 2018)
- The Best Start Grant for low income mothers, planned for introduction in 2018–19, which replaces the Sure Start Maternity Grant
- Changes to income tax rates in Scotland from 2018–19 onwards.

In Wales, the TTM models the Council Tax Reduction Scheme which provides financial support with Council Tax payments for low-income households.

The analysis also models the introduction of the National Living Wage (NLW), which was introduced in 2015 and uprated every April after. The NLW consists of an above-inflation increase in the minimum wage for employees aged 25 and over. The Government's stated intention is that the NLW should rise to 60% of median earnings by 2020 (Low Pay Commission, 2017).

The TTM is a microsimulation model which uses data from two datasets, the UK Family Resources Survey (FRS) and Living Costs and Food Survey (LCF). These surveys interview individuals within selected households in the UK (details of the datasets are discussed further in Section 3.3). The TTM calculates net incomes for households (and also for benefit units within households, and for individuals within benefit units), within a set of tax-transfer parameters and for a given tax year (for example, 2017–18). The parameters are held in files in spreadsheet format; a set of parameters can describe the actual tax-transfer system in place at a given time, or a simulated system with one or more reforms implemented (for example, an increase in income tax rates).

The model is fundamentally static: it does not attempt to model the effect of reforms to taxes or transfer payments on people's behaviour. The analyses in this report assume that behaviour is unchanged in response to policy changes, but we do discuss the potential impact of the reforms since 2010 on work incentives in Chapter 9.

The TTM has a functionality similar to other models of this type, for example:

- The distributional analysis models used by HM Treasury (HMT) and the Department for Work and Pensions (DWP) to analyse the distributional impact of policy changes (HM Treasury, 2017: 18–19).
- The Institute for Fiscal Studies (IFS)'s TAXBEN model (Adam, 2016).
- The EUROMOD model, which is an EU-wide model, with the UK component hosted at the University of Essex (Sutherland and Figari, 2013).

The models differ slightly in the data they use and in the aspects of the tax and benefit system that they model, but their underlying structures are very similar. Where they produce different results, these differences should be explicable.

3.3 Data sources

Family Resources Survey

The Family Resources Survey (FRS) is an annual survey of around 20,000 households per year in the UK, collected on a tax-year basis (UK Data Archive, 2017). The FRS is a repeated cross-sectional survey, not a panel survey: it interviews a new set of households each year rather than conducting repeat interviews with the same set of households over a number of years.

At the time of writing, the most recent release of FRS was 2015–16. The 2015–16 dataset contains 13,840 households from England; 2,704 households from Scotland; and 848 households from Wales (plus 1,930 households from Northern Ireland that are not used in the analysis in this report). The implications of the small FRS sample size for the impact assessment of the effect of policies on households in Wales and, to a lesser extent, Scotland, are discussed further below.

The FRS is widely acknowledged as the best source of data on individual, family and household gross incomes and disposable incomes (incomes after payment of direct taxes and transfer payments) in the UK. For this reason, the FRS is used for the UK Government's detailed statistics on the income distribution (the *Households below average income*, or HBAI) (DWP, 2017). The FRS contains individual, family and household attributes, which makes it suitable for microsimulation modelling of changes in taxes and transfer payments in response to policy reforms. These attributes establish eligibility to many elements of the tax and transfer payment system (for example, age; single/couple and/or marital status; number of children in the family; housing tenure type). The FRS also contains information on housing

costs and childcare arrangements and expenditure (but not expenditure on other goods and services).

Living Costs and Food Survey

The Living Costs and Food Survey (LCF) is an annual survey of households (Bulman, 2017) which has been conducted on a tax-year basis since 2015–16 (prior to 2015, the survey was conducted on a calendar-year basis). Like the FRS, the LCF is a repeated cross-sectional survey rather than a panel survey, involving interviews of a new set of households each year rather than repeat interviews with the same set of households over a number of years. The LCF also contains data on individual, family and household gross incomes and disposable incomes.

Although the LCF income data are not as detailed as income data in the FRS, they are of sufficient quality for microsimulation modelling of taxes and transfer payments. The LCF also collects data on expenditure on goods and services at the household level, using a combination of individual expenditure diaries completed over the two-week survey period, and additional questions about recurring regular expenditures (for example, utility bills, rent and mortgage payments). The LCF is used for the Office for National Statistics (ONS) publication *Effects of taxes and benefits on UK household income* (ONS, 2017a). The LCF is also the primary data source used by HMT when producing distributional analyses. The main drawback of the LCF compared with the FRS is that the sample size is smaller, at around 5,000 households per year. The 2015–16 LCF dataset contains 4,109 households from England; 420 households from Scotland; and 227 households from Wales (plus 156 households from Northern Ireland).

Sample size issues and data pooling

Our 2014 report for the Commission (Reed and Portes, 2014) used only one year of FRS data and one year of LCF data to analyse the distributional effects of reforms to taxes and transfer payments between 2010 and 2015. This led to problems regarding small sample sizes, particularly for the LCF data. Our data requirements are more demanding in this project due to our intention to produce results for Scotland and Wales as well as England. As indicated above, small sample size is particularly a problem for Wales (the same problem is mitigated in Scotland by the fact that the Scottish Government provides additional funding to the DWP to over-sample the Scottish population relative to its share of the whole UK population).

To overcome the problem of small sample size, the analysis in this report pools data from several consecutive years of FRS and LCF data, which increases the sample size available for analysis. We use four consecutive years of FRS data (2012–13, 2013–14, 2014–15 and 2015–16) and six consecutive years of LCF data (2010 through to 2015–16 inclusive). Table 3.1 shows the full sample size available for analysis in each country. Even after pooling datasets, the sample size in Wales, in particular, is still relatively small (less than 3,500 FRS households and less than 1,500 LCF households). This presents problems, particularly when trying to analyse more than one protected characteristic simultaneously. The relatively small ethnic minority sub-sample in Wales also makes impact assessment by ethnicity very difficult (there are only 99 households in the FRS sample for Wales with any ethnic minority adults in them, compared with around 400 in Scotland and over 6,000 in England).

Table 3.1 Information about number of households in the FRS and LCF data

Country	**Number of households in pooled dataset**	
	FRS	LCF
England	56,474	26,602
Scotland	11,657	2,717
Wales	3,405	1,473
Great Britain	**71,536**	**30,792**

Source: analysis of Family Resources Survey (2012–13 to 2015–16) and Living Costs and Food Survey (2010 to 2015–16).

Equality Act 2010 protected characteristics in the data

Both the FRS and the LCF contain data on most (but not all) of the Equality Act 2010's protected characteristics. Table 3.2 contains information for each of the protected characteristics for each dataset. The table explains whether the End User Licence (EUL) dataset – the standard version of the dataset available to researchers from the UK Data Archive – holds information about the protected characteristics, and at what level of detail. The table also has information about additional data in the Secure Access (SA) version of the data. This is an enhanced version of the dataset with additional information that is only accessible to researchers who have applied for a special user licence, and at a secure location, for reasons of data confidentiality.

Table 3.2 Information about Equality Act 2010 protected characteristics in the FRS and LCF data

Protected characteristic	Information in FRS		Information in LCF	
	EUL dataset	SA dataset (additional)	EUL dataset	SA dataset (additional)
Age	Yes		Yes	
Disability	Two binary variables ('core'/'wider' definition): plus binary variables for specific conditions		No	
Gender reassignment	No		No	
Marriage and civil partnership	Yes		Yes	
Pregnancy and maternity	Maternity (but not pregnancy)		Maternity (but not pregnancy)	
Race	Detailed classification		Broad classification	
Religion or belief	No	Yes	No	Yes
Sex	Yes		Yes	
Sexual orientation	No	Yes	No	Yes

Source: Handbooks for Family Resources Survey (2012–13 to 2015–16) and Living Costs and Food Survey (2010 to 2015–16).

As shown in Table 3.2, the EUL version of the FRS data contains data on all the Equality Act 2010 protected characteristics except for gender reassignment, religion or belief, sexual orientation, and pregnancy. The SA version of the FRS data also includes data on religion or belief and sexual orientation which are judged too sensitive by ONS for inclusion in the standard dataset (UK Data Archive, 2017: 20–21). The data provided by the LCF is similar, with one significant omission: the LCF does not include any disability variable, which means that we are unable to provide any analysis of the impact of indirect taxes by disability status in this report. The FRS also has a more detailed classification than the LCF of race; the 'Asian' category for adults in the FRS is broken down into five sub-categories – Indian, Pakistani,

Bangladeshi, Chinese and Other Asian – whereas the LCF combines all these into one category.

The EUL version of the datasets were used for this report due to the administrative difficulties of enabling access to the SA version of the LCF and FRS datasets. The analysis focuses on cumulative impact assessment of policies based on age, disability, race and sex. We also analyse two-way combinations of these characteristics and assess the impacts of policies according to where households are located in the income distribution. Some additional analysis of the impact of policies by maternity status and by marriage/civil partnership status is contained within Appendix B. We do not perform any analyses examining gender reassignment, religion or belief, or sexual orientation.

3.4 Methodological improvements to microsimulation modelling

Since Reed and Portes (2014), the Landman Economics/IPPR/Resolution Foundation tax-transfer model has been improved and enhanced in several key respects. This section summarises the key improvements and more detail on the functionality and capabilities of the model is provided in Appendix A.

More detailed disability information in the FRS

Our 2014 report used data from the 2010–11 FRS, which contained only limited information on disability status (a binary variable corresponding to the 1995 Disability Discrimination Act definition of disability). From 2012–13 onwards, the FRS includes more detailed information on disability for adults and children in the sample. The disability status variable has been changed to correspond more closely to the 2010 Equality Act definition of disability as 'a physical or mental impairment that has a "substantial" and "long-term" negative effect on your ability to do normal daily activities'.[4]

Due to the difficulty of precisely identifying all those survey sample members who are disabled under the Equality Act 2010 (EA) definition, the FRS provides two disability variables:

- The **core** definition (variable DISCORA1 in the adult dataset and CDISCORA1 in the child dataset). According to the FRS documentation, everyone who is disabled under this definition will be disabled under the EA

[4] More detailed information is available at: https://www.gov.uk/definition-of-disability-under-equality-act-2010

definition, but some people who are disabled under the EA definition will be excluded.

- The **wider** definition (variable DISACTA1 in the adult dataset and CDISACTA1 in the child dataset). This definition should capture everyone who is disabled under the EA definition, but may also capture some sample members who are not disabled under the EA definition.

The individuals who are classified as disabled under the EA definition, but who may not be captured under the FRS core disability variable, include those who are in one or more of the following categories (UK Data Archive, 2017: 27):

- People with a long-standing illness or disability who would experience substantial difficulties without medication or treatment.
- People who have been diagnosed with cancer, HIV infection or multiple sclerosis and who are not currently experiencing difficulties with their day-to-day activities.
- People with progressive conditions, where the effect of the impairment does not yet impede their lives.
- People who were disabled in the past and are no longer limited in their daily lives.

In view of the difficulty of identifying a precise mapping between the FRS core and wider disability variables and the EA definition of disability, we report results using a combination of both definitions.

Since 2012–13, the FRS has also included a set of variables for whether sample members experience particular functional disabilities. There are ten binary variables corresponding to difficulties with the following functional areas:

- Vision
- Hearing
- Mobility
- Dexterity
- Learning
- Memory
- Mental health
- Stamina, breathing or fatigue
- Social or behavioural difficulties
- Difficulties in any other area of life.

These variables are used in the analysis to develop a ‘disability score’ measure as a proxy for the severity of an individual’s disabilities. The disability score is arrived at by summing the number of functional disabilities for each adult or child, producing a number between zero and ten. This score is then summed across adults and children in the household to produce a ‘household disability score’ indicator, used for some of the distributional analysis in Chapters 4 and 6. The individual-level distributional score for adults is also used as one of the characteristics for intersectional analysis in Chapter 5.

Individual-level distributional analysis

Distributional analysis of tax and transfer policies is often conducted at the household or family level, but analysing changes in net income at the individual adult level within couples is also instructive. For example, given that most benefits and tax credits in the UK are paid to women rather than men within couples, *a priori* we would expect the effect of cuts to benefits and tax credits to have a greater impact for women in couples than for men in couples. Our 2014 report introduced an experimental distributional analysis at the individual level to accompany the household-level analysis in the main set of results (Reed and Portes, 2014). This individual-level distributional analysis has now been refined and improved to the extent that we feel confident presenting individual-level distributional results alongside the household-level results in this report. This is particularly important when analysing the impact of policies by gender. A full technical explanation of the assumptions underlying the individual-level analysis is contained within Appendix A.

Improvements to modelling algorithms

Some of the algorithms used to model various parts of the tax and transfer payment system have been improved since the 2014 report. For example, taxation of savings and dividends is now modelled more accurately. The New State Pension introduced for new claimants in 2016, which has a higher basic rate but also changed qualifying conditions, is modelled more accurately in the new set of results. The code for modelling UC has been rewritten since 2014. Perhaps most importantly, the TTM now includes a new algorithm designed to model the reassessment of claimants of Disability Living Allowance (DLA) for Personal Independence Payment (PIP). The assumptions underlying these new algorithms in the model are discussed in Appendix A.

The National Living Wage

One of the key policy reforms of the post-election July 2015 Budget was the National Living Wage (NLW), an above-inflation increase in the National Minimum Wage for employees aged 25 and over. This is a key aspect of the post-2015 Conservative Government's stated ambition to 'make work pay' by improving the financial returns to work for low-paid employees. A full appraisal of the distributional impact of reforms introduced from 2015 onwards needs to include the impact of the NLW. We therefore include the NLW alongside reforms to the tax and transfer payments systems in this report.

Partial take-up of means-tested benefits, tax credits and Universal Credit

The analysis in our 2014 report assumed that everyone who was eligible for means-tested benefits (such as income-based Jobseeker's Allowance (JSA) and Housing Benefit), tax credits and UC (when rolled out) claimed these transfer payments. Take-up is less than 100% in practice, as shown by DWP statistics concerning take-up of means-tested benefits and HMRC statistics concerning take-up of tax credits. An algorithm was therefore developed which allows estimated take-up of benefits, tax credits and UC to be set at a proportion between zero and 100% of eligible recipients. For means-tested benefits and tax credits, recent statistics from the DWP and HMRC were used to provide realistic take-up assumptions. For UC (where take-up figures had not been published, as roll-out was at too early a stage), an algorithm was used to determine take-up for each benefit unit in the FRS. This was based on whether the benefit claimant was assumed to claim any of the benefits or tax credits which are being replaced by UC. In addition, we adjust UC receipt to take account of benefit sanctions (details are set out in Appendix A).

3.5 Policies included in the cumulative impact assessment

The analysis in this report includes the impact of all tax, benefit, tax credit and UC policies that the TTM is able to simulate or approximate with a reasonable degree of accuracy. In practice, reforms fall into three broad categories, as explained under the headings below.

Reforms included with high accuracy

The majority of reforms are included with high accuracy, including:

- the income tax and NIC systems

- most parts of the benefit system
- most parts of the tax credit system
- most parts of UC.

Reforms included with lower accuracy

Some aspects of the tax and social security reforms can be modelled, but with lower accuracy because the EUL version of the FRS data does not include enough information for completely accurate modelling. The main examples of this are:

- Council Tax and the Council Tax Benefit system (replaced by Council Tax Support when the system was localised in April 2013). The FRS EUL dataset does not include local authority identifiers, meaning that we were unable to model exact Council Tax liabilities and the precise system of Council Tax Support in place in each local authority in England; we use an approximation instead. For Scotland and Wales, national Council Tax Reduction Schemes are in place, making this problem less acute.
- Local Housing Allowance (LHA) for Housing Benefit claimants in the private rented sector. The maximum permissible rents on which LHA can be claimed in each local authority are based on rent levels in the local authority. In the absence of local authority identifiers in the FRS, we are forced to approximate LHA levels based on regional information.
- Assessments for disability-related benefits such as Employment and Support Allowance (ESA) and PIP. Although the FRS includes information on the nature and severity of each claimant's disabilities that can be used to approximate the results of assessments for these benefits (and, in particular, re-assessments of the existing stock of DLA and Incapacity Benefit (IB) claimants), there is not enough information to enable a fully accurate simulation of an assessment for either of these benefits. The results from using the FRS disability variables will be at best an approximation of the actual outcome of any assessment.

Reforms which cannot be included

Overall, the TTM is able to model the fiscal impact of over 90% of reforms to the benefits, tax credits and UC systems since 2010 to a high or partial standard of accuracy. However, some aspects of the benefits, tax credits and UC systems cannot be included in the impact assessment because the FRS data do not contain the required information. The main examples of this are:

- Changes to rules regarding the income thresholds for repayment of tax credits if income rises more than expected over the course of a tax year. These were made less generous during the 2010–15 Coalition Government as a cost-saving measure. Since the FRS (and LCF) data are cross-sectional rather than panel datasets, they do not contain the information about claimants' incomes in the previous tax year that would be required to model these reforms.
- Sanctions for claimants of JSA, ESA, tax credits and UC. The sanctions system was made significantly more tough during the 2010–15 Coalition Government (Hudson-Sharp *et al*., 2018: 83–84). Moreover, data from the DWP show that the number of JSA sanctions each year that are applied for a variety of reasons (for example, non-attendance at Jobcentre Plus interviews; failure to actively seek work) increased to a peak in 2013, before starting to fall as more claimants were transferred to UC. The number of sanctions under UC increased markedly between 2015 and 2017 (Hudson-Sharp *et al*., 2018: 85–88). Unfortunately, the FRS does not contain any information about whether benefit claimants have been sanctioned or not; it is not even clear in the FRS documentation whether a sanctioned claimant is recorded as claiming a particular benefit but with a zero receipt of benefit, or is not recorded as claiming the benefit. We are therefore unable to model the impact of increased benefit or tax credit sanctions in the research. However, we do include an adjustment to the level of UC take-up in response to recent data showing that the proportion of UC claimants who are sanctioned is higher than for the benefits and tax credits which UC replaces (Hudson-Sharp *et al*., 2018: 87–8). Details are explained in Appendix A.

The indirect impacts of changes to the delivery of the benefit system are also difficult or impossible to model (although some may be captured indirectly, to the extent that they impact benefit receipt as recorded in the FRS data). In particular, although the transitions from IB to ESA and from DLA to PIP are modelled as described above, the broader impact of changes to the assessment system are difficult to capture. As evidenced by widespread public concern, these changes, the high volume of appeals, and the considerable evidence of significant hardship to many claimants, have had broader impacts than those modelled here. This research focuses on features of the system that can be quantitatively modelled, therefore omitting certain qualitative features that may nonetheless be important and additional to the analysis contained here (Hudson-Sharp *et al*., 2018: 63–82).

3.6 Choice of baseline scenario

The reforms to taxes and transfer payments modelled using the TTM are assessed against a baseline 'business-as-usual' scenario. This assessment involves taking the final tax-transfer system before the May 2010 general election (that is, the system for the 2010–11 tax year) and uprating that system using the default rules in place for the previous Parliament. In practice, this means that:

- For the **2010–15 Parliament**, the baseline scenario involves uprating means-tested benefits by the Rossi index, which excludes housing costs and tax thresholds, non-means-tested benefits, and tax credits by the Retail Price Index (RPI).
- For the **2015–17 and subsequent Parliament**, the baseline scenario involves uprating the State Pension by the 'triple lock' (the maximum of average earnings, the Consumer Price Index (CPI), or 2.5%) and almost all other benefits, tax credits, UC and tax thresholds by the CPI.

In practice, the change to CPI uprating for the baseline scenario from 2015 onwards means that the levels of most transfer payments, and tax thresholds, are lower (by around 1% per year of uprating) than if RPI/Rossi uprating had been used for the post-2015 baseline. Significant methodological problems with the uprating formula for RPI have resulted in its decertification as a national statistic (Johnson, 2015). This means that RPI would probably have been phased out in favour of CPI (or something similar to CPI) even in the absence of other reforms. Using CPI as the post-2015 uprating baseline therefore seems appropriate. However, we provide in Appendix C a comparison of some of the headline distributional results, using an alternative baseline where RPI uprating is used all the way up to 2021–22 .

3.7 Choice of tax year in which to perform the impact assessment

The results presented in this report use the **2021–22** tax year to assess the impact of changes to taxes and transfer payments. Assuming the current Parliament runs to full term, 2021–22 will be the final full year of the Parliament and mark the point at which all changes to the system announced since 2010 should be fully implemented (with the exception of future increases to the state pension age in the 2020s).

4 | Cumulative assessment of the impact of reforms at the household level

4.1 Introduction

This chapter shows the distributional impact of fiscal reforms at the level of the household (the next chapter shows results at the level of the individual). Most of the results here are presented for Great Britain as a whole, except in cases where the results for England, Scotland or Wales look markedly different from the results for Britain as a whole, or where reforms are specific to Scotland or Wales.

4.2 Impact by position in the household income distribution

First, this chapter looks at the impact of reforms according to where each household sits in the income distribution. Households in the Family Resources Survey (FRS) and Living Costs and Food Survey (LCF) datasets are ranked from poorest to richest in terms of disposable income (adjusting for family size). The (weighted)[5] data are then divided into ten equally sized groups or 'deciles', with the poorest 10% of families in decile 1, the next 10% in decile 2, and so on to the richest 10% in decile 10.

Figure 4.1 shows the distributional impact of all modelled reforms since 2010 to taxes, benefits, tax credits and Universal Credit (UC) by household net income decile, modelled for the 2021–22 tax year. The analysis uses LCF data to calculate the impact of changes in indirect taxes and FRS data to calculate the impact of all other changes. The figure is a stacked bar chart with different coloured bars showing

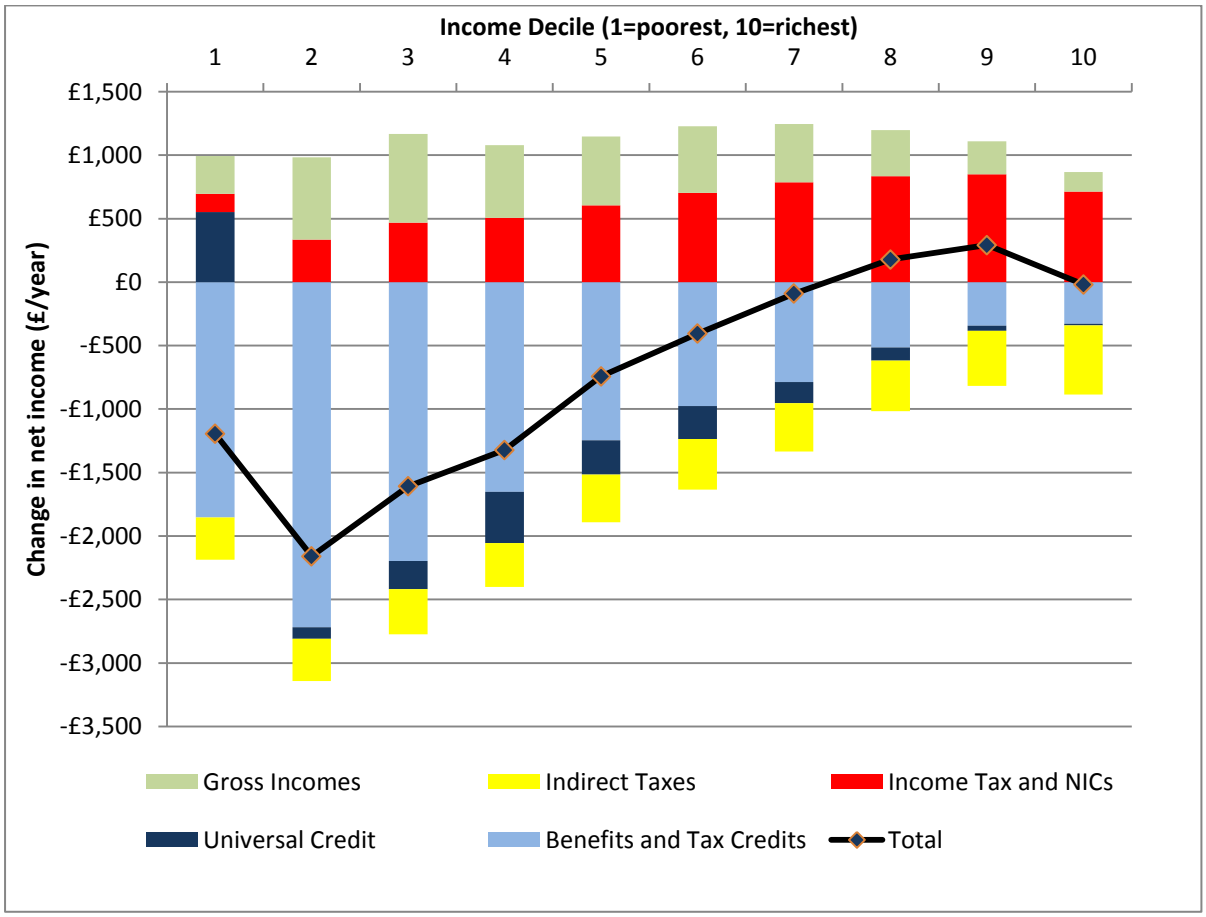
[5] The data are reweighted to adjust for differences in survey response rates and/or sampling frequencies between households with different characteristics (for example, number and age of adults; number of children; tenure type; region) After applying weights, the FRS and LCF datasets more closely resemble the UK population in terms of household composition.

the impact of reforms to different aspect of taxes, transfer payments, and policies affecting gross incomes:

- benefit and tax credit reforms (in light blue)
- UC (measured as an additional impact on net incomes after all other reforms to benefits and tax credits, in dark blue)
- reforms to direct taxes and National Insurance Contributions (NICs) (in red)
- changes to gross income (as a result of the introduction of the National Living Wage (NLW), in green)
- changes to indirect taxes (in yellow).

The black line shows the total impact of these changes and is the sum of the stacked bars.

Figure 4.1 Cash impact of reforms to taxes and transfer payments by household net income decile and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

Figure 4.1 shows that the biggest average total losses from the reforms are in decile 2 (at around £2,150 per year). Losses for the poorest decile are smaller than this, at around £1,200 per year. This is partly because average losses from benefit and tax credit reforms are smaller for the lowest decile than for decile 2; in addition, the introduction of UC leads to an increase in average net incomes for the lowest decile, but a reduction in net income for the other deciles. The positive impact of introducing UC for the lowest decile occurs because we assume that UC will have a higher overall take-up rate than the benefits and tax credits it replaces. We expect higher take-up because, if someone is claiming one component of the previous benefit and tax credit system but not another part (for example, Housing Benefit but not tax credits) when UC is introduced, the claimant will automatically claim both components (as they form part of the same UC payment). Appendix D shows the impact of changing the assumptions regarding the take-up of UC on the measured distributional impact.

Moving further up the distribution, the overall impact of the reforms is negative for deciles 2 to 7, with the average impacts getting smaller for households further up the distribution. For households in deciles 8 and 9, the total impact is positive (average gains of around £300 in decile 9), and, for the top decile, the overall impact of reforms is around zero. This distributional pattern is driven by one main factor: while the changes to benefits and tax credits (and UC above the first decile) have an overall negative impact, the impact is smaller for households further up the income distribution. This is mainly because households receive larger benefit and tax credit payments in the baseline scenario the further down the income distribution they are.

Reforms to benefits and tax credits since 2010 have resulted in expenditure being around £30 billion lower than if the benefit and tax credit rules (including the uprating rules) had been unchanged from those operating before the 2010 election. This makes it unsurprising that the distributional impact of these cuts is borne most heavily by the households that are most reliant on benefits and tax credits. This pattern is repeated in distributional analysis by household characteristics (particularly by household demographic characteristics and disability status).

The impact of changes to income tax and NICs is positive across all ten deciles but is larger in cash terms for the richer income deciles than for the poorer income deciles (with the largest cash gains occurring in decile 9). The main reason for this is that the policy reform resulting in the largest reduction in direct taxation since 2010 is the raising of the tax-free personal allowance for income tax, from £6,475 in the

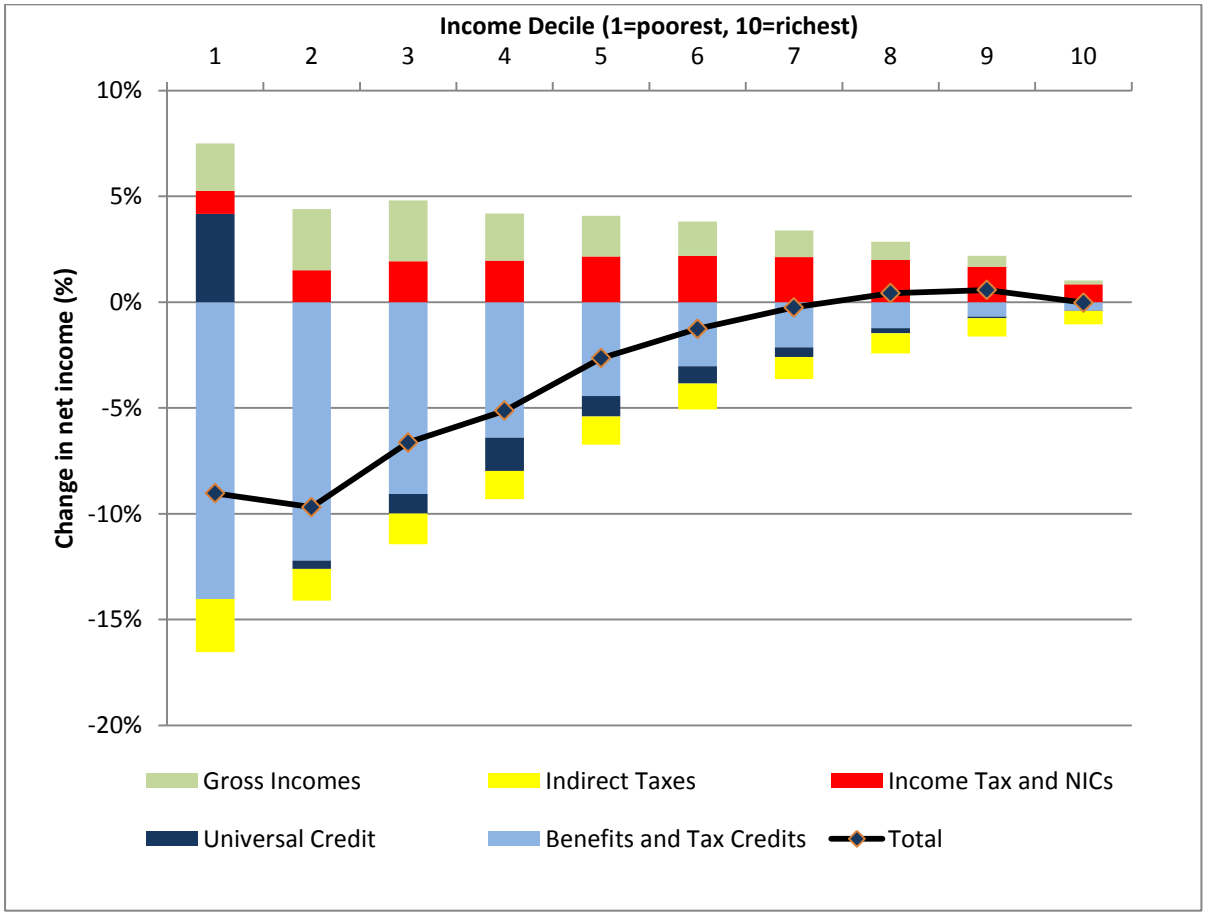
2010–11 tax year to £11,850 in 2018–19, with further increases to £12,500 planned by 2020/21. This is a substantial increase in real terms in the personal allowance and results in a cut in income tax for men and women whose gross income is above the original personal allowance threshold of £6,475 (uprated in line with inflation). However, the largest gains from the policy go to people who are earning £12,500 or more (in 2020–21 prices) because gross income needs to be this high to benefit from the whole of the allowance increase. Many adults in households lower down the income distribution do not earn enough to receive the full benefit of the allowance increase.

The impact of changes to gross incomes caused by the NLW is also positive across the whole income distribution but the highest impacts are in deciles 2 and 3. This is because the NLW is assumed to increase wages for all employees with an hourly wage below 60% of median earnings (at 2020–21 prices) and these low-wage workers are more likely to be located in deciles 2 and 3 than elsewhere in the income distribution. However, even the top decile shows some average gains from the NLW. Since the deciles are defined in terms of household income, some low-wage workers aged 25 or over (for example, men or women in couples whose partners are high earners but who earn less than 60% of median earnings in their own jobs) are located in the richest deciles.

Changes to indirect taxes result in losses in every decile and these losses are slightly larger for richer households than for poorer households. The main policy change which drives this result is the increase in the standard rate of VAT from 17.5% to 20% from January 2011; while excise duties on petrol and diesel have been cut substantially since 2010, the overall impact of the fuel duty cuts is not enough to offset that of the VAT increase.

Figure 4.2 shows the results from Figure 4.1 as a percentage of net income in the baseline scenario rather than in annual cash terms. The results show a broadly regressive overall pattern of total impacts across most of the income distribution (between deciles 2 and 9). The largest negative net impact is for decile 2 at around 10% of net income; average losses for richer households are smaller the higher up the decile the household is, while deciles 8 and 9 experience small average gains (0.6% for decile 9). For the poorest and richest deciles, the pattern is different; average losses for the lowest two deciles are 9–10%, while the top decile experiences very small average losses (less than 0.1%).

Figure 4. 2 Percentage impact of reforms to taxes and transfer payments by household net income decile and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

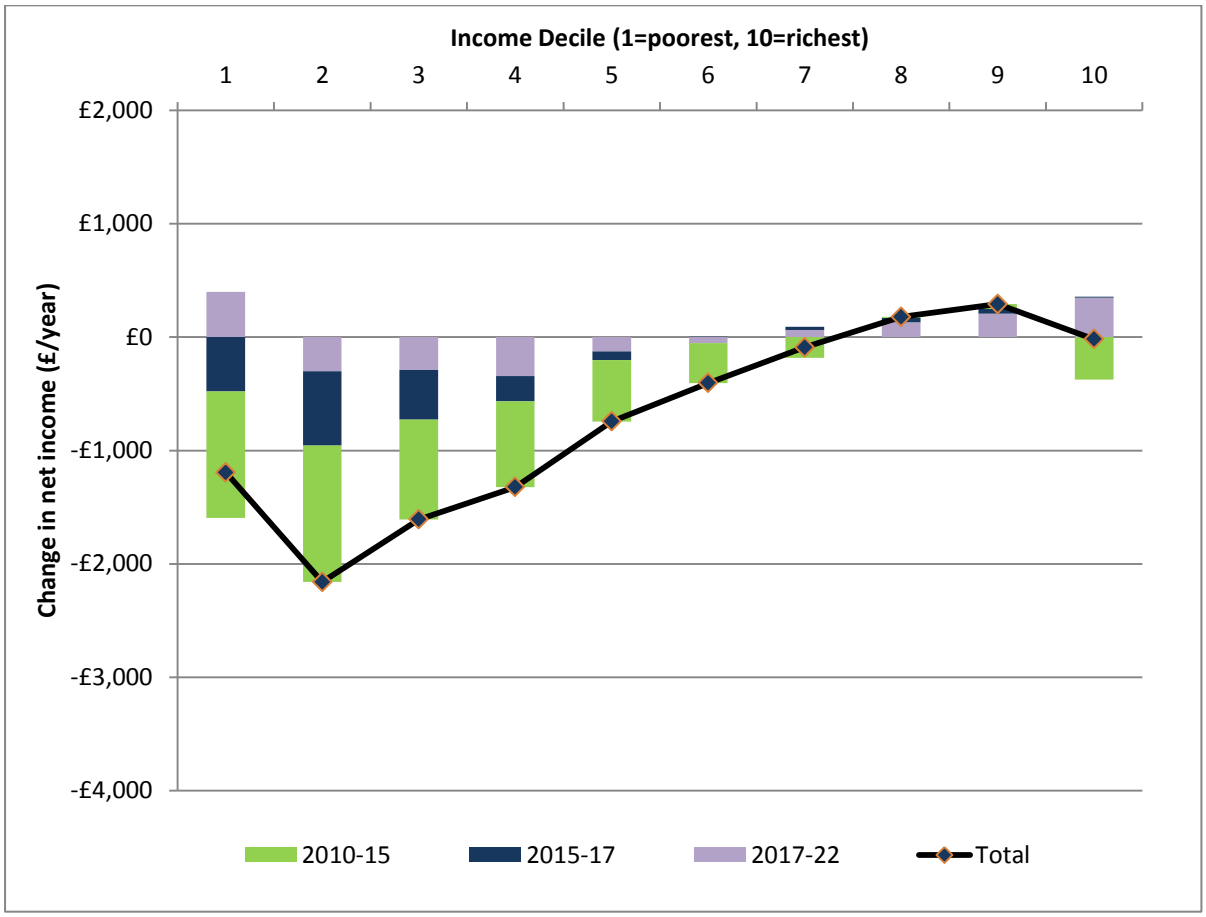
Figure 4.3 shows an alternative breakdown of the impact of the reforms, correlating impact to the Parliament in which the reforms were introduced (rather than by the type of reform). Figure 4.3 is in cash terms and the scale is the same as that in Figure 4.1 to enable easy comparisons between the two breakdowns. Reforms introduced during the 2010–15 Coalition Government (shown in green in Figure 4.3) have the largest negative cash impact on the bottom two deciles of the income distribution, smaller negative impacts in deciles 3 to 7, virtually no impact on deciles 8 and 9 and a negative impact in the top decile. The negative impacts in the lower income deciles are driven largely by benefits and tax credits; the negative impact in

the richest decile is driven largely by a reduction in the level of the higher rate threshold for income tax in real terms and increases in NIC rates for high earners.

Reforms introduced in the 2015–17 Parliament have negative impacts in the lower half of the income distribution (with the largest impact in decile 2) but negligible impacts further up the distribution. Once again this is a result of cuts in real terms in benefits and tax credits. The pattern for the 2017–22 Parliament is somewhat different: increases in average income in the lowest decile, losses in deciles 2 to 6 (which are largest in deciles 2, 3 and 4) and average gains in deciles 7 to 10 (which are larger for richer households). The distributional impacts shown for the 2017–22 Parliament are driven by four main factors:

- UC, which increases average net incomes in the lowest decile (mainly due to higher projected take-up rates compared with the benefits and tax credits it replaces) while reducing average net incomes in the other deciles (mainly due to being less generous than the benefits and tax credits it replaces).
- Further cuts to benefits and tax credits (for example, the continuation of the four-year freeze on most working-age transfer payments, operational from 2016 onwards).
- The NLW, which increases gross incomes (as shown in Figure 4.1).
- Increases in real terms in the value of the income tax higher rate threshold from 2017–18 onwards (at the time of writing, the Conservative Government was committed to increasing the level of the higher rate threshold to £50,000 by 2020–21).

Figure 4.3 Cash impact of reforms to taxes and transfer payments by household net income decile by Parliament of introduction, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

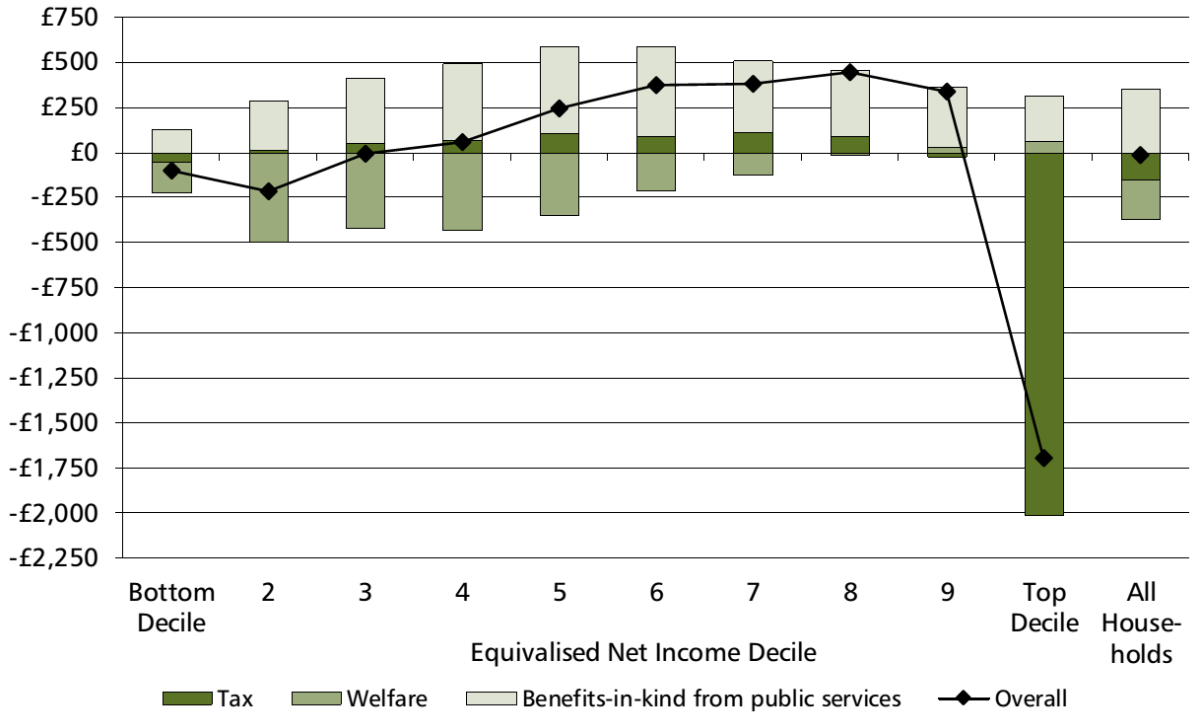
4.3 Comparison with distributional analysis by HM Treasury

HM Treasury (HMT) publishes a distributional analysis to accompany measures in each Budget and Autumn Statement (in November 2017, the Budget was moved from spring to autumn, with effect from the 2018 Spring Statement). Figure 4.4 below reproduces a graph of distributional impacts in cash terms from HMT's distributional analysis accompanying the November 2017 Budget (HM Treasury, 2017). HMT's distributional analysis graph appears different from the Landman Economics cash impact analysis by household income decile presented in Figures 4.1 and 4.3 above. While the HMT's overall pattern of results in deciles 1 to 9 does not look that different from our overall figures, the 'total' line shows higher gains than our results.

Conversely, the bar in Figure 4.4 for the top decile of households shows a large negative impact that is not present in Figures 4.1 or 4.3. There are several reasons why the two graphs differ:

- The HMT graph includes the distributional impact of benefits-in-kind from public services, which are not included in Figures 4.1 or 4.3 (the Commission plans to publish in 2018 a separate report using modelling by Landman Economics to show the distributional impact of changes to spending on public services since 2010).
- The HMT graph only includes reforms introduced from 2015–16 onwards (that is, the sum of HMT's 'tax' and 'welfare' bars is equivalent to summing the '2015–17' and '2017–22' bars in Figure 4.3). The HMT graph takes no account of reforms introduced between 2010–11 and 2014–15.
- HMT includes some reforms that we regard as too difficult to model accurately or consistently using the FRS or LCF data in Figure 4.4 – in particular, increases in Stamp Duty Land Tax (SDLT) announced in the 2015 Budget and Autumn Statement, and the abolition of SDLT for first-time buyers for properties worth up to £300,000.
- The HMT analysis uses the LCF only (rather than combining results for direct tax and transfer payments from the FRS with results for indirect taxes from the LCF, as we do), and their model uses three years of pooled LCF data (rather than six years, as we do for indirect taxes).

Figure 4.4 HM Treasury's cumulative cash impact analysis of modelled tax, welfare and public spending changes on households in 2019–20, in cash terms (£ per year), by income decile



Source: HMT distributional analysis model, DWP and HMRC modelling.

4.4 Impacts by household income decile for England, Scotland and Wales

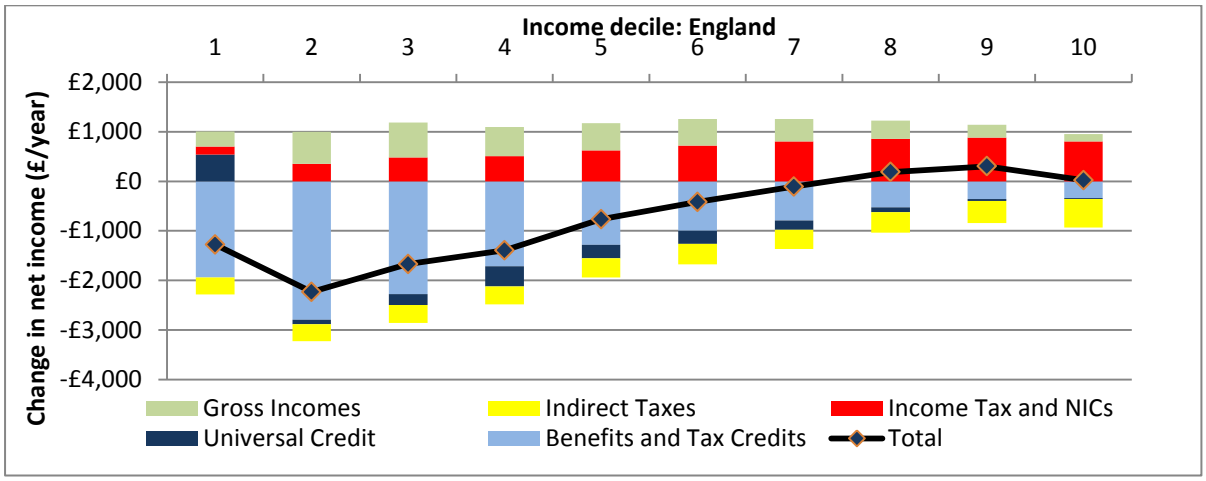
This section presents the headline cash-terms distributional impacts for England, Scotland and Wales separately to compare the effects of the reforms to taxes and transfer payments in each country. Figure 4.5 is a three-panel figure showing graphs equivalent to Figure 4.1 for households in England (top panel), Scotland (middle panel) and Wales (bottom panel) separately. While the overall shape of the distributional impacts in each panel appear similar, two main differences exist.

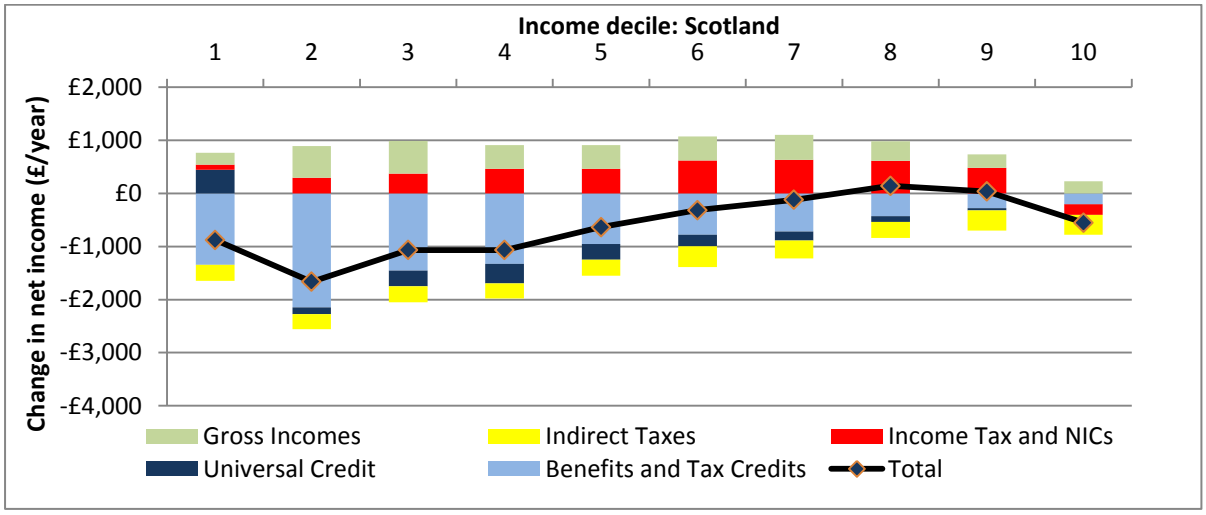
First, the distributional effects in Scotland and Wales are less negative for households in the bottom half of the income distribution. For example, households in deciles 1 and 2 in England are forecast to lose an average of slightly under £1,300 per year and slightly over £2,200 per year respectively. In Scotland, the equivalent average losses are slightly under £900 for decile 1 and slightly over £1,650 for decile

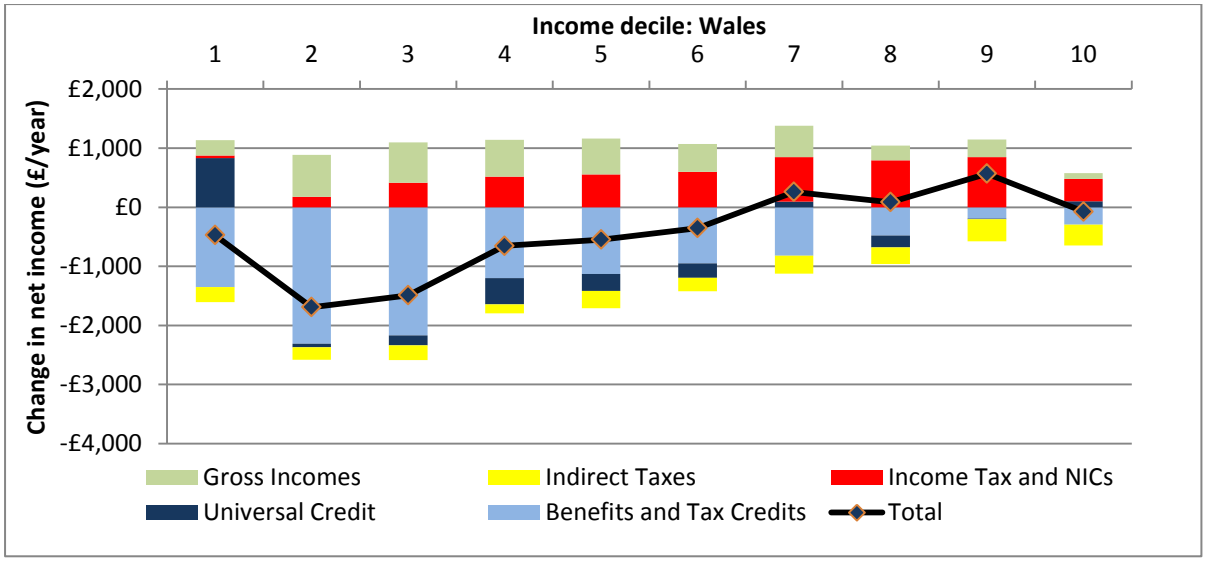
2. In Wales, the equivalent losses are slightly under £500 for decile 1 and slightly under £1,700 for decile 2. These differences reflect two main factors. The first factor is the presence of policies introduced by the Scottish and Welsh Governments to mitigate the impact of benefit and tax credit cuts on households. Both Governments have introduced schemes to offset the reductions in Council Tax Support for low-income households introduced by the UK Government when Council Tax Benefit was devolved to local authorities in England, and to the Scottish and Welsh Governments in their respective jurisdictions, in 2013. The Scottish Government has also introduced extra funding to offset the impacts of the spare room subsidy (‘bedroom tax’) which reduces Housing Benefit for social sector tenants who are deemed to have excess bedrooms in their property (see Chapter 6 for more details). The second factor is the difference in rent levels for Housing Benefit claimants in Wales and Scotland when compared with England. On average, rents are higher in England (particularly London and the South East) compared with Scotland and Wales; therefore the impact of restrictions on Housing Benefit has been more severe for claimants in England than it has in Scotland or Wales. The data also suggest that the introduction of UC leads to a larger increase in net incomes among the bottom decile of households in Wales than in either Scotland or England. This is because the partial take-up algorithm in the TTM predicts a larger increase in take-up for low-income UC claimants in Wales than in Scotland or England.

Second, the distributional pattern of impacts looks more volatile or ‘lumpy’ in Wales compared with Scotland or England. This is a consequence of the relatively small sample size for the Welsh FRS and LCF datasets compared with the English and Scottish FRS and LCF datasets, which makes accurate distributional analysis for Wales more difficult.

Figure 4.5 Cash impact of reforms to taxes and transfer payments by household income decile and type of reform, 2021–22: England, Scotland and Wales







Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

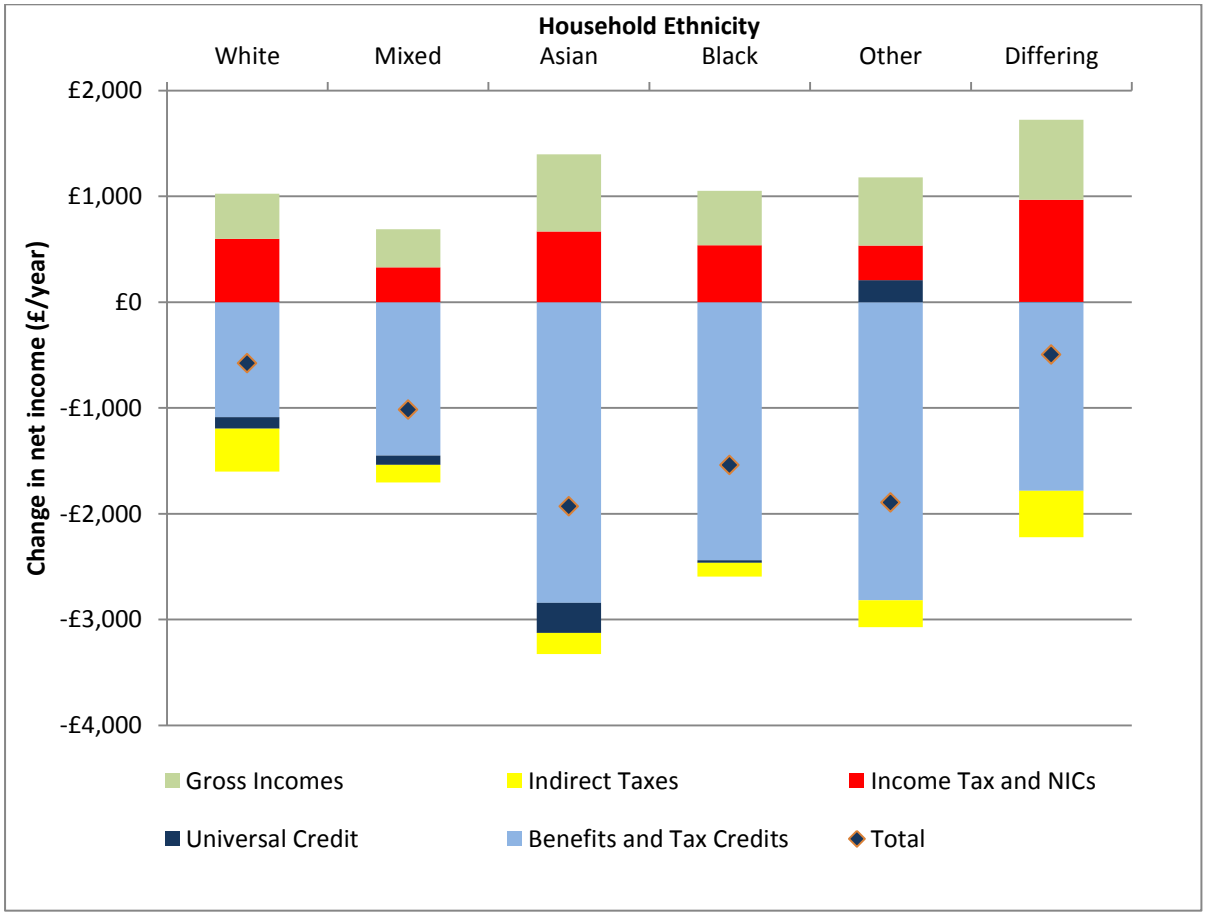
4.5 Impacts by ethnicity of adults in the household

This section shows the distributional impact of reforms to taxes and transfer payments by the ethnicity of adults in the household. The FRS and LCF datasets feature a harmonised ethnicity variable (for adults in each survey), which classifies survey respondents into the following five categories:

- White (including England/Welsh/Scottish/Northern Irish/British, Irish, Gypsy or Irish Traveller, and any other White background).
- Mixed or Multiple ethnic groups (including White and Black Caribbean, White and Black African, White and Asian and any other Mixed/Multiple ethnic background).
- Asian (including Indian, Pakistani, Bangladeshi, Chinese and any other Asian background).
- Black (including Black British, African, Caribbean and any other Black/African/Caribbean background).
- Other (including Arab, and any other ethnic group not specified in the other categories).

Because the ethnicity variable is an adult-level variable and this chapter features household-level analysis, a sixth category must be introduced for households with one or more adults where the adults are of differing ethnicities. Figure 4.6 therefore features a six-way household ethnicity breakdown. Where all the adults in a household are the same ethnicity (for example, Black), the household is placed in the relevant category (in the same example, ‘Black’).

Figure 4.6 Cash impact of reforms to taxes and transfer payments by household ethnicity (broad classification) and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

Figure 4.6 shows that the total cash impact of reforms to taxes and transfer payments since 2016 is negative across all household ethnicity groups but worst for 'Asian' and 'Other' ethnicities who experience overall average losses of around £2,000 per year in each case. In both cases, this effect is mainly due to substantial losses from benefit and tax credit reforms, which are only partially offset by gains from the NLW and from income tax and National Insurance changes (and a small positive impact UC for other ethnicities). The smallest cash losses are for 'White' households and households with adults of differing ethnicity, with both groups losing between £500 and £600 per year on average.

In addition to the broad ethnic classification used for Figure 4.6, from 2014–15 onwards the FRS (but not the LCF) features a more detailed ethnicity variable that sub-divides the 'Asian' category into five groups:

- Indian
- Pakistani
- Bangladeshi
- Chinese
- Other Asian

Figure 4.7 presents an analysis of the annual cash impact of reforms to taxes and transfer payments using this more detailed ethnicity variable. This Figure does not contain bars for 'indirect taxes' because the LCF data do not feature the detailed ethnicity variable. The analysis is also based on a two-year pooled FRS sample rather than a four-year sample, which makes the results less accurate. However, the results of disaggregating the 'Asian' category are useful to observe; the distributional impacts for different ethnic group sub-categories differ markedly.

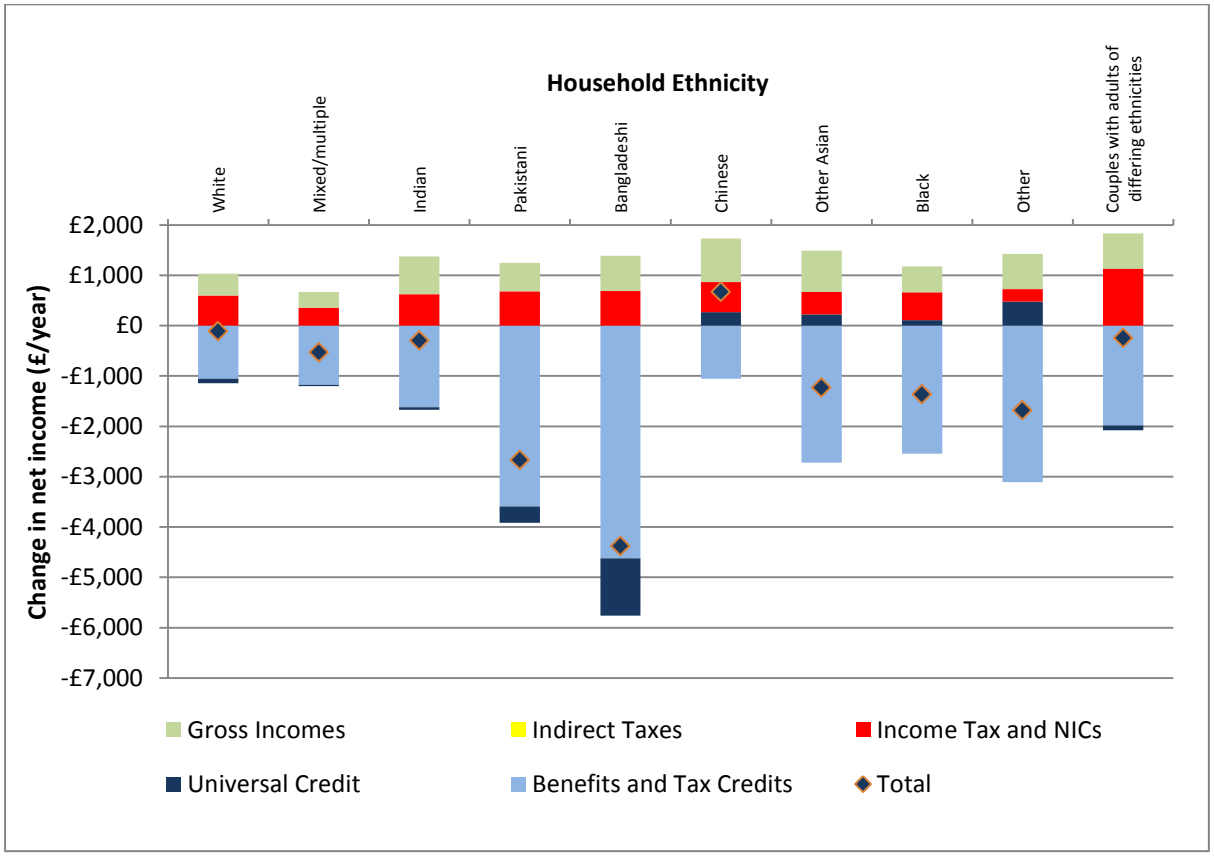
Figure 4.7 shows substantial losses for Bangladeshi households (around £4,400 per year on average), and Pakistani households (slightly under £2,700 per year on average). Indian households see much smaller losses (only around £300 per year), while Chinese households are the only ethnic group to gain from the reforms on average (gains of slightly under £700 per year). 'Other Asian' households lose around £1,200 per year on average, similar to the outcome seen by Black households (slightly under £1,400 per year average losses). The pattern of losses (and, in the case of Chinese households, gains) by household ethnicity reflects two main variations across household ethnic groups.

First, there is a substantial difference in the extent to which households of different ethnicities lose out from the benefit and tax credit changes. Bangladeshi and Pakistani households are hit particularly hard, on average losing over £4,600 and almost £3,600 respectively from the cuts to benefits and tax credits. Bangladeshi households also lose over £1,100 on average and Pakistani households over £300 from the cuts to UC. 'Other Asian', Black and 'Other' households are also adversely affected by the cuts to benefits and tax credits, with average losses of around £2,700, £2,550 and £3,100 respectively. For these groups, however, the introduction of UC has positive impacts on net income, which offset some of the losses. At the other end of the scale, White, Mixed/Multiple and Chinese households have relatively small average losses from the benefit and tax credit cuts, at between £1,000 and £1,200 per year for each group.

Second, the increases in net income arising from the income tax and NICs reforms and the introduction of the NLW have different impacts across the various ethnic groups. The biggest gains from the NLW are for Indian, Chinese, 'Other Asian' and 'Other' groups, as well as couples containing adults of differing ethnicities. All these groups gain by at least around £700 because they contain a relatively high proportion of working adults on low hourly wages. By comparison, the 'Mixed/Multiple' ethnic group gains by only slightly over £300 on average from the NLW, and White households by less than £450. The biggest gainers from the income tax and NICs changes are couples containing adults of differing ethnicities (an average gain of over £1,100 per year), Chinese households (slightly under £600), Bangladeshi households (slightly under £700) and Pakistani households (slightly under £600). The smallest gainers are 'Mixed'/'Multiple' households (around £350 per year) and 'Other' households (around £250 per year). The fact that Chinese households are the only group to gain on average is explained by the fact that they are the only group simultaneously to experience relatively large gains from the NLW and income tax and NICs changes, in conjunction with relatively small losses to benefits and tax credits.

The comparison of Figures 4.6 and 4.7 demonstrates how a broad ethnic categorisation can conceal substantial variations which appear when a more detailed disaggregation is used for the analysis.

Figure 4.7 Cash impact of reforms to taxes and transfer payments by household ethnicity (detailed classification) and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2014–15 to 2015–16.

4.6 Impacts by household disability status

This section shows the distributional impact of reforms to taxes and transfer payments since 2010 according to whether households contain disabled adults and/or children. We use two different definitions of 'household disability status' in this report:

- A nine-way classification based on the FRS questions, which identify a 'core' and 'wider' group of disabled people, the presence or absence of children in the household, and, if children are present, whether any of them are disabled.

- A ‘score’ measure based on the number of functional disabilities experienced by adults and children in FRS households.

This section discusses each of these definitions in turn. The LCF does not contain a disability status variable, which means we are unable to present results for the impact of indirect taxes by disability status. The average losses presented are therefore less than they are in analyses which include indirect taxes.

Adult–child household disability classification

The nine-way adult–child household disability classification is based on the combination of two three-way classifications, one relating to the disability status of the adult(s) in the household; the other relating to whether or not there are any children in the household, and, if so, whether any of the children are disabled.

The adult-level classification divides households into three categories:

1) **No disabled adult(s)** – households with no adults who are disabled according to either the core or wider FRS definitions (detailed in Section 3.4).
2) **Wider disabled adult(s)** – households with no core disabled adults, but at least one adult who is disabled according to the wider FRS definition.
3) **Core disabled adult(s)** – households with at least one adult who is disabled according to the core FRS definition.

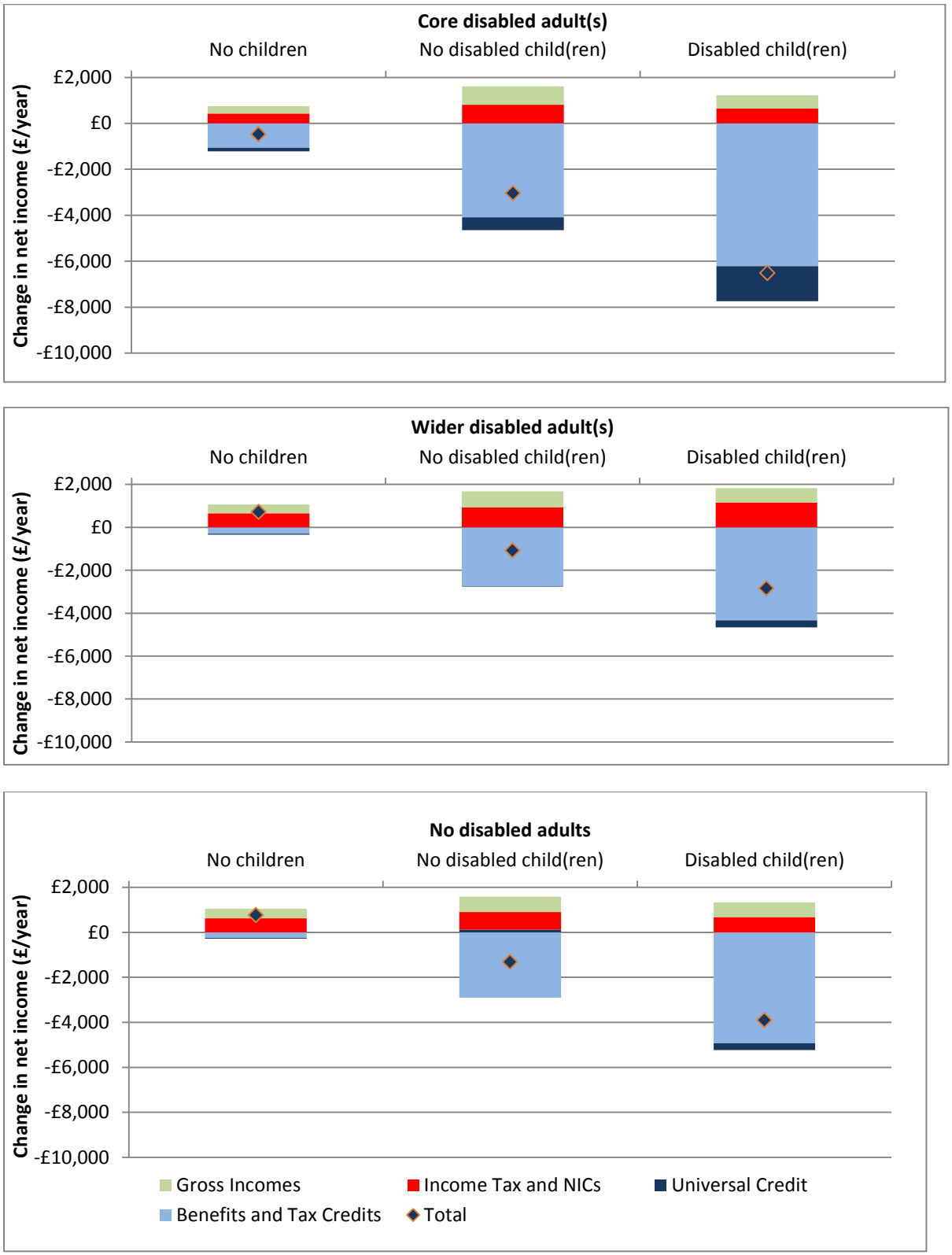
This classification is combined with a child-level combination, which also has three categories:

a) Households with **no children**.
b) **No disabled child(ren)** – households with at least one child, but no disabled children.
c) **Disabled child(ren)** – households with at least one child who is disabled according to the core or wider FRS definitions.

The combination of categories 1), 2) and 3) for adults and categories a), b) and c) for children creates nine (three multiplied by three) household-level disability categories.

Figure 4.8 shows the average cash impact of reforms to direct taxes and transfer payments according to this classification. The figure’s top, middle and bottom panel correspond to categories 1), 2) and 3); within each panel, the results are shown for categories a), b) and c).

Figure 4.8 Cash impact of reforms to taxes and transfer payments by adult–child household disability status and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 4.8 demonstrates two findings about the relationship between disability status and the impact of reforms to direct taxes and transfer payments. First, comparing the top panel with the middle and bottom panels indicates that households with at least one adult who is disabled under the FRS core definition experience greater average losses than either households with at least one adult who is disabled under the FRS wider definition (but no core disabled adults), or households with no disabled adults. Second, households with disabled children experience greater average losses than households with no disabled children. Households with children – whether disabled or not – also experience greater average losses than households without children. We discuss this finding in Section 4.7.

These two findings taken together indicate stark differences between households with disabled adults and children, and those with neither. In the right-hand column of Figure 4.8, households with at least one FRS core disabled adult, and at least one disabled child, experience average losses of around £6,500 per year. This loss equates to slightly under 14% of this group's net income: the group loses around one pound of net income in seven from the reforms on average. By comparison, households with at least one FRS core disabled adult but no children lose slightly under £500 on average from the reforms, while households with children, none of whom are disabled, and with no disabled adults, lose slightly over £1,300 on average. Households with no disabled adults and no children gain around £750 from the reforms on average; the same is true for households with wider disabled adults (but no FRS core disabled adults) and no children.

This pattern of distributional effects is mainly driven by cuts to benefits and tax credits; groups that are more likely to be in receipt of substantial amounts of benefits and tax credits lose out more significantly. Households with FRS core disabled adults and disabled children also experience substantial average losses from the introduction of UC (around £1,500 per year), which compound the pre-existing losses from benefit and tax-credit cuts (over £6,000 per year). More detail on the effects of changes to disability additions in UC for adults and children compared with the benefit and tax credit system which UC replaces is given in Hudson-Sharp *et al*. (2018: 148–51).

Household disability 'score'

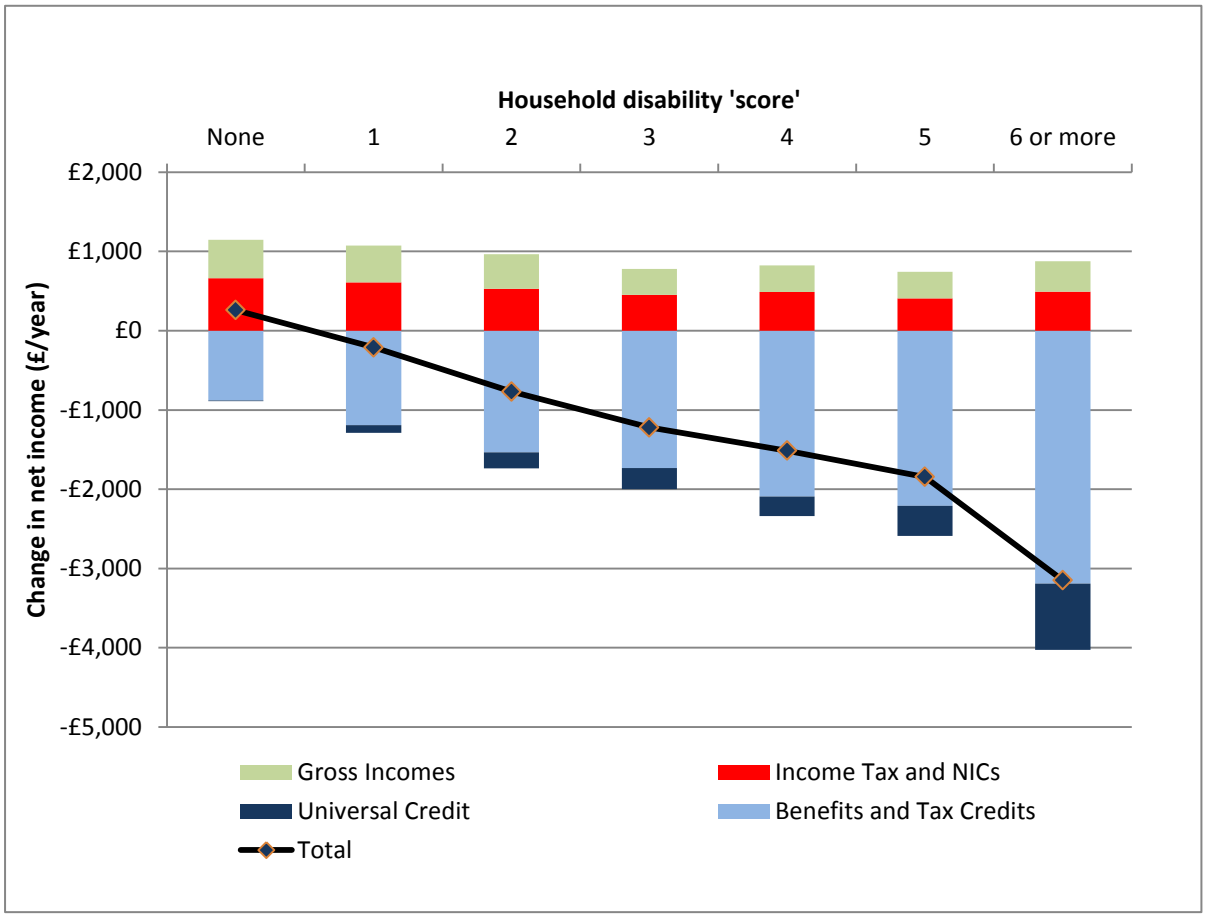
The nine-way adult–child household disability classification is a useful taxonomy for demonstrating the distributional impact of reforms according to whether households contain disabled adults and/or children, but takes little account of the severity or extent of disabilities. As an alternative disability classification, we use the ten binary indicators in the FRS for specific functional disabilities to develop a household disability 'score' variable. The household disability score is constructed for each FRS household using a two-stage process:

- The number of functional disabilities (between zero and ten) is summed for each person in the FRS household.
- These individual-level scores are then summed across the household.

The household disability score is a measure (crude, but nonetheless indicative) of the number of functional disabilities across all adults and children in the household. The score's formulation means that the disability score will tend to be larger for households with more people in them. Appendix E presents a distributional analysis using a modified household disability score variable, dividing the score by the number of people in the household to correct for this tendency. The pattern of results does not look markedly different from the results in this section that use the unadjusted score variable.

Figure 4.9 shows the cash impact of reforms to direct taxes and transfer payments by household disability score. Relatively few households have disability scores above six, which means that households with scores of six or more are combined into a single category (the bar furthest to the right in the figure). The figure shows a clear negative slope, with households with higher disability scores experiencing greater average losses. Average changes in net income range from a gain of around £250 per year for households with a disability score of zero to losses of around £3,150 per year for households with a disability score of six or more. This pattern of losses is clear evidence that households containing people with more extensive disabilities are losing more, on average, than households with relatively minor disabilities or no disabilities at all.

Figure 4.9 Cash impact of reforms to taxes and transfer payments by household disability score and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

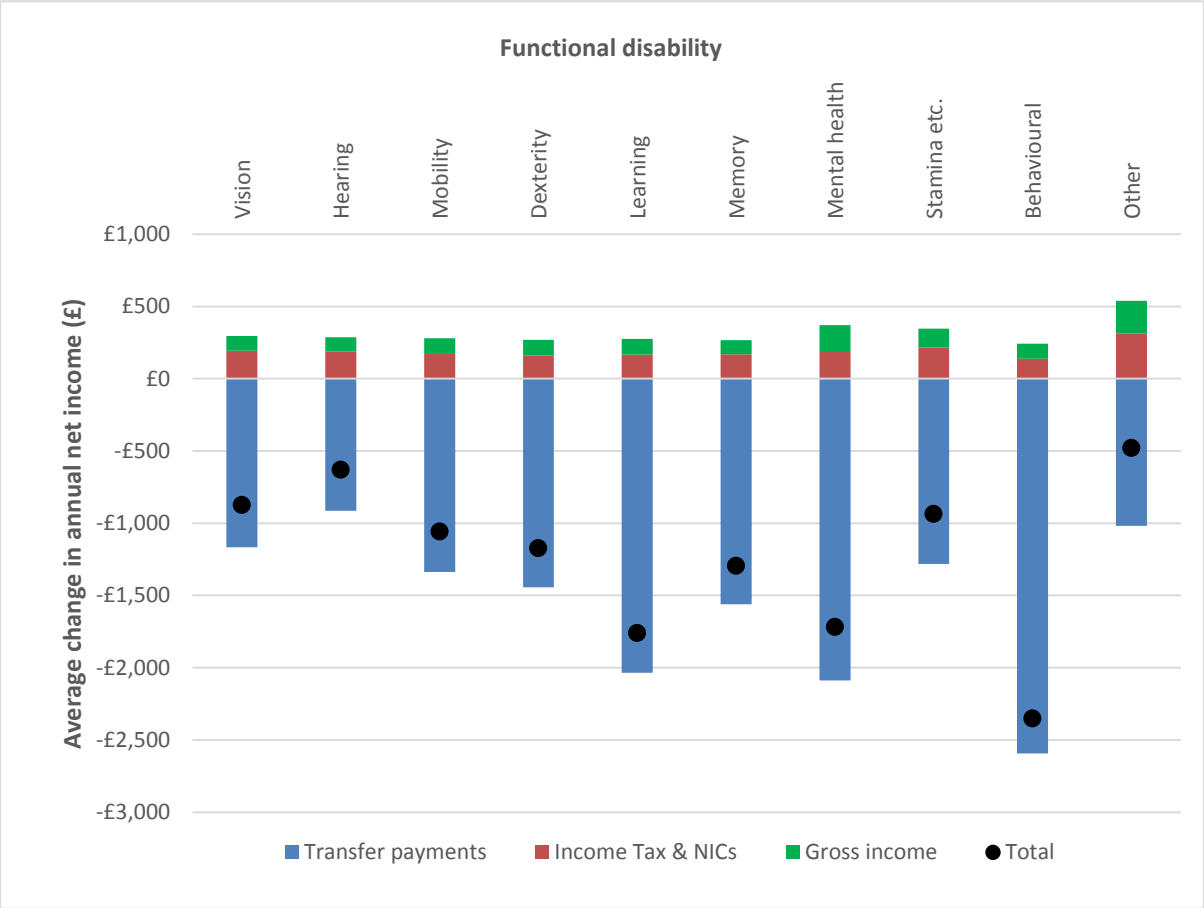
The pattern of losses in Figure 4.9 is mainly driven by larger losses from benefit and tax credit cuts, and from the introduction of UC, for households with a higher disability score. Households with a higher disability score benefit slightly less on average from the income tax and NICs changes, and from increases in gross income as a result of the NLW. This effect is caused by the fact that households with a higher disability score have fewer adults in work (on average) than households with a lower disability score, partly because employment rates for disabled working-age adults are lower than for non-disabled working-age adults. In addition, households with disabled children have lower adult employment rates than households without disabled children, mainly because disabled children often require longer hours of care from adults in the household, which reduces opportunities for paid employment.

Specific functional disability

As well as using the functional disability indicator variables to construct a household-level disability 'score', it is also possible to look at average losses according to each of the specific functional disabilities covered in the FRS. Figure 4.10 shows average losses from reforms to direct taxes and transfer payments for individuals according to each of the specific functional disabilities in the FRS data. The figure shows an individual-level analysis rather than a household-level analysis, meaning that the results relate to adult disabilities only (Section 5.1 details the assumptions underlying the individual-level analysis). The figure's columns show average losses from the reforms for subset of individuals with specific disabilities. This figure is different from the other distributional graphs presented in this report because the categories are not mutually exclusive; for example, an adult with vision and hearing difficulties would appear in both the first and the second columns.

Figure 4.10 shows that the largest net losses from reforms to direct taxes and transfer payments since 2010 are for adults with behavioural difficulties. Adults in this group lose around £2,350 per year on average from the reforms. The next biggest losses are for individuals with learning difficulties (around £1,750 on average) and individuals with mental health problems (slightly over £1,700 on average). The smallest average losses are for individuals with hearing difficulties (around £630) and individuals with other difficulties not covered by any of the other nine categories (slightly under £500). These variations mainly reflect differences in the extent of losses from cuts to transfer payments. However, adults in the 'other' category also gain more from the changes to income tax and NICs and the introduction of the NLW than other groups, mainly because they are more likely to be in work than adults with other functional disabilities.

Figure 4.10 Cash impact of reforms to direct tax and transfer payments by specific functional disability, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

4.7 Impacts by household demographic type

This section analyses the distributional impact of reforms to taxes and transfer payments by household demographic type. This classification is a combination of three different household characteristics:

- Presence or absence of children in the household
- Number of adults in the household
- Whether the adult(s) in the household are working age or pensioner(s).

Based on various combinations of these factors, the demographic type classification divides households into eight categories:

- Working-age single adults with no children
- Lone parents
- Working-age couples with no children
- Couples with children
- Single pensioners
- Couple pensioners
- Multiple benefit units (MBUs) with no children
- Multiple benefit units (MBUs) with children

The MBU classifications comprise households where more than one 'benefit unit' lives at a single address. A benefit unit is defined by the DWP as a single adult or an adult couple. Examples of MBUs would be:

- More than one single adult sharing an address
- A single adult or lone parent living with his or her parents
- An adult couple living with their parents.

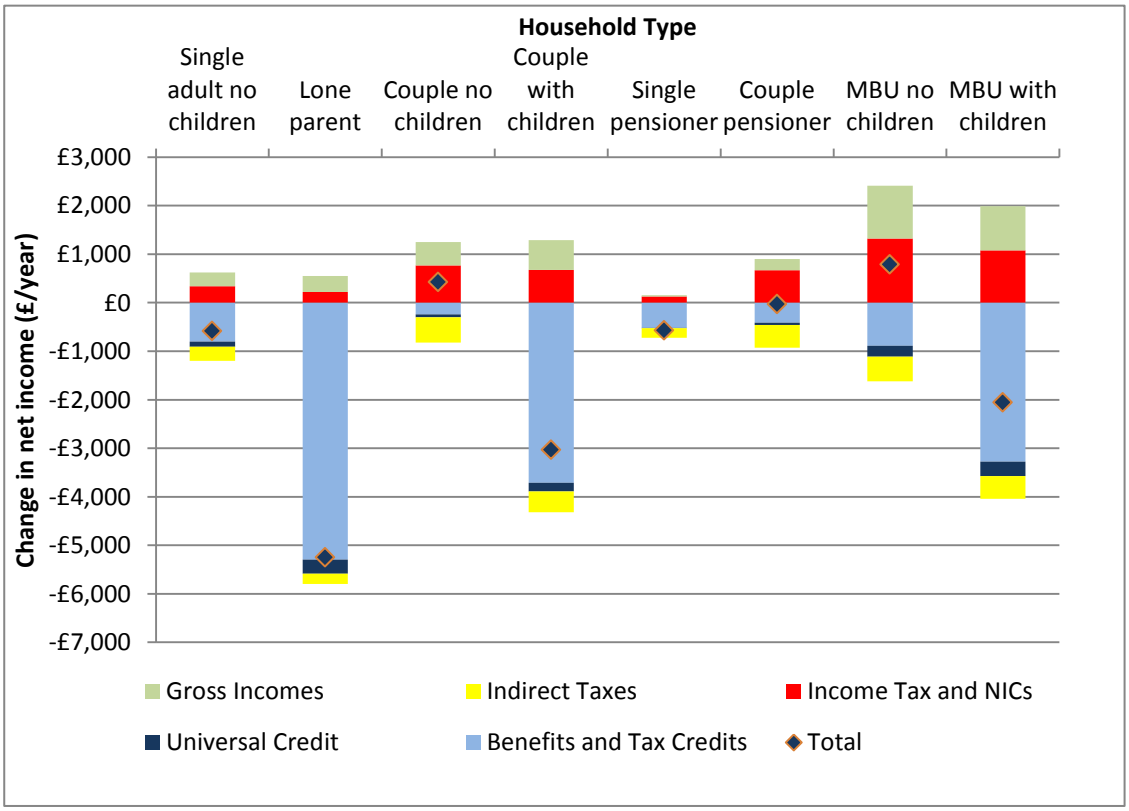
Figure 4.11 shows the average cash impact of reforms to taxes and transfer payments by household demographic type. The most striking finding demonstrated by the figure is that households with children experience much larger losses as a result of the reforms than households without children. Losses are especially dramatic for lone parents, who lose around £5,250 on average – equivalent to almost 19% of their net income, or slightly under one pound of every five pounds of income in the baseline scenario. Average losses for couples with children are smaller but still substantial, at around £3,000 per year, equivalent to around 6% of net income. For MBU households with children, losses average around £2,050 per year.

Households without children experience average gains in some cases. Couples without children gain slightly under £450 per year and MBUs with no children gain slightly under £800 per year. The remaining groups experience average losses: slightly under £600 for single working-age adults without children, around £550 for single pensioners, and £25 for couple pensioners. To a large extent, the pattern of gains or losses for households without children is determined by the size of their gains from the income tax and NICs changes, and the introduction of the NLW. MBUs without children, couples without children and couple pensioners experience larger gains in gross income and reduced direct tax payments than single adults with no children and single pensioners. This reflects the fact that many households in

couple and MBU groups have at least two adults in work and therefore receive a potential double benefit from the tax changes and the NLW. Single pensioners, by contrast, benefit only to a very small extent from the tax changes. This is largely because the substantial increase in real terms in the personal allowance for working-age people did not affect pensioners in the baseline system until the increase in the personal allowance 'caught up' with the value of the personal allowance for pensioners aged 65 to 74 in the 2016–17 tax year. Single pensioners are also much less likely to be in work than working-age people and so do not benefit considerably from the NLW. By contrast, many couple pensioner households contain a younger working-age partner, many of whom do benefit from these reforms.

As for the other distributional breakdowns featured so far in this chapter, the heavy losses for households with children are driven by the substantial cuts to benefits and tax credits since 2010. Losses are slightly exacerbated by the introduction of UC, although the predicted increase in take-up of UC (compared with its predecessor benefits and tax credits) to some extent mitigates the additional losses.

Figure 4.11 Cash impact of reforms to taxes and transfer payments by household demographic type and type of reform, 2021–22 tax year: Great Britain



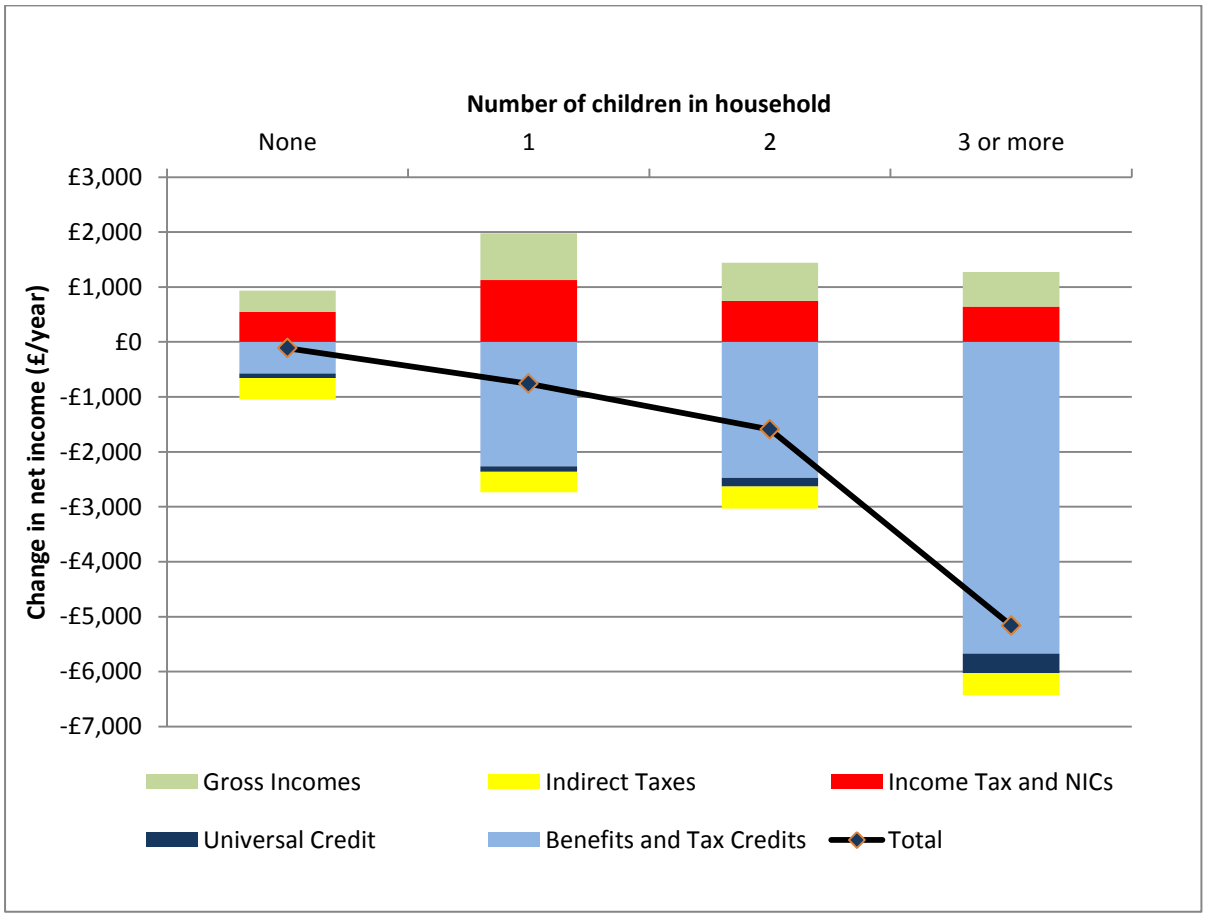
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

4.8 Impacts by number of children in the household

Households with children are not a protected group under the Equality Act 2010. However, an analysis of distributional impacts by the number of children in households is instructive, showing the impact of reforms that are particularly disadvantageous for large households (Housing Benefit, tax credits and UC). Figure 4.12 shows the average cash impact of reforms by number of children in the household. The figure has a clear negative slope; average cash losses are greater for households with more children. The average cash losses for households with three or more children (around £5,150) are over three times the average cash losses for households with two children (around £1,600) and over six times the average cash losses for households with one child (around £800). These figures suggest a particular net income penalty to having three or more children in the household. This penalty is mostly driven by cuts in benefits and tax credits, which result in cash

losses averaging slightly under £2,300 for households with one child and slightly under £2,500 for households with two children, but almost £5,600 for households with three or more children. The introduction of UC also has a larger negative impact for households with three or more children than any other group.

Figure 4.12 Cash impact of reforms to taxes and transfer payments by number of children in household and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

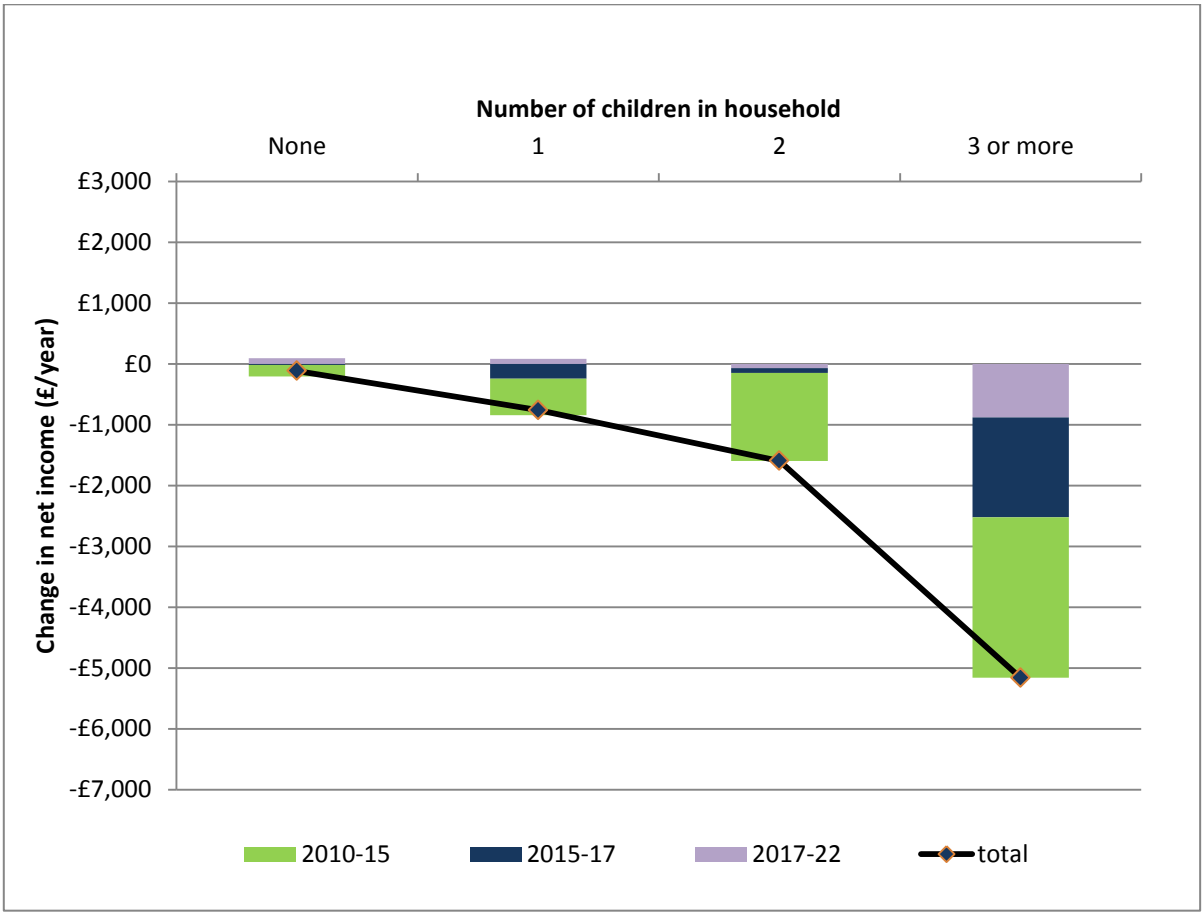
One of the main reforms driving the results shown in Figure 4.12 is the announcement in the July 2015 Budget that, from 2017 onwards, premiums for children in Housing Benefit, tax credits and UC would be limited to a maximum of two children only for new claimants, and would not be available for existing claimants

for most third and subsequent children born after April 2017 (Hudson-Sharp *et al*., 2018: 115–16).[6] This measure accounts for some, but not all, of the pattern shown in Figure 4.12.

The specific impact of the two-child limit on Housing Benefit, tax credits and UC is shown more clearly in Figure 4.13, which breaks down the cash impact of reforms according to the Parliament in which they were introduced. The relatively large dark blue bar for the three or more children column compared with equivalent bars for households with one or two children shows that the two-child limit had a substantial impact for families with three or more children. However, the green bar (corresponding to reforms introduced by the 2010–15 Coalition Government) and the lilac bar (corresponding to reforms introduced by the Conservative Government from June 2017 onwards) also show larger negative impacts for households with three or more children than for the other groups. This reflects the fact that households with three or more children were more adversely affected by particular reforms than other groups. The reforms in question include the uprating limit of 1% on most working-age benefits from 2013–14 to 2015–16; the subsequent working-age benefit freeze from 2016–17 onwards; and the cap on the maximum amount of benefits receivable by non-working families introduced in 2013 and subsequently made more stringent in 2017 (see Hudson-Sharp *et al*., 2018: 34–48). This result is due to the fact that households with three or more children claim larger amounts of means-tested benefits and tax credits than households with two or fewer children.

[6] There is an exception for children conceived as a result of rape.

Figure 4.13 Cash impact of reforms to taxes and transfer payments by number of children in household and Parliament of introduction, 2021-22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

4.9 Impacts by average age of adults in the household

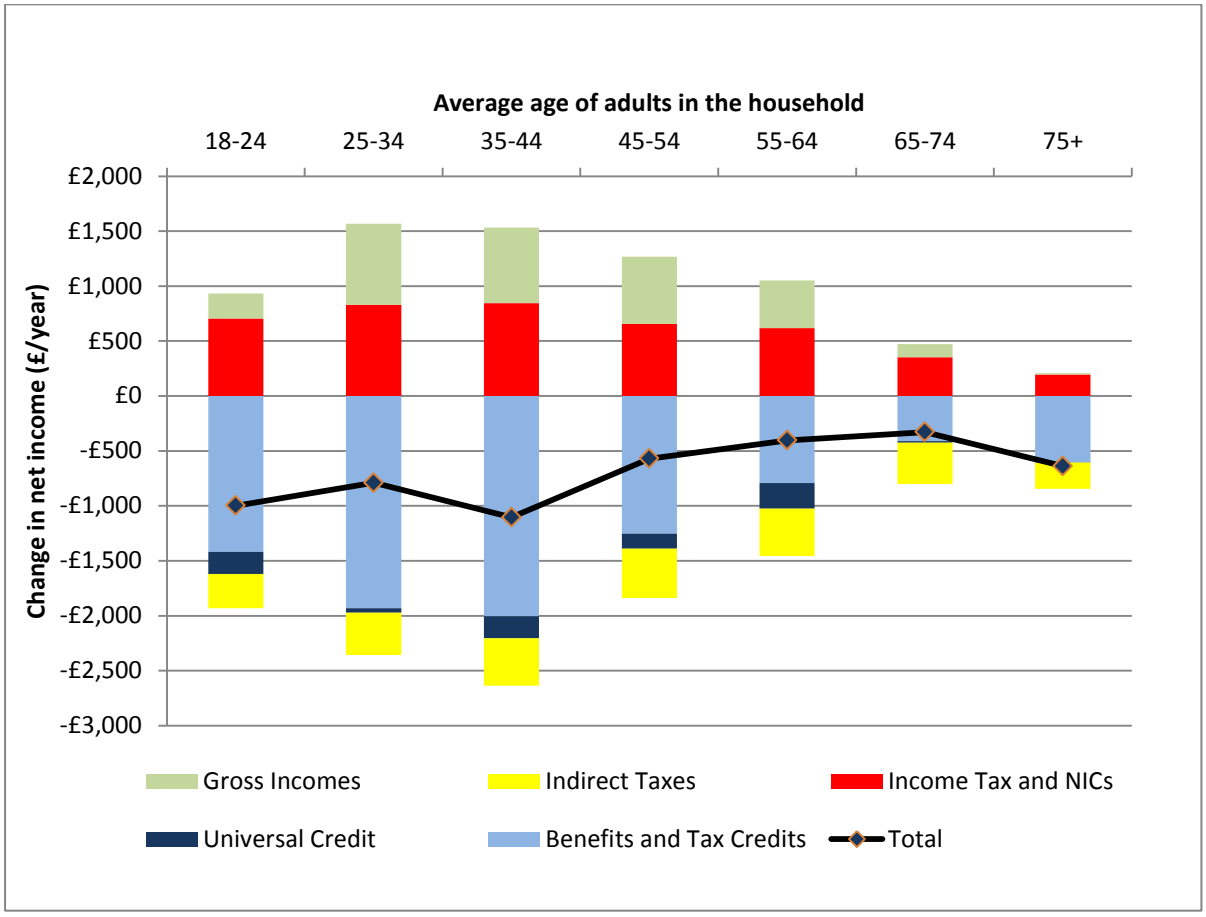
Age is a protected characteristic, and an analysis of the distributional effect of reforms to taxes and transfer payments by age of adults in the household is an essential component of cumulative impact assessment. The analysis by household demographic type above has shown that some reforms have a different impact on working-age households than on pensioner households. This section presents a fine-grained analysis of the distributional effects of reforms according to the average age of adults in the household. We classify households into seven age groups: 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, and 75 and over.

Figure 4.14 shows the average cash impact of reforms according to this classification. The average effect of the reforms is negative for all age groups. Overall, the largest negative impacts are for households with an average age of adults between 35 and 44 (average cash losses of around £1,100 per year) and households with an average age of adults under 25 (average cash losses of £1,000 per year). The losses from benefits and tax credits are largest for households with adults with an average age between 25 and 44 (mainly because these households are the most likely to contain children). Households with an average age under 25 fare slightly worse than households with an average age between 25 and 34, mainly because the former group has much smaller gross income gains from the NLW. This reflects the fact that the NLW is not available to employees aged under 25.

Further up the age distribution, households with an average adult age 65 to 74 have the smallest average losses (slightly over £300 per year), while losses for households with average adult age 45 to 54, 55 to 64, and 75 and over are also relatively small (in the range £400 to £650). The composition of these net losses is worth exploring. For the average adult age 45 to 54 group, losses from benefits and tax credits are greater than for the pensioner age groups but gains from the NLW and the tax and NICs changes are also larger than for pensioners. These negative and positive impacts to some extent cancel each other out. For households with average adult age 65 and over, losses from benefits and tax credits are smaller than for working-age households, mainly because the value of the State Pension and Pension Credit has been protected from cuts (due to the ‘triple lock’ guarantee on State Pension uprating and the decision to uprate Pension Credit Guarantee in line with average earnings growth) (Thurley, 2018).

However, pensioners do suffer some benefit losses due to the change from the Retail Price Index to the Consumer Price Index uprating for disability-related benefits (mainly Attendance Allowance and Disability Living Allowance) and reductions in the value of the Savings Credit element of Pension Credit. Pensioners also benefit considerably less than other groups from the increases in gross income. This is due to the lack of effect of the NLW (since most pensioners are not in work) and from the changes to income tax and NICs (because pensioners already had a relatively generous tax-free personal allowance in 2010, so their scope to benefit from the increase in real terms in the personal allowance to £12,500 by 2020–21 is more limited than for other groups). Pensioners in the 75 and over age group also lose less than other groups from the changes to indirect tax, because their average weekly expenditure is lower than for younger households.

Figure 4.14 Cash impact of reforms to taxes and transfer payments by average age of adults in household and type of reform, 2021–22 tax year: Great Britain

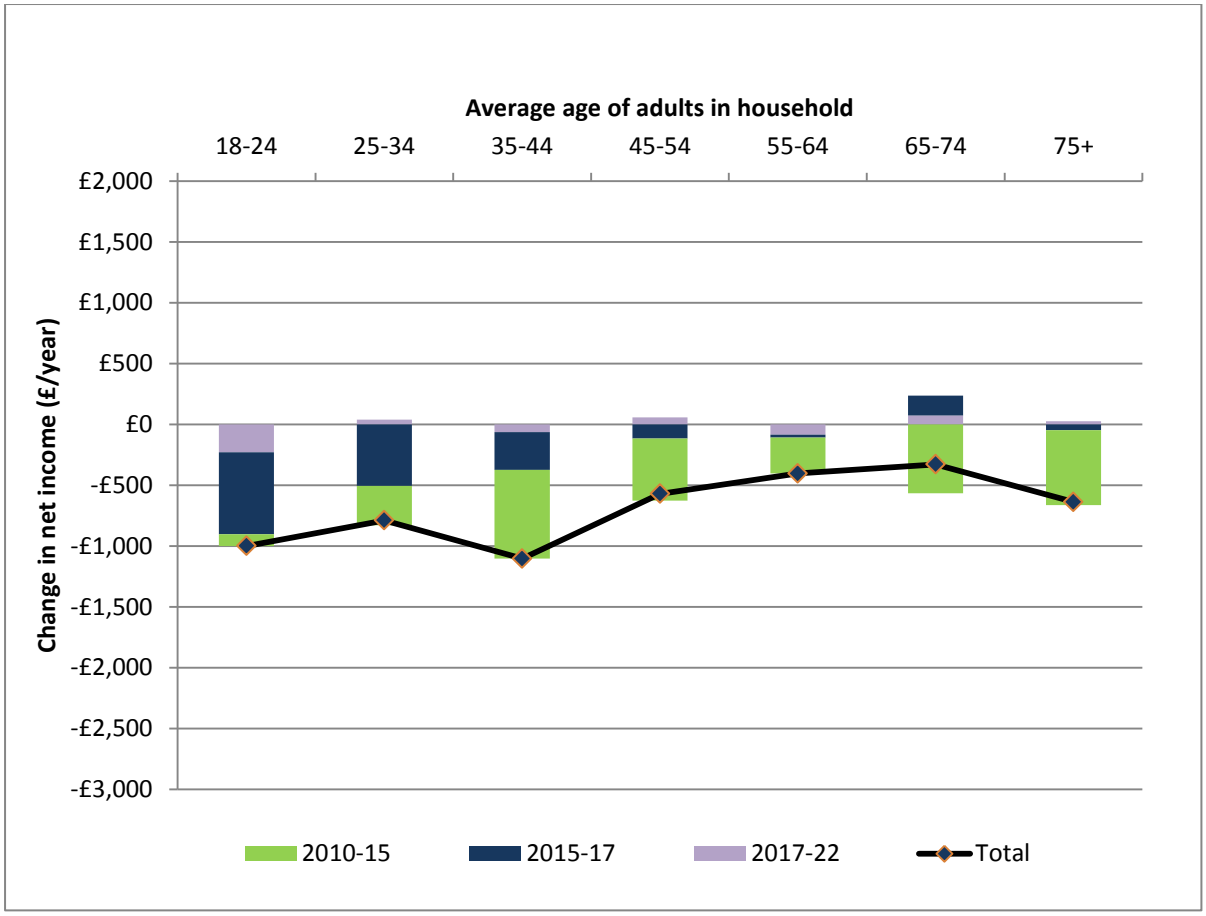


Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

Figure 4.15 shows the pattern of distributional results across age groups according to the Parliament in which reforms were introduced. The reforms under the 2010–15 Coalition Government had the smallest negative impact on households with an average age less than 25, with larger impacts for households with average ages 35 to 44, 45 to 54, and 65 and over. By contrast, the reforms introduced under the 2015–17 Conservative Government have had the largest negative impact for younger households, and a positive impact for households with an average age 65 to 74. Reforms introduced under the Conservative Government elected in June 2017 also have the largest negative impact for households with an average adult age

under 25. From 2015 onwards, reforms therefore have a much larger negative impact on younger households than older households.

Figure 4.15 Cash impact of reforms to taxes and transfer payments by average age of adults in household and Parliament of introduction, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

4.10 Conclusions

This chapter has demonstrated significant variation in the distributional impacts of the reforms since 2010 to direct and indirect taxes, transfer payments and the NLW across multiple household characteristics. In particular:

- The reforms are regressive across the income distribution, with households in the bottom two deciles losing 9–10% of their net income on average and, by contrast, households in the top decile losing less than 0.1% on average.

- The distributional results by household income decile for Scotland and Wales show less negative overall impacts in the bottom half of the income distribution than the analysis for England.
- Analysis by ethnicity of the adults in the household shows that Bangladeshi households have average losses of around £4,400 and Pakistani households have average losses of around £2,700. Chinese households are the only ethnic group to experience average net gains.
- Analysis by disability status of adults and children in each household shows that households with at least one FRS core disabled adult and at least one disabled child lose around £6,500 per year on average from the reforms (excluding reforms to indirect taxes). This is an amount equivalent to one-seventh of their total net income.
- Breaking down the impact of the reforms by household disability 'score' shows average losses of around £3,150 per year for households with a score of six or more. In general, households with greater numbers of disabilities lose more on average than households with fewer disabilities.
- Breaking the results down by demographic type shows households with children are the largest average losers from the reforms. In particular, lone parents lose an average of £5,250 – almost one-fifth of their total net income. Couples with children lose £3,000 per year on average.
- Households with three or more children see particularly large losses (around £5,600).
- Analysing the results by the average age of adults in the household shows the largest losses for households with adults of average age 35 to 44, and the smallest for average age 65 to 74. The differences by average age are not as large as for other protected characteristics.

Overall, groups with particularly large losses from the reforms tend to be those who are most reliant on means-tested transfer payments: benefits, tax credits and (where rolled out) UC.

5| Intersectional analysis of the distributional impact of reforms by household and individual characteristics

5.1 Introduction

In the previous chapter, we analysed the impacts of reforms to taxes and transfer payments using breakdowns by one household characteristic at a time (for example, household income decile; ethnicity; disability). Researchers and policymakers are increasingly interested in the **intersectional** impact of policies. Intersectional analysis involves examining more than one characteristic (including Equality Act 2010 protected characteristics) at the same time; for example, the simultaneous analysis of household disability status and household demographic type. These 'two-way' analyses are crucial for examining **multiple disadvantages** that households and/or individuals might face due to the combination of two or more sets of protected characteristics. In this chapter, we focus on two-way distributional breakdowns of the impacts of the reforms. Our main focus here covers the following characteristics:

- Position in the income distribution
- Household and/or family demographic type
- Disability status
- Ethnicity
- Gender
- Age

The first two sections in this chapter consider intersectional analysis of household demographic type by position in the income distribution and household demographic type by disability status, using household-level analysis. The remaining breakdowns use individual-level analysis, which makes it easier to see patterns in the results by gender in particular. The tax-transfer model has the functionality to assign the distributional impact of reforms to taxes and transfer payments (known as the social

security system in Scotland, and the welfare system in England and Wales), at the individual, rather than the household, level.

The key assumptions that underpin the methodological approach of the individual-level analysis can be summarised as follows:

- Gross incomes (earnings, income from self-employment, investment income, private pension incomes, and incomes from other non-state sources such as property income) are allocated to individuals in the Family Resources Survey (FRS) data. This is relatively straightforward, as the source of each of these incomes is specified in the FRS data.
- Direct taxes on income (income taxes and National Insurance Contributions (NICs)) are allocated to individuals in the FRS data. Again, this is relatively straightforward: the tax and National Insurance systems operate on an individual rather than joint basis, and the FRS contains information about individual taxes and NICs.
- Benefits and tax credits received by couples (with the exception of the State Pension) are allocated according to which adult records receipt of the benefit in the FRS data. If neither couple records receipt in the data (which occurs when a couple is assessed as eligible for a means-tested benefit or tax credit, but no receipt is recorded in the data), the benefit or tax credit is split 50/50 between the couple. If both members of a couple report separate receipt of a benefit (which can occur for certain benefits, such as Disability Living Allowance), then the benefit is allocated to each person in the couple in proportion to the amount received in the FRS data.
- If the FRS data specifically indicate that State Pension is being received on behalf of a couple (that is, with a dependant addition), then the pension amount is shared equally between the couple. If two adults in a couple are receiving separate amounts of State Pension in their own right, then the pension is allocated separately to each partner as specified in the data.
- Universal Credit (UC) paid to couples is assumed to be split 50/50 between the members of the couple under our default assumption. (In Figures 5.9 and 5.13 we show how the main distributional results are affected if we assume instead that UC is paid to the primary earner in a couple).

A full explanation of the methodology used to allocate taxes and transfer payments to individual members of each household is given in Appendix A.

These assumptions are to some extent arbitrary, and do not necessarily reflect the actual distribution of either cash income or consumption within the household. Nonetheless, the assumptions are at least indicative of the extent to which individuals have control over such income.

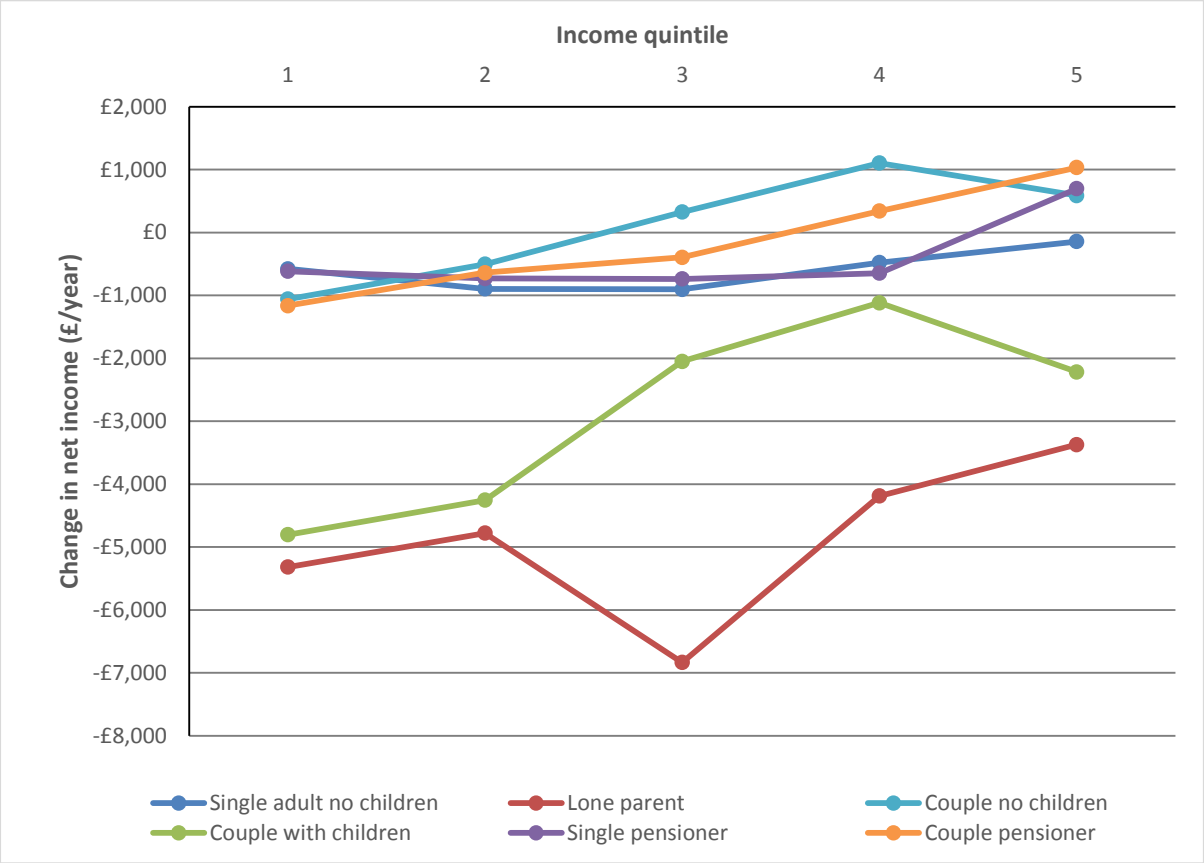
The individual-level analysis in this chapter does not contain any information about the distributional impact of indirect tax reforms at the individual level, due to the difficulty of assigning consumption to individuals in households.[7]

5.2 Analysis by household demographic type and income quintile

Figure 5.1 shows the overall impact of reforms to taxes and transfer payments since 2010 by quintile of the household net income distribution for households of each demographic type.[8] We use household income quintiles (which divide the income distribution into five equally sized segments from poorest to richest) instead of income deciles. Our reasoning is that a two-way breakdown means some of the data 'cells' for particular household demographic types and positions in the income distribution will be smaller than for a one-way breakdown by income decile across the whole FRS sample. For example, only 179 lone-parent households sit in the top income quintile across the pooled four-year Great Britain FRS sample.
We have used a line chart for Figure 5.1 rather than the stacked bar chart used for the one-way breakdowns earlier in this report to avoid confusion caused by a stacked bar of multiple combinations of income quintile and demographic type. The coloured lines in Figure 5.1 correspond to the black 'Total' line in the earlier stacked bar charts.

[7] Although the Living Costs and Food Survey (LCF) contains information on expenditure from diaries at the individual level, many goods and services are purchased on behalf of the household rather than an individual household member, making it difficult to assign expenditure accurately to individuals in the household based on the diaries.
[8] Multiple Benefit Unit households are excluded from the graph to make the graph easier to read.

Figure 5.1 Overall cash impact of reforms to taxes and transfer payments by household demographic type and income quintile, 2021–22 tax year: Great Britain



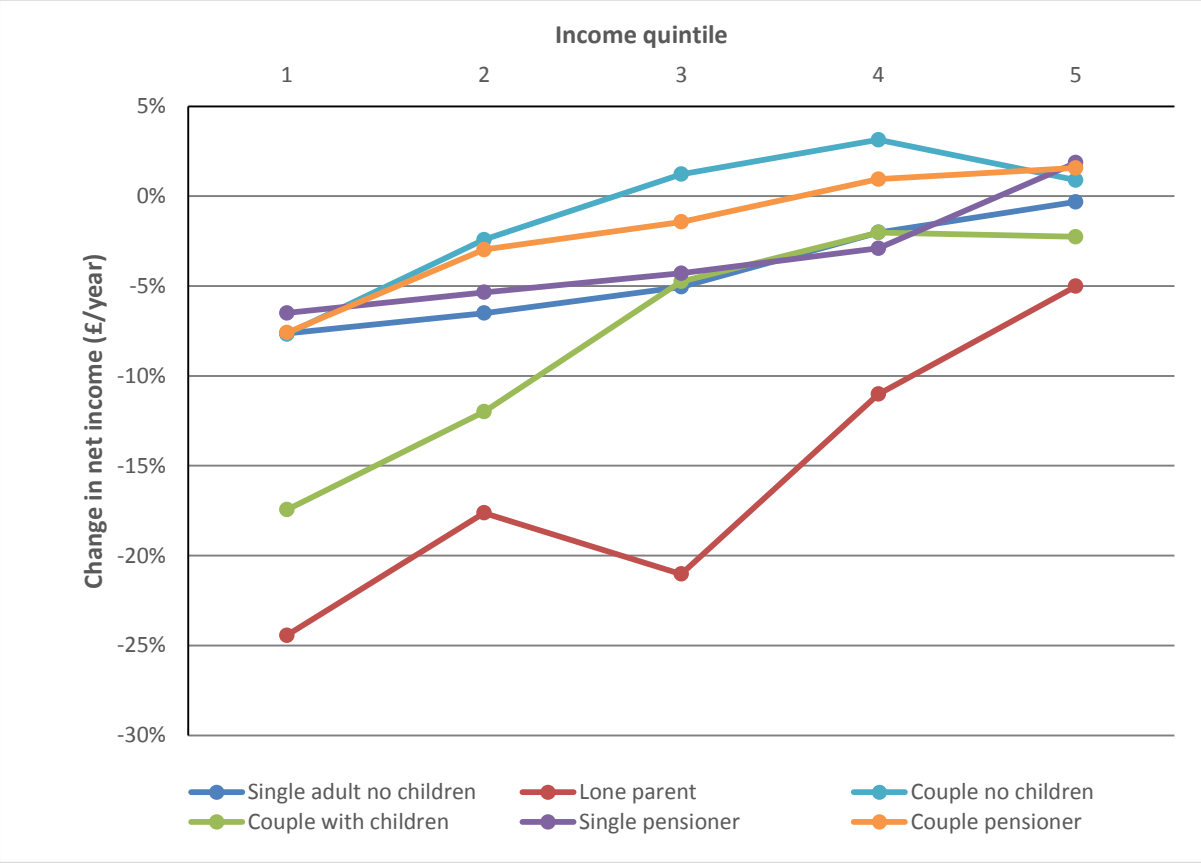
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

Figure 5.1 shows that lone parents and couples with children experience larger average losses than other demographic types across all five quintiles of the income distribution. The third quintile of lone parents fare worse than the other four quintiles; however, further analysis of the data suggests that this pattern is driven by a few households with especially large losses in quintile 3. Average losses for lone parent households in the bottom quintile (around £5,300) are not that much larger than for couples with children in the bottom quintile (around £4,800). However, average percentage losses for lone parents in the bottom quintile are much greater than for couples with children in the bottom quintile (slightly under 25% compared with around 17.5%). This is demonstrated by Figure 5.2, which shows the same results as Figure 5.1 but as a percentage of net income rather than in cash terms.

Figure 5.2 shows that losses in percentage terms are larger at the bottom of the income distribution than the top across all the demographic types. For lone parents, percentage losses are larger than for any other demographic type across all quintiles whereas, for couples with children, losses in quintiles 3 and above are more comparable to single pensioners and single adults without children. Couples without children experience net losses in the bottom two quintiles but net gains in the top three quintiles. For couple pensioners, the top two quintiles are net gainers on average but the bottom three quintiles are net losers.

All demographic types in the bottom quintile of the net income distribution lose at least 6.5% of net income on average, which is larger than the percentage losses for lone parents in the top income quintile (5%). However, in cash terms, losses for lone parents in the top income quintile (slightly under £3,400) are far greater than the losses for any of the demographic types without children in the bottom quintile.

Figure 5.2 Overall percentage impact of reforms to taxes and transfer payments by household demographic type and income quintile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

5.3 Analysis by household demographic type and disability status

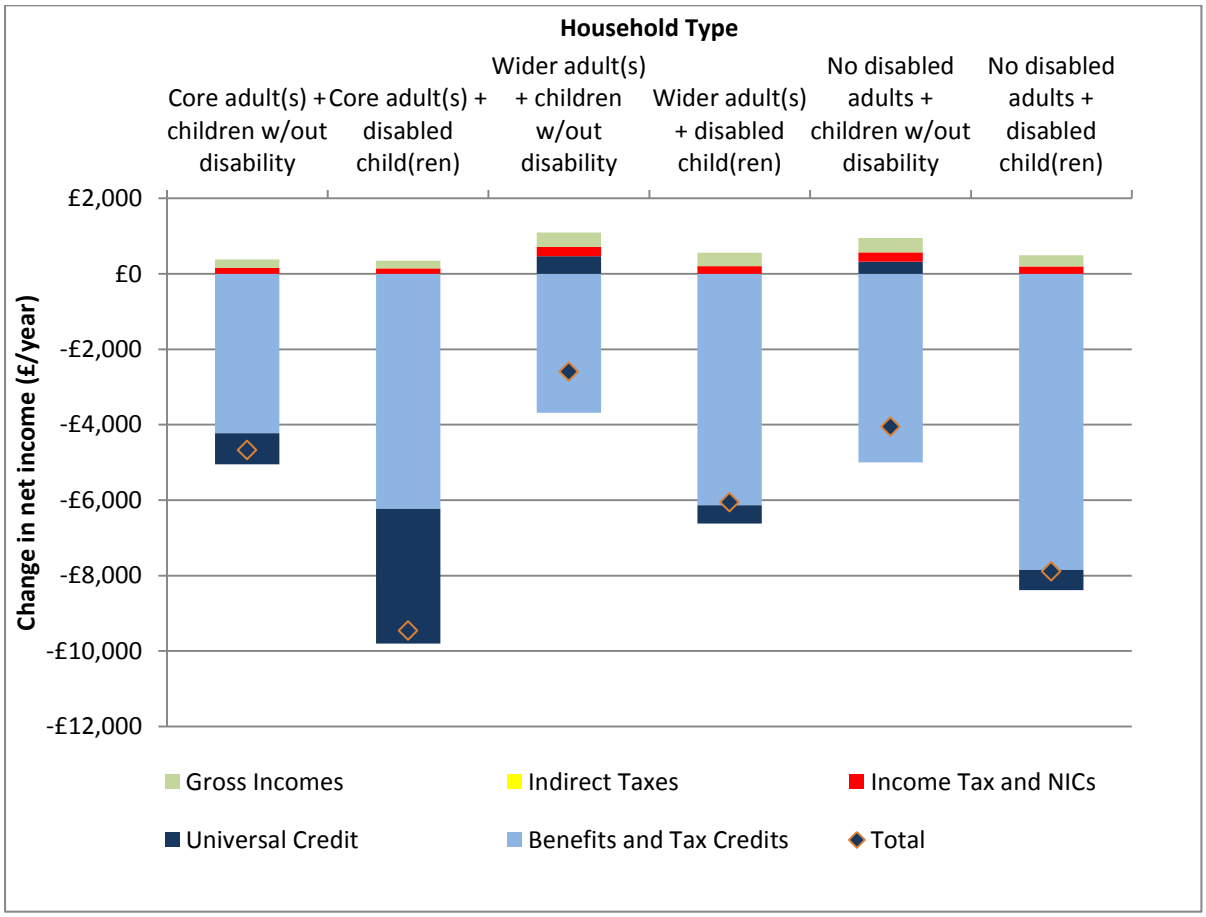
Chapter 4 demonstrated that two of the strongest negative impacts of the reforms since 2010 are:

- substantial losses in net income for disabled households (in particular for households with disabled adults and children at the same time, and/or a high disability 'score')
- substantial losses in net income for lone-parent households.

These findings make two-way analysis essential to establish whether lone-parent households where the lone parent, and possibly one or more children, are disabled, face a double disadvantage.

Figure 5.3 offers a breakdown by household disability as shown in Figure 4.8 but for lone-parent households only. Figure 5.4 gives the same breakdown for couples with children. Households with a lone parent who is in the FRS core disabled group and one or more disabled children (the second column from the left) face particularly heavy losses (an average loss in net income of slightly under £9,500, which in percentage terms equals 29.5% of net income in the baseline scenario). FRS core disabled lone parents with one or more disabled children are losing almost three out of every ten pounds of their net income as a result of the reforms to taxes and transfer payments since 2010. Average losses for lone parents who are not disabled, but who have at least one disabled child, are not much smaller (around £7,900, over 24% of net income).

Figure 5.3 Cash impact of reforms to taxes and transfer payments by household disability status for lone-parent households, 2021–22 tax year: Great Britain

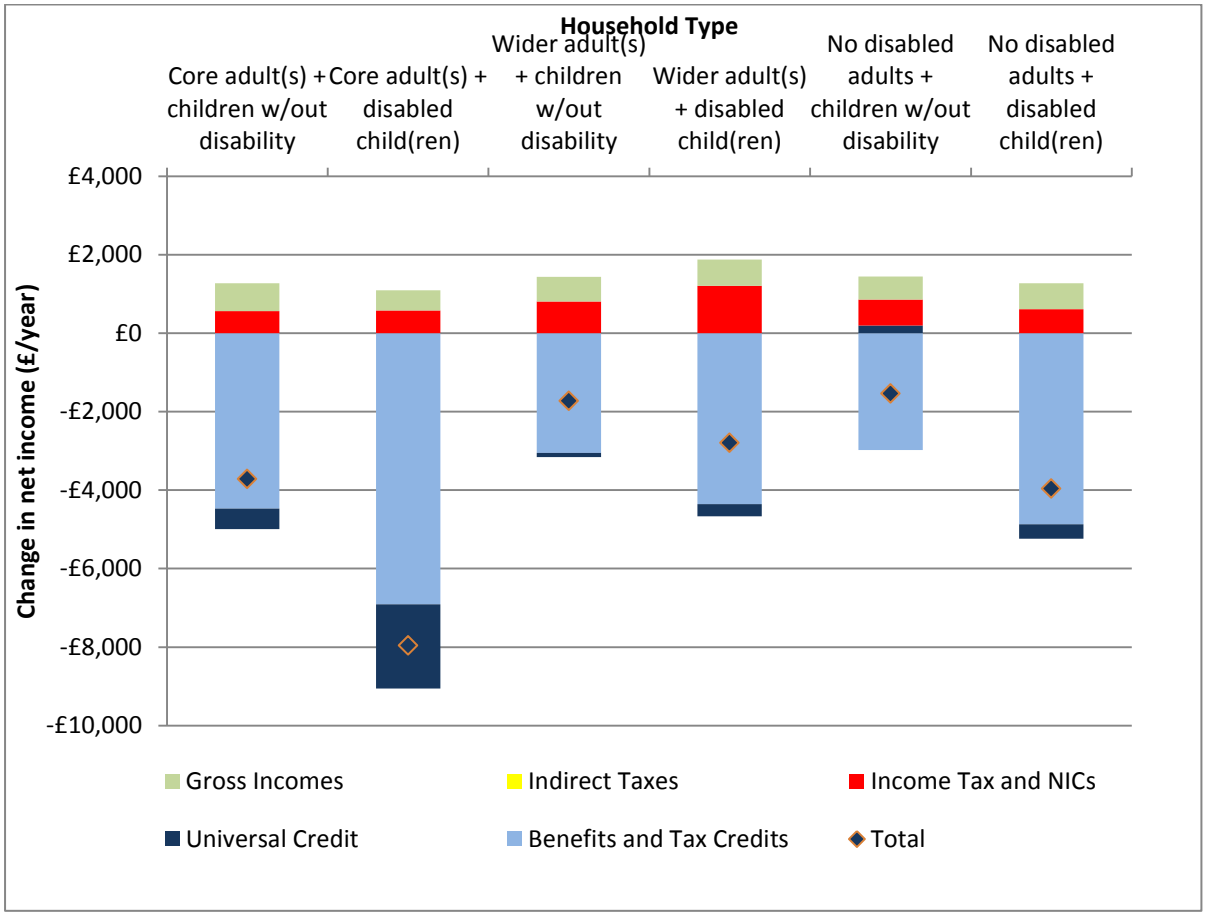


Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 5.4 shows the equivalent results for couples with children by disability status. Average losses for couples with at least one FRS core disabled adult, plus at least one disabled child, are slightly under £8,000 (equivalent to slightly under 18% of net income). Losses for the other groups in Figure 5.4 are smaller, but still substantial, particularly for couples with no disabled children but at least one FRS core disabled adult (average losses of around £3,700), and conversely for couples with no disabled adults but at least one disabled child (average losses of around £3,900). One reason why average losses are slightly smaller for couples with at least one FRS core disabled adult and at least one disabled child than for lone parents in the same

position is that couples in this group benefit more from the introduction of the National Living Wage (NLW) and changes to income tax and NICs. Lone parents with disabled adults and disabled child(ren) have a much lower employment rate than couples with at least one disabled adult and disabled child(ren). This is largely because many couples with a disabled adult also have a non-disabled adult who is more likely to be in work.

Figure 5.4 Cash impact of reforms to taxes and transfer payments by household disability status for couple households with children, 2021–22 tax year: Great Britain

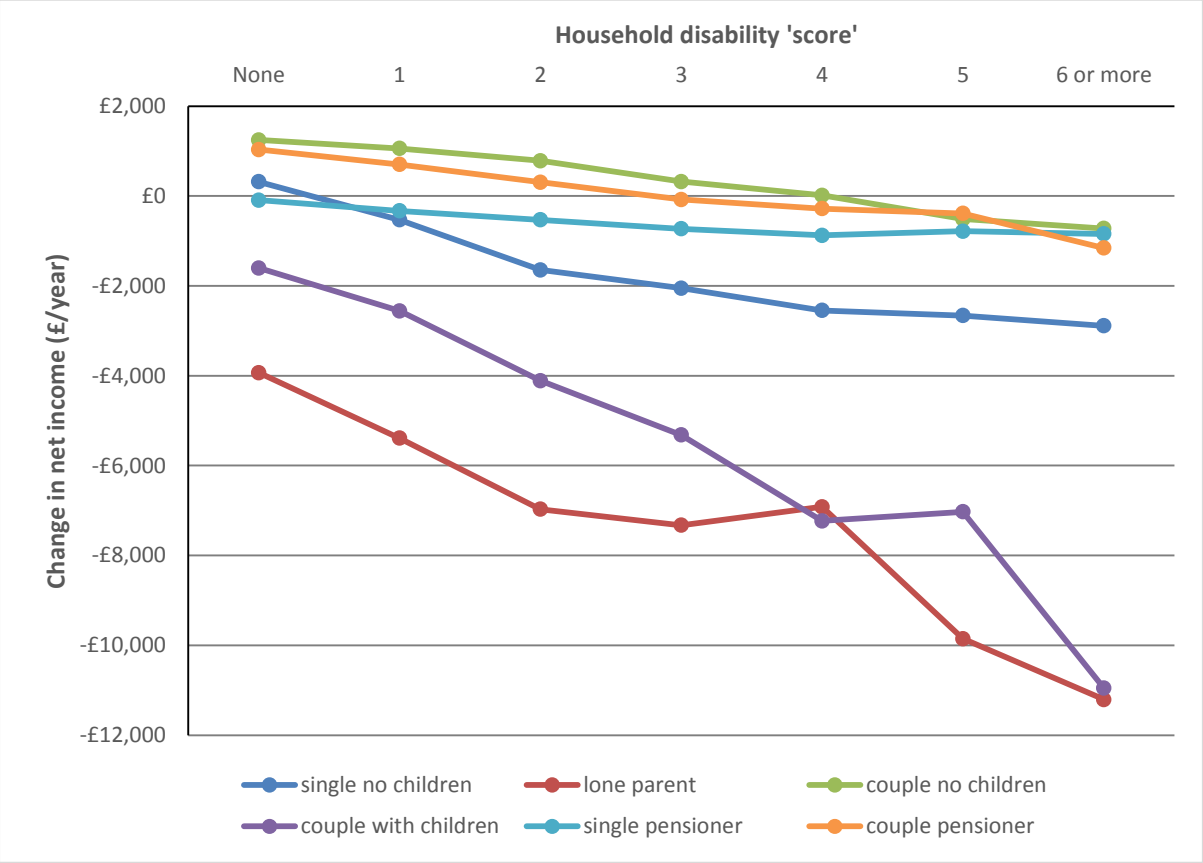


Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 5.5 shows the overall impact of reforms by household disability 'score' for different household demographic types. The results are striking: while all the lines in

the figure have a clear negative slope (that is, households with a higher disability score lose out more from the reforms, regardless of demographic type), the negative slope is much steeper for households with children. Lone parents with a household disability score of six or more lose on average around £11,200 (around 31.5% of their net income), while couples with children with a household disability score of six or more lose slightly under £11,000 (23% of their net income). The equivalent figures for other household demographic types with disability scores of six or more are much smaller: around £2,900 for single adults without children, £1,150 for couple pensioners, £850 for single pensioners and slightly over £700 for couples without children. Couples without children gain on average from the reforms unless they have a household disability score of five or more.

Figure 5.5 Cash impact of reforms to taxes and transfer payments by household disability score for various household demographic types, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.4 Impact of reforms by gender and income decile

Figure 5.6 shows the cash impact of reforms to direct taxes and transfer payments by gender and income decile. This figure (and all subsequent figures in this chapter) is based on individual-level, rather than household-level, results from the tax-transfer model; the results do not contain any losses from indirect tax reforms. (Also of note is the fact that the deciles are constructed according to individual's position in the household income distribution, not according to the distribution of individual incomes.) The 'average' column at the right-hand side shows that, on average, women lose around £400 per year from the reforms, whereas men lose only around £30. Women lose more (or gain less) from the reforms on average across every decile of the household income distribution. The largest losses for women relative to men are in deciles 3, 4 and 5, with the gender difference being nearly £500 in decile 3, although women's absolute cash losses are largest in decile 2.

Figure 5.6 Cash impact of reforms to direct tax and transfer payments by gender and income decile, 2021–22 tax year: Great Britain

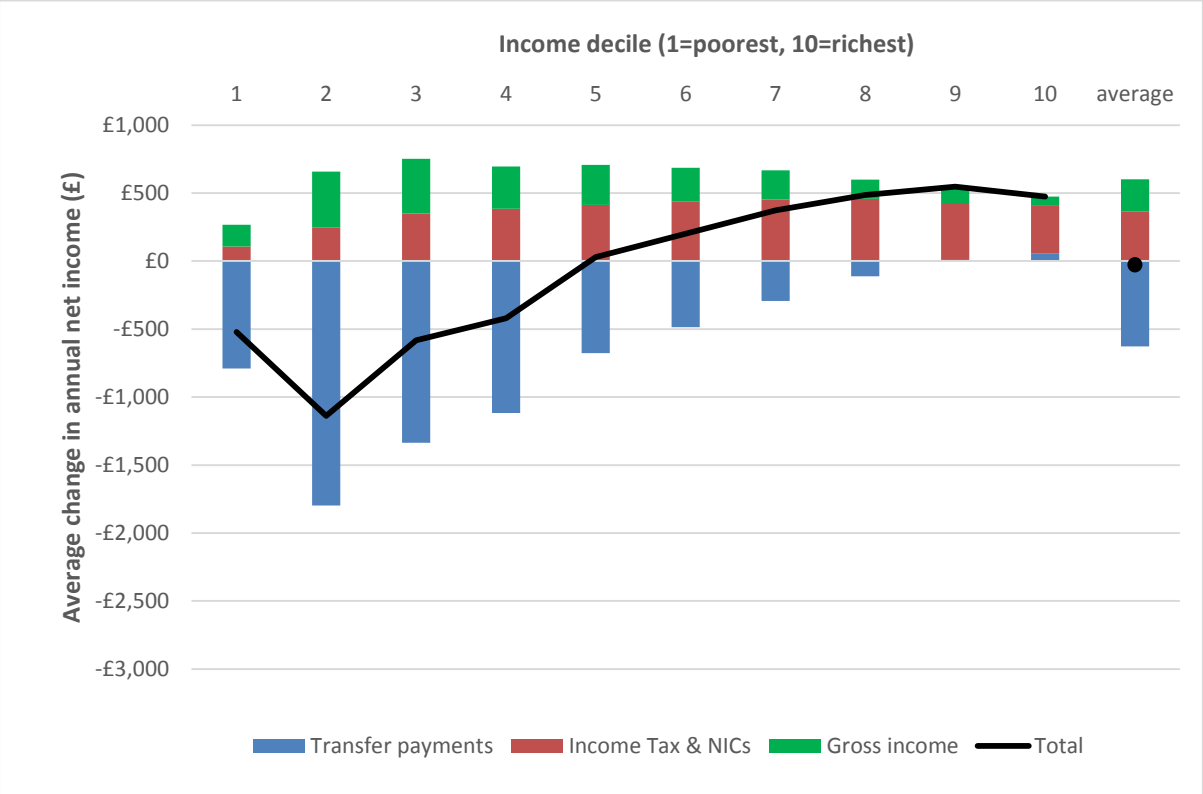
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figures 5.7 and 5.8 show the contribution of different reforms to the overall distributional patterns shown in Figure 5.6. There are three differences between Figures 5.7 and 5.8 which help explain the overall patterns seen in Figure 5.6. First, changes to transfer payments have a smaller negative effect for men than for women in every decile except for decile 2, because women tend to receive larger amounts of transfer payments in the baseline scenario than men. Women receive an average of around £7,900 per year in transfer payments compared with around £6,550 per year for men. This is partly because 90% of lone parents with dependent children are women (ONS, 2017b), and partly because women are more likely to receive benefits and tax credits in couples with children.

Second, men benefit slightly more on average than women from the changes to income tax and NICs. This is partly because working-age men have a higher employment rate than their female counterparts, but mainly because women are more likely to be full-time homeworkers looking after pre-school children. Women are also more likely than men to work part-time and on average to have lower hourly earnings. Women are therefore less likely to benefit from the full value of the increase in the income tax personal allowance, which is the main direct tax cut introduced since 2010.

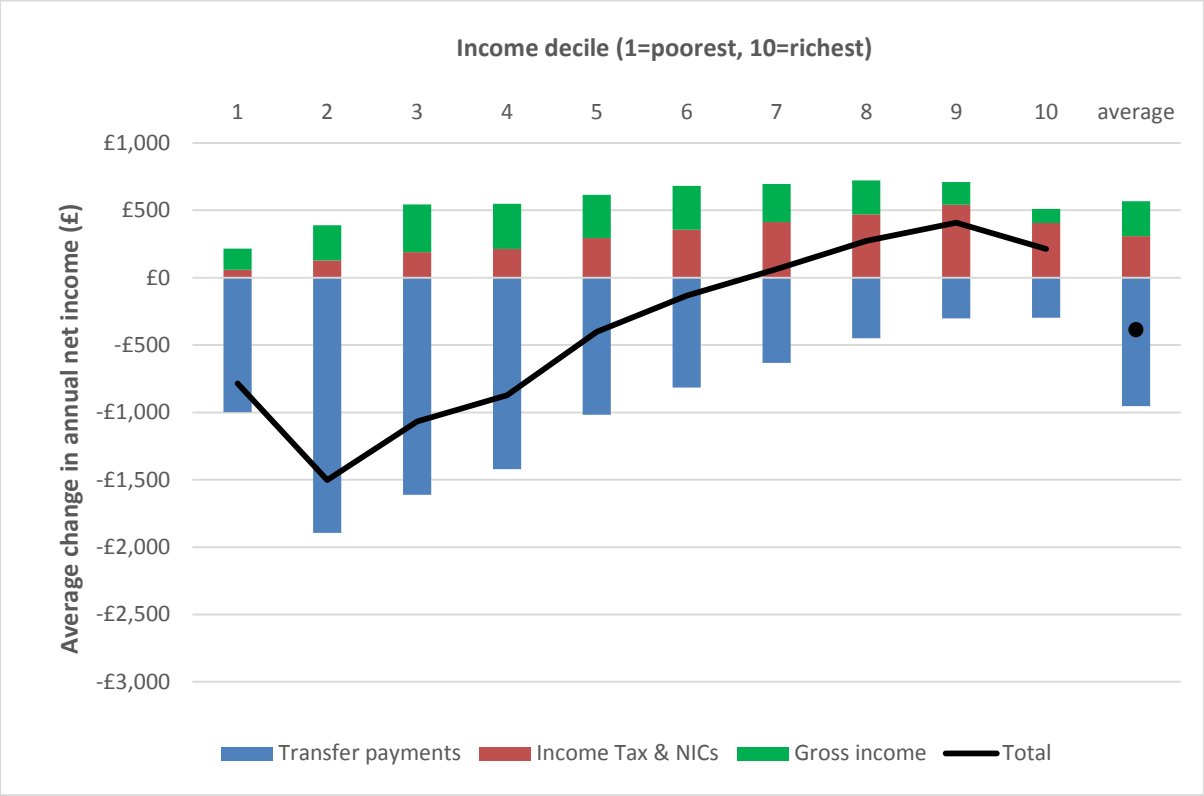
Third, while women's average gains in gross income from the NLW are slightly higher than men's (£259 for women compared with £234 for men), the distributional pattern of gains by household income decile show a different trend. The average gains are highest for men in gross income in deciles 2 and 3 and for women in deciles 3 and 4, and women's gains are spread higher up the income distribution. This reflects the fact that women who have relatively low earnings are more likely than men to have a high-earning partner, and hence to be a member of a higher-earning household.

Figure 5.7 Contribution of different types of reform to overall cash impact, men by income decile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 5.8 Contribution of different types of reform to overall cash impact, women by income decile, 2021–22 tax year: Great Britain



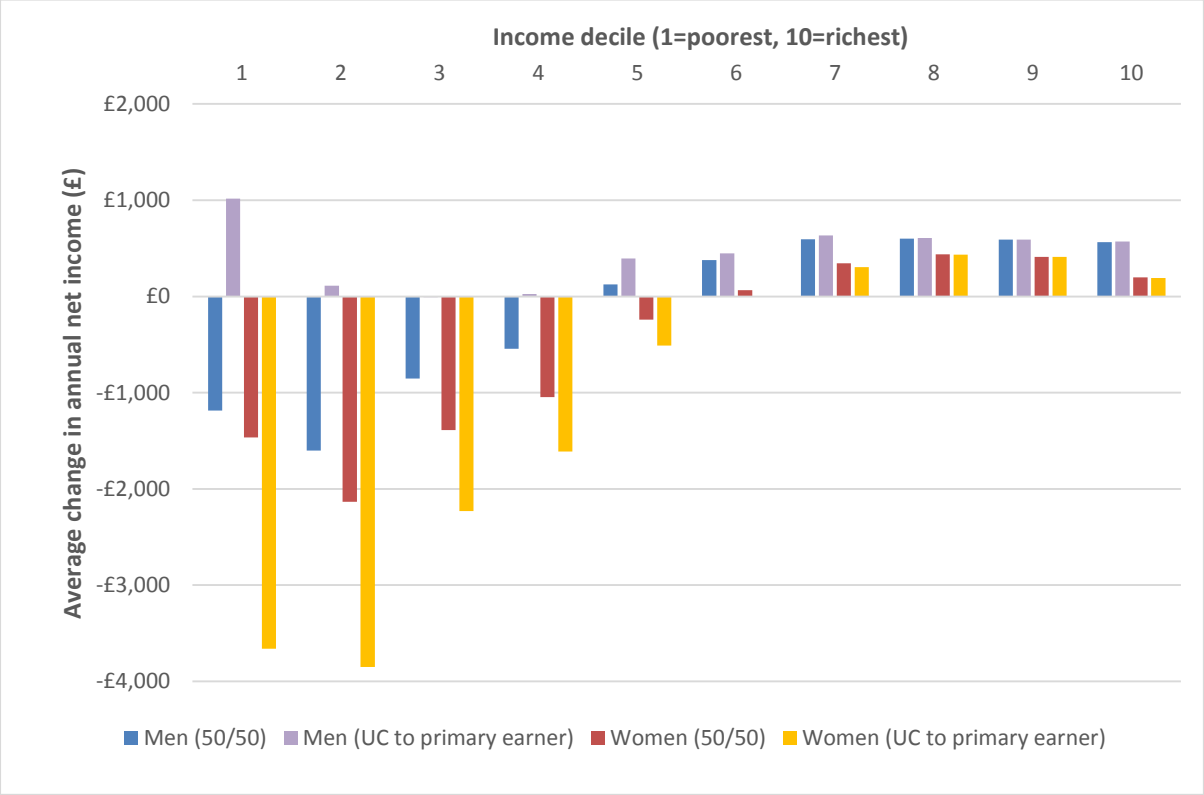
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 5.9 shows the impact of changing our assumption on the distribution of UC payments within couples. Our default assumption is that UC payments in couples are split 50/50 between partners. If we instead assume that UC goes to the primary earner in a couple (with the primary earner defined as the member of the couple with the highest weekly earnings), the distribution of changes in income for men and women in couples changes drastically. Figure 5.9 shows the average cash gains for men and women (in couples only), including the impact of UC under the two different assumptions regarding who receives the UC payment. The blue and red bars (labelled 'Men (50/50)' and 'Women (50/50') show a similar pattern of changes in income for women compared with men to that observed in Figure 5.6. However, the purple and yellow bars (labelled 'UC to primary earner') show a drastic shift in income from women to men as a result of the introduction of UC. Women are forecast to lose an average of over £3,650 per year in the bottom decile, and £3,850

in decile 2, while men gain slightly over £1,000 in decile 1 and slightly over £100 in decile 2.

There is also a substantial redistribution from women to men in deciles 3, 4 and 5. This pattern of redistribution from women to men occurs if we assume that the primary earner receives all the UC payment, because using our definition, the male partner is the primary earner in around four-fifths of couples in the FRS dataset. This finding is potentially worrying for gender equality given that the UK Government has designed UC as a single payment with the couple nominating which partner receives the benefit. Hudson-Sharp *et al*. (2018: 148) discuss the gender equity implications of the single monthly payment regime in more detail.

Figure 5.9 Impact of Universal Credit being paid to the primary earner instead of split 50/50 between both partners, men and women in couples by household income decile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

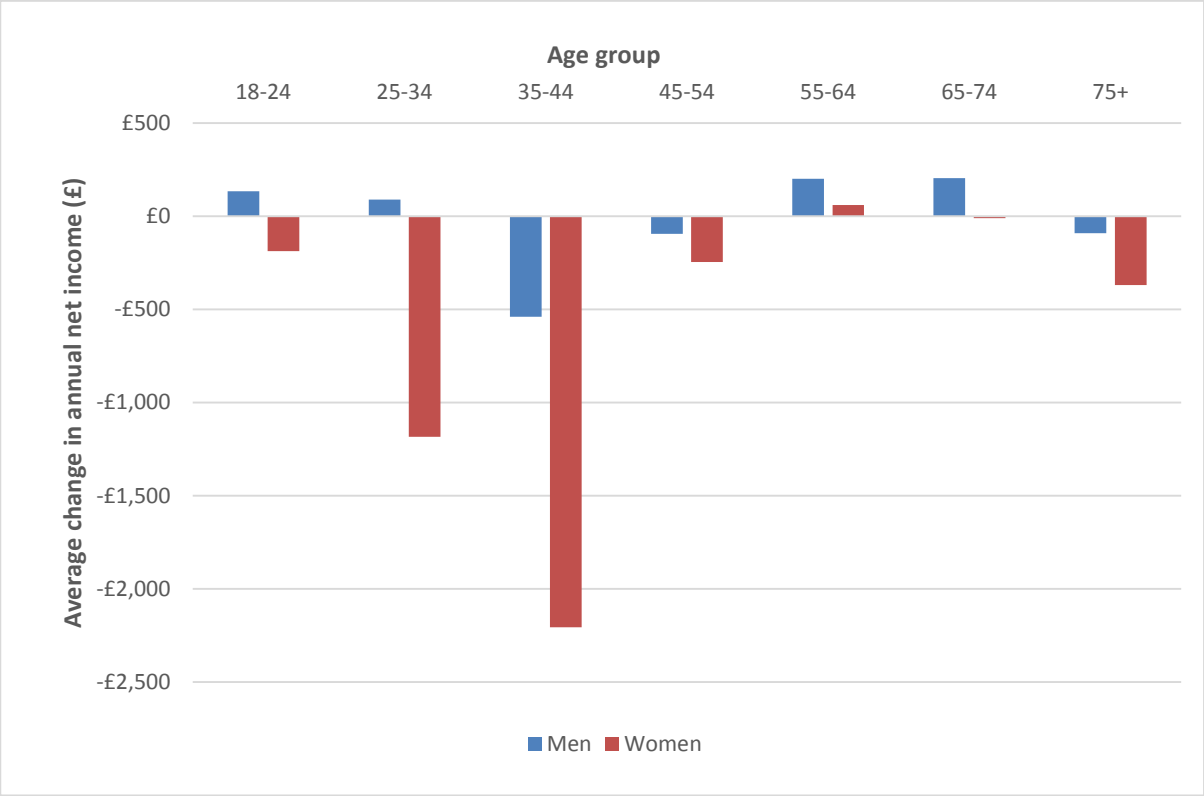
5.5 Impact of reforms by gender and age

Analysis of the impact of reforms to direct taxes and transfer payments at the individual level makes it easier to see patterns and trends in the results that are obscured for multiple-adult households, particularly when households contain adults from different age groups.

Figure 5.10 shows average changes in net income arising from reforms for individuals categorised by gender and age group. As with the analysis by gender and income decile in Figure 5.6, women fare worse than men from the reforms in each category. However, the size of the differential between men and women is far more pronounced in the 25 to 34 and the 35 to 44 age groups than in any other age group. Most strikingly, women aged 35 to 44 lose an average of slightly over £2,200 per year from the reforms compared with slightly under £550 for men. In the 25 to 34 age group, women lose an average of slightly under £1,200 per year from the reforms compared with average gains of slightly under £100 for men. The pattern of average losses and gains for women compared with men in this age group is explained by the fact that women in these age groups receive much larger amounts in transfer payments in the baseline scenario than men in the same age groups. As with Figures 5.7 and 5.8, this is partly explained by the fact that the vast majority of lone parents are women, and partly by the fact that transfer payments tend to be paid to mothers in couples with children.

In the other age groups, the differences between men and women are less pronounced, but men still experience larger net gains (or smaller net losses) from the reforms. This is true even for the 18 to 24 age group, in which women lose slightly under £200 from the reforms but men gain almost £150. There are also differences in the over-75 age group, in which men lose slightly under £100 on average whereas women lose over £350.

Figure 5.10 Cash impact of reforms to direct tax and transfer payments by gender and age group, 2021–22 tax year: Great Britain



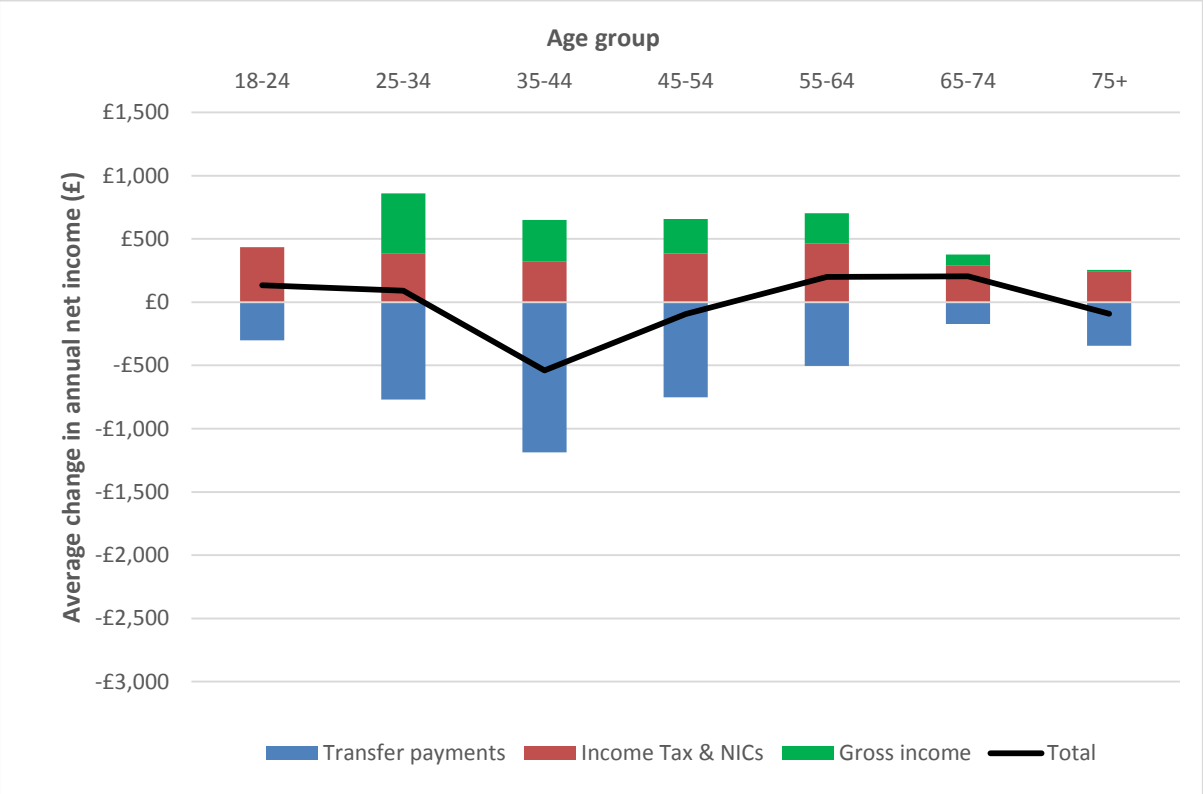
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figures 5.11 and 5.12 show breakdowns of the contributions of different income sources to the overall trends shown in Figure 5.10 for men and women respectively. For men, as set out above, the negative impact of cuts to transfer payments (the blue bars) is partially or wholly offset by reductions in income tax and NICs payments, and also increased gross incomes arising from the NLW. (Note that men and women aged under 25 do not benefit from the NLW because they are not eligible to receive it, but their losses from cuts to transfer payments are also smaller than for other working-age men.) Pensioners benefit relatively little from the NLW (because most pensioners are not in work) and their gains from changes to income tax and NICs are smaller (mainly because pensioners benefit less from the increases in the income tax personal allowance). However, pensioners' losses from changes to transfer payments are smaller than for other groups (except under-25s) because the value of the State Pension and Pension Credit has been mainly maintained under the reforms since 2010.

For women, the pattern of gains from the NLW, income tax and NICs changes is similar, except that women aged between 25 and 64 gain more than men from the NLW (because they are more likely to be in low-paid work) and female pensioners gain less from the income tax and NICs changes than men (because they have lower gross incomes on average). Women lose more from changes to transfer payments than men across every age group, including pensioners. For example, women aged 35 to 44 lose almost £1,000 more than men in the same age group (around £2,150 compared with slightly under £1,200), while women aged 25 to 34 lose over £1,400 compared with less than £800 for men.

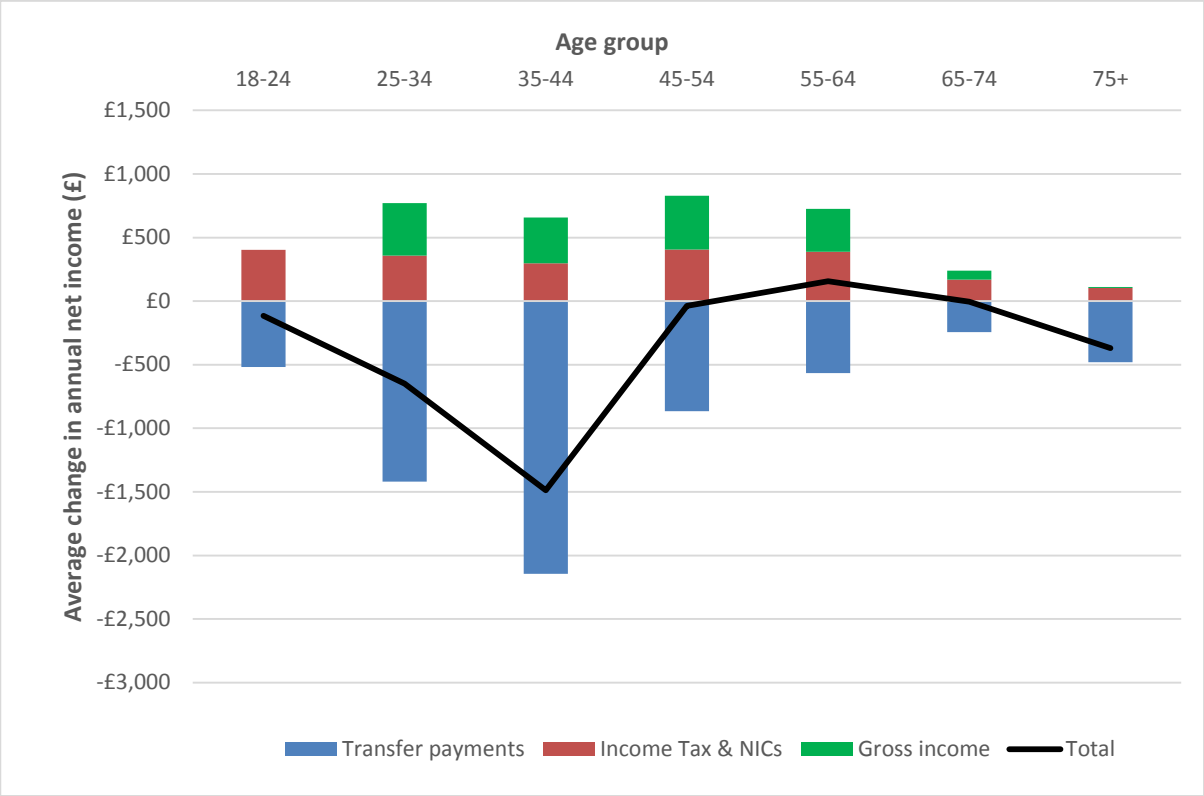
In the over-75 group, women lose £370 on average compared with less than £350 for men. This reflects the fact that women in the over-75 group are older on average than men, and therefore more likely to be in receipt of Attendance Allowance (cut as a result of the change from Retail Price Index to Consumer Price Index uprating from 2011 onwards). Female pensioners also gain less from the income tax changes (around £100) than men (almost £250), which reflects lower taxable gross incomes for women than men in these age groups. This is partly because women tend to earn less than men when in work but also because many women take substantial time out of the labour force when having children, so their pension entitlements tend to be substantially lower than for men on average.

Figure 5.11. Contribution of different types of reform to overall cash impact, men by age group, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

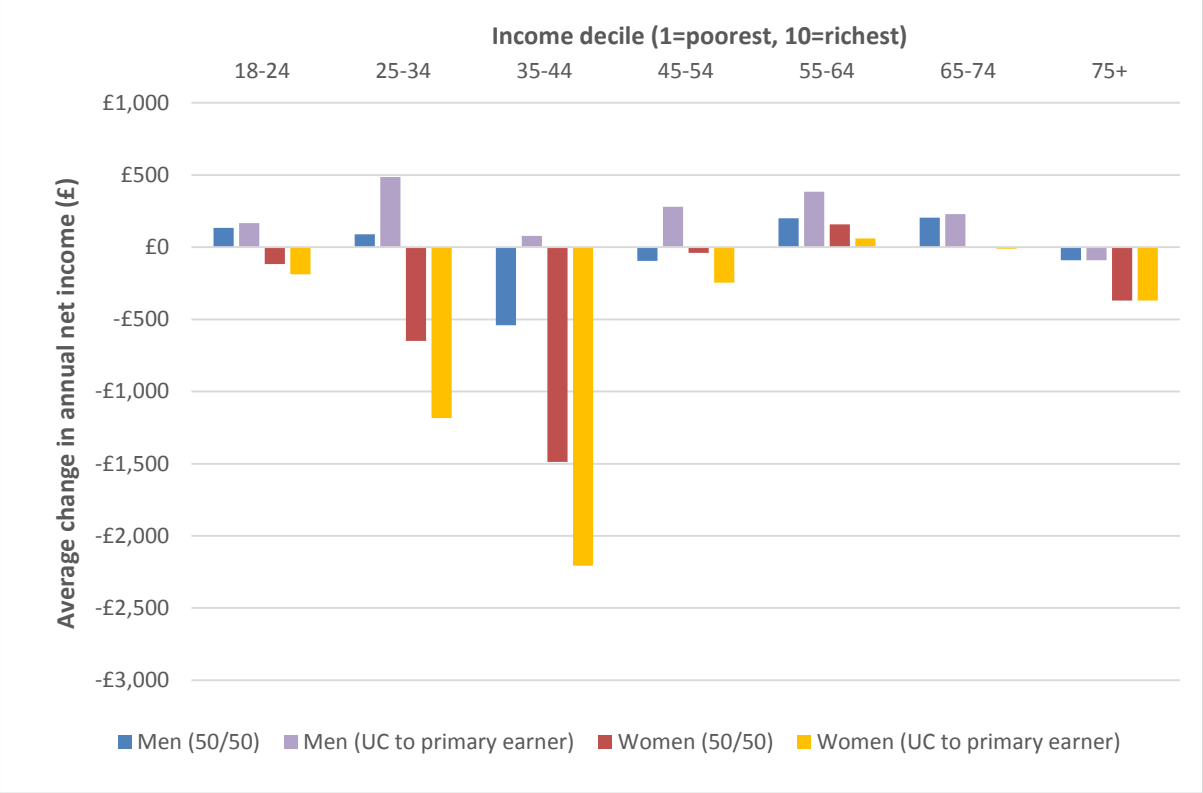
Figure 5.12. Contribution of different types of reform to overall cash impact, women by age group, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 5.13 shows the impact by gender and age group of varying the assumption regarding which partner UC is paid to in couples (as was done for Figure 5.9 by gender and income decile). Once again, women lose significantly more if we assume that UC is paid to the primary earner (yellow bars) than if we assume that UC is split 50/50 between both partners in each couple (red bars). Women's average losses in the 25 to 34 age group increase from £650 to almost £1,200 per year, and from slightly under £1,500 to over £2,200 in the 35 to 44 age group. Men in the 35 to 44 age group move from average losses of slightly under £550 to average gains of slightly under £80 if UC is paid to primary earners.

Figure 5.13 Impact of Universal Credit being paid to the primary earner instead of split 50/50 between partners, men and women in couples by age, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.6 Impact by gender, disability status and household income

Figure 5.14 shows the impact of reforms to taxes and transfer payments at the individual level, by gender and disability status. The figure compares the net impact of reforms for individuals in the FRS core disabled group with individuals who are not in either the core or wider disabled groups (labelled 'non-disabled') Individuals in the wider disabled group are omitted from the figure to improve readability. The average impacts are shown for individuals according to which tertile of the household income distribution they are in (tertiles divide the income distribution into three equally sized

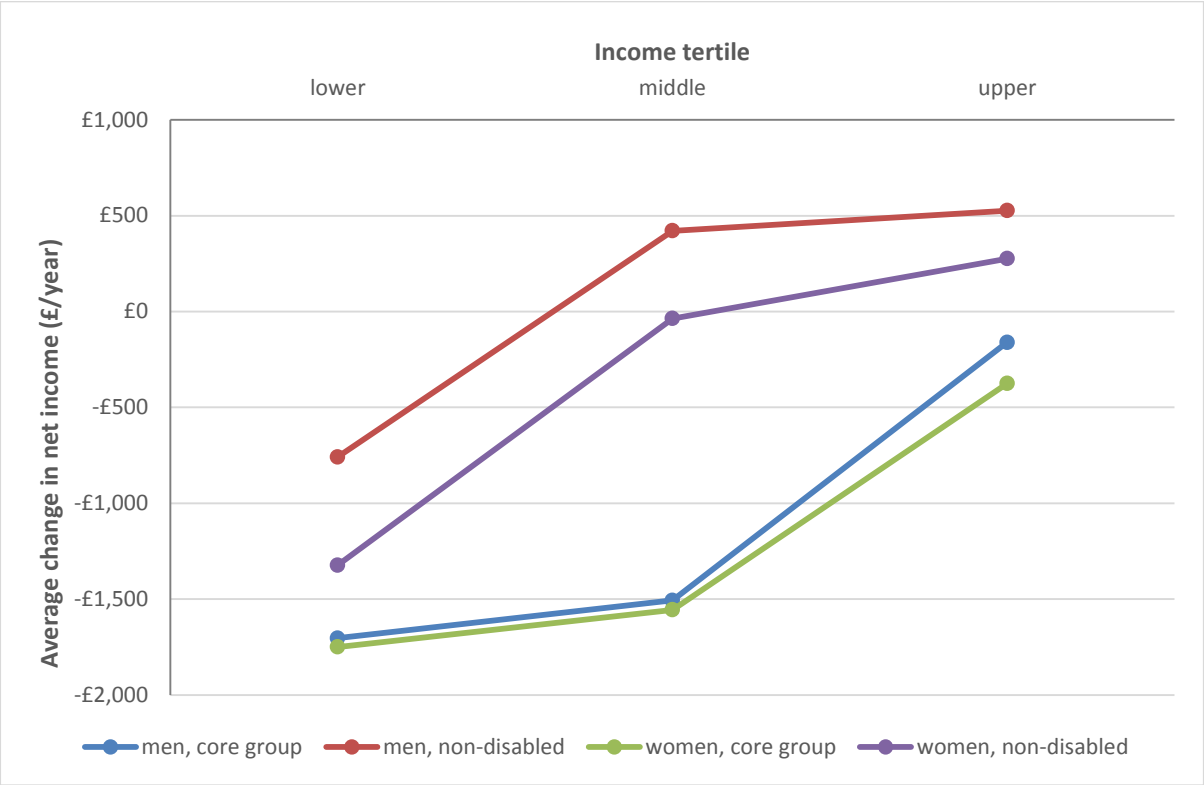
segments, from poorest to richest).[9] This is therefore a three-way intersectional analysis by gender, disability status and household income.

Figure 5.14 shows that the average cash impact of reforms to direct taxes and transfer payments for FRS core disabled men and women are broadly similar. Men in the bottom household income tertile lose slightly over £1,700 per year on average compared with slightly under £1,750 per year on average for women. Losses in the middle tertile are also similar (slightly over £1,500 for men and slightly over £1,550 for women). The top tertile shows more of a difference between FRS core disabled adults, with men faring better than women on average (losses of slightly over £150 for men compared with £375 for women). For non-disabled adults, men have significantly better average outcomes from the direct tax and transfer payment reforms in each tertile of the income distribution (for example, in the middle tertile, men gain around £420 on average compared with a loss of almost £50 for women).

In other words, the distributional impacts of reforms for low- and middle-income disabled men and women is more similar than for non-disabled men and women, or for high-income disabled men and women. To a large extent, this is because low-income disabled men and women both suffer considerable losses on average from cuts to transfer payments to disabled people whereas, for working-age non-disabled people, the main component of benefits and tax credit receipt is payments for children, which mainly go to mothers in the individual-level analysis. This results in greater average losses from the reforms to transfer payments for non-disabled women compared with non-disabled men.

[9] Tertiles are used rather than deciles or quintiles here because of the relatively small sample size of the FRS core disabled group of adults in the upper reaches of the income distribution.

Figure 5.14 Cash impact of reforms to direct tax and transfer payments by gender, disability status and income tertile, 2021–2022 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.7 Impact by gender, ethnicity and household income

Previous analysis in this report has shown wide variation in the effects of reforms to the tax and transfer payments system by both gender and ethnicity, making it instructive to perform a two-way analysis across the two characteristics (or, rather, a three-way analysis that assesses distributional effects by position in the household income distribution as well as gender and ethnicity).

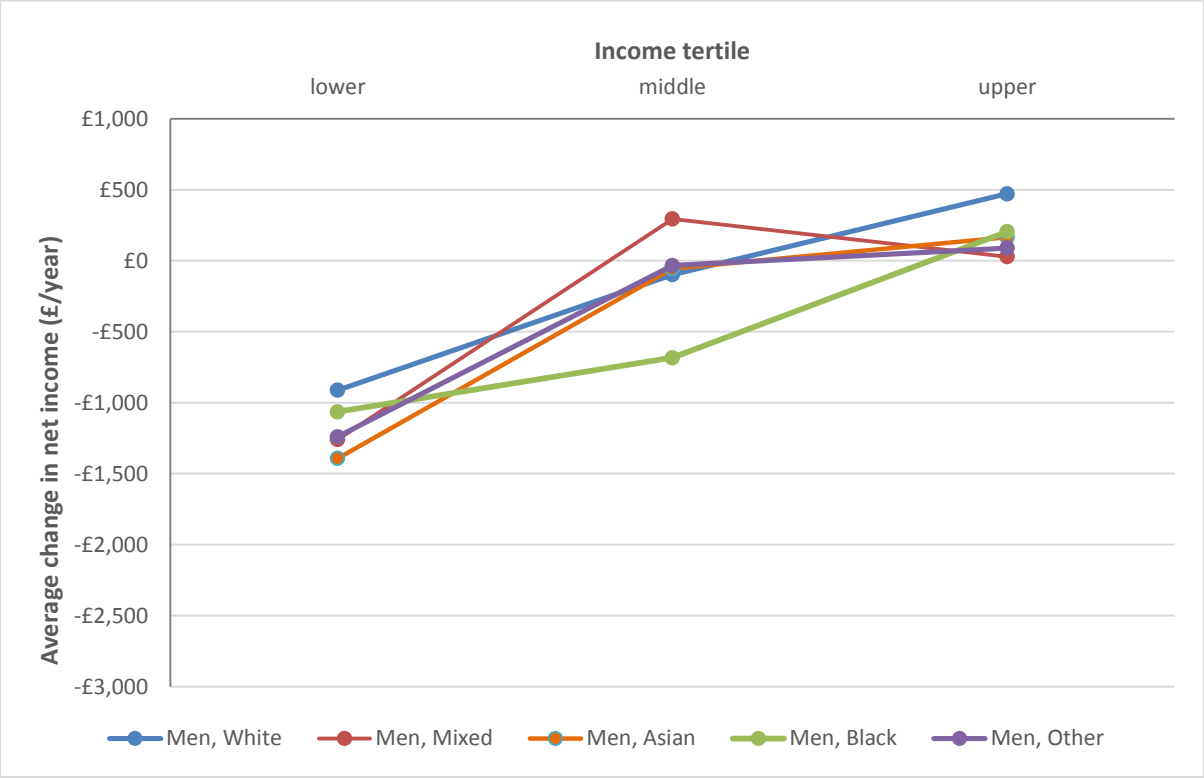
Figures 5.15 and 5.16 show an intersectional analysis of the distributional impacts of reforms to direct taxes and transfer payments by gender and ethnicity, according to the tertile of household income within which adults are located. The ethnicity variable used in this analysis is at the individual, rather than the household, level. We also use the aggregated version of the FRS ethnicity variable (which combines Indian, Pakistani, Bangladeshi, Chinese and 'other Asian' into a single Asian ethnicity)

because sample sizes were too small for accurate results when we attempted to use the disaggregated version. Figure 5.15 shows the results for men and Figure 5.16 shows the results for women.

Figures 5.15 and 5.16 illustrate three key findings. First, men fare better than women from the reforms in every ethnic group and across every point in the income distribution. Second, there is a positive income gradient for almost all the lines in the graph: people in the top tertile within each combination of gender and ethnicity fare better than people in the middle tertile within the same group, who in turn fare better than people in the bottom tertile in the same group. The only exception is men of Mixed ethnicity, for whom the middle tertile has an average gain of around £300 from the reforms compared with an average gain of near zero for the top tertile.

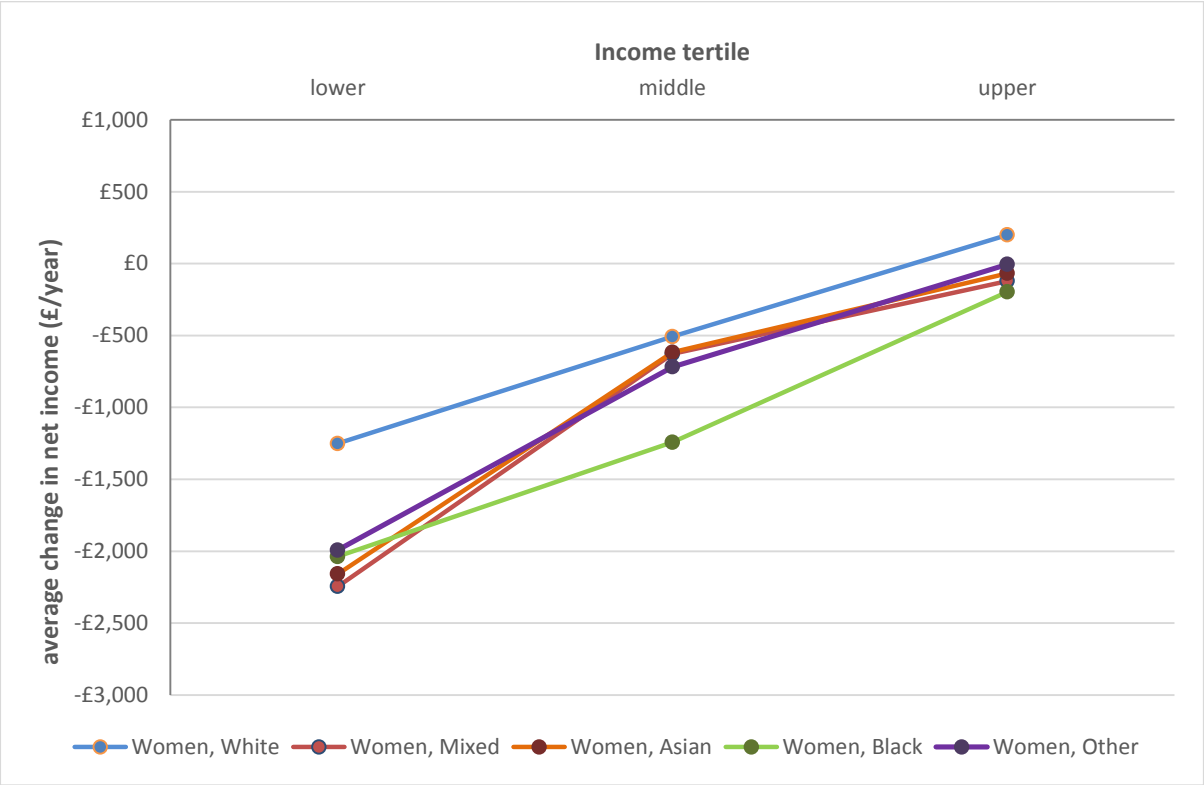
Third, ethnic minority women suffer the biggest net impacts from the reforms. White women experience smaller losses in the bottom and middle tertile than women in other ethnic groups (and White women in the top tertile experience a small average gain from the reforms of around £200, compared with losses of between zero and £200 for women in the other ethnic groups). The picture for men is not as clear. White men fare better from the reforms than any other ethnic group in the bottom and top tertile but fare less well than any group except Black men in the middle tertile (with net losses of slightly over £30 on average compared with average gains of slightly under £300 for men of Mixed ethnicity). Black women fare worse than any other sub-group in the middle and top tertiles, with average losses of slightly under £200 in the top tertile and around £1,250 in the middle tertile. Women of Mixed and Other ethnicities fare worse from the reforms than Black women in the lowest tertile, although the differences between all the female ethnic groups in the lowest tertile are small (with the exception of White women, who fare dramatically better).

Figure 5.15 Cash impact of reforms to direct tax and transfer payments for men by ethnicity and income tertile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 5.16 Cash impact of reforms to direct tax and transfer payments for women by ethnicity and income tertile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.8 Impact by disability score and age

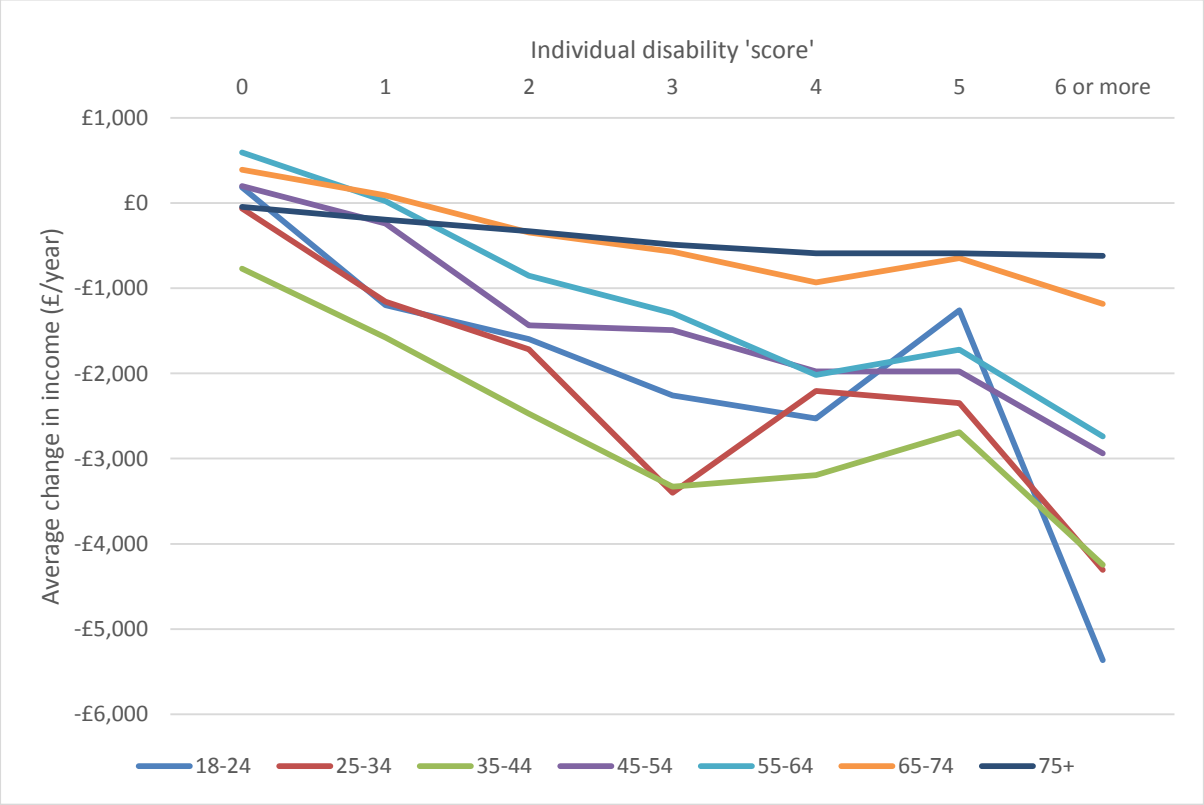
Figure 5.17 shows the relationship between individual disability 'score' and average losses from the direct tax and transfer payment reforms according to individual age group. The individual disability score measure here is the sum of the number of functional disabilities for each individual adult; that is, the adult component of the household disability score measure used in Chapter 3.

Figure 5.17 shows a similar downward slope to the household-level disability score results shown in Figure 4.9. However, the downward gradient is much steeper for adults aged 18 to 44 than for adults aged 45 to 64, who in turn have a much steeper gradient than pensioners. For pensioners aged 75 and over, the negative gradient is much lower; over-75s with a disability score of six or more lose slightly over £600 on

average from the reforms compared with almost £5,400 for under-25s in the same group.

Younger disabled adults are hit harder by the reforms on average than older disabled adults due to several factors. First, younger disabled adults are more likely to be in families with children, who (as shown in Chapter 4) experience more losses as a result of cuts to transfer payments than other households. Second, the introduction of UC results in large losses for disabled adults and children in many cases. This is because the disability additions for UC are less generous for disabled people who are not in the most severe category than the tax credits which UC replaces (Hudson-Sharp *et al*., 2018: 148–51). Third, the reassessment of Disability Living Allowance (DLA) claimants for Personal Independence Payment (PIP) results in losses for some working-age disabled people who are claiming DLA in the baseline scenario. Pensioners are not affected by the DLA-PIP reassessment process and are mostly unaffected by the introduction of UC, meaning they do not suffer as much from these changes.

Figure 5.17 Overall cash impact of reforms to direct tax and transfer payments by age group and individual disability 'score', 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.9 Impact by disability, ethnicity and gender

Figure 5.18 shows an analysis of distributional impacts of direct taxes and transfer reforms by disability and ethnicity for men and women separately. The analysis is presented as a bar chart rather than a line graph, with the bars showing overall distributional impacts of the reforms by ethnicity for men and women in FRS core disabled groups and non-disabled groups, defined as in Figure 5.13 (once again, adults in the FRS wider disabled group, but not the FRS core disabled group, have been dropped from the graph to improve readability).

Figure 5.18 shows that, within every ethnic group, non-disabled men experience better outcomes on average from the reforms than disabled men, non-disabled women or disabled women. This finding reflects the combination of the 'gender gradient' and the 'disability gradient' to the impact of the reforms; women suffer larger losses on average from the package of reforms than men, and disabled people suffer larger losses than non-disabled people. Non-disabled men gain on average within every ethnic group, with average gains ranging from slightly over £400 for Black and Mixed ethnicity non-disabled men to slightly over £650 for Asian non-disabled men.

Non-disabled women also fare better than disabled women (and, indeed, better than disabled men) within every ethnic group, but there is more variation in their outcomes across ethnic groups than for non-disabled men. The effects of the reforms on White non-disabled women are near zero on average; by contrast, Black non-disabled women lose over £1,000 per year, and Asian non-disabled women lose almost £850 per year. These variations arise mainly because Black women and Asian women are more likely on average to live in households which are lower down the income distribution, and relatively reliant on means-tested benefits and tax credits.[10] They are therefore more likely to lose out to a bigger extent from the cuts to benefits and tax credits.

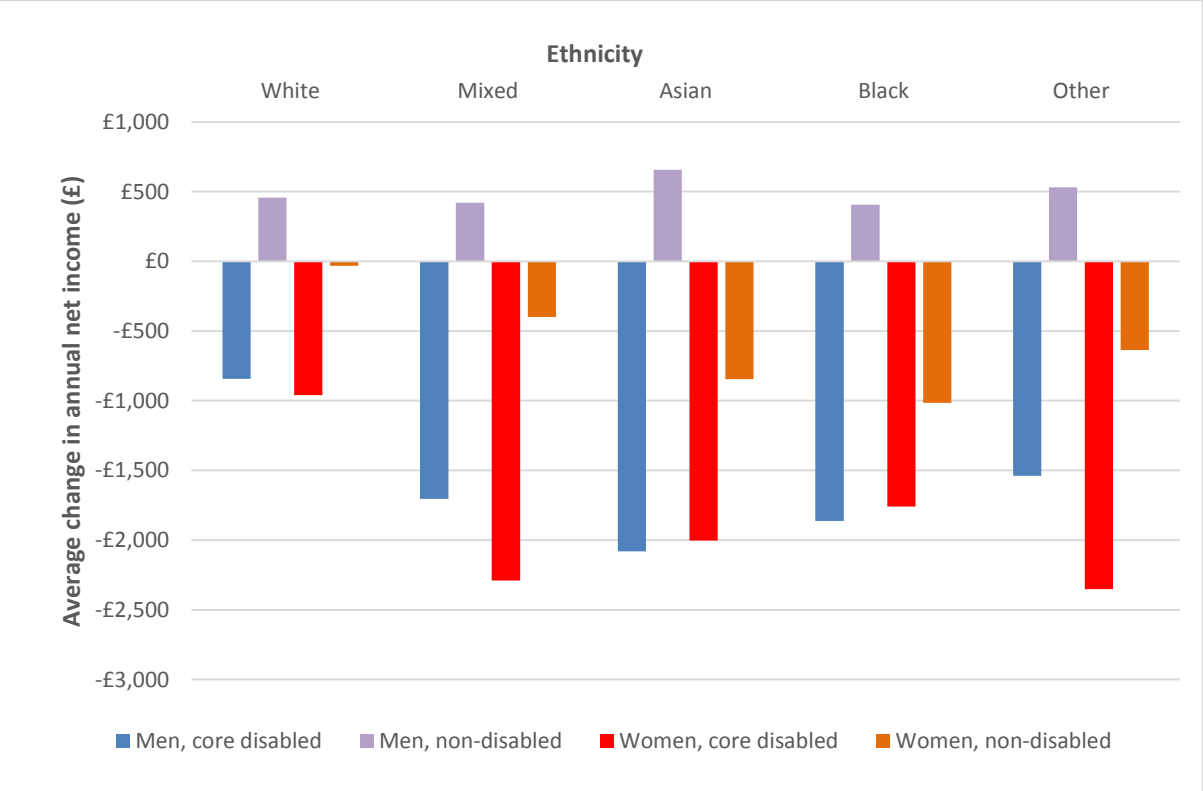
Looking at disabled men and women, the pattern of losses for women compared with men is much less clear than for non-disabled women. In two ethnic groups (Asian

[10] Analysis of the FRS sample used for this project shows that 64% of Asian women and 68% of Black women live in households in the bottom half of the income distribution compared with 50% of White women.

and Black), disabled men lose slightly more on average from the reforms than disabled women (average losses of around £2,100 for disabled Asian men compared with £2,000 for disabled Asian women, and slightly over £1,850 for disabled Black men compared with slightly over £1,750 for disabled Black women). In the other ethnic groups, women lose more from the reforms than men (for example, average losses of over £2,350 for women in the 'Other' ethnic group compared with slightly under £1,550 for men). Disabled people fare substantially worse than non-disabled people in every category of gender and ethnicity.

The main losers from the reforms in this intersectional analysis are disabled women of Mixed ethnicity (with average losses of almost £2,300 per year) and disabled women of Other ethnicity (with average losses of £2,350 per year).

Figure 5.18 Overall cash impact of reforms to direct tax and transfer payments by disability, ethnicity and gender, 2021–22 tax year: Great Britain



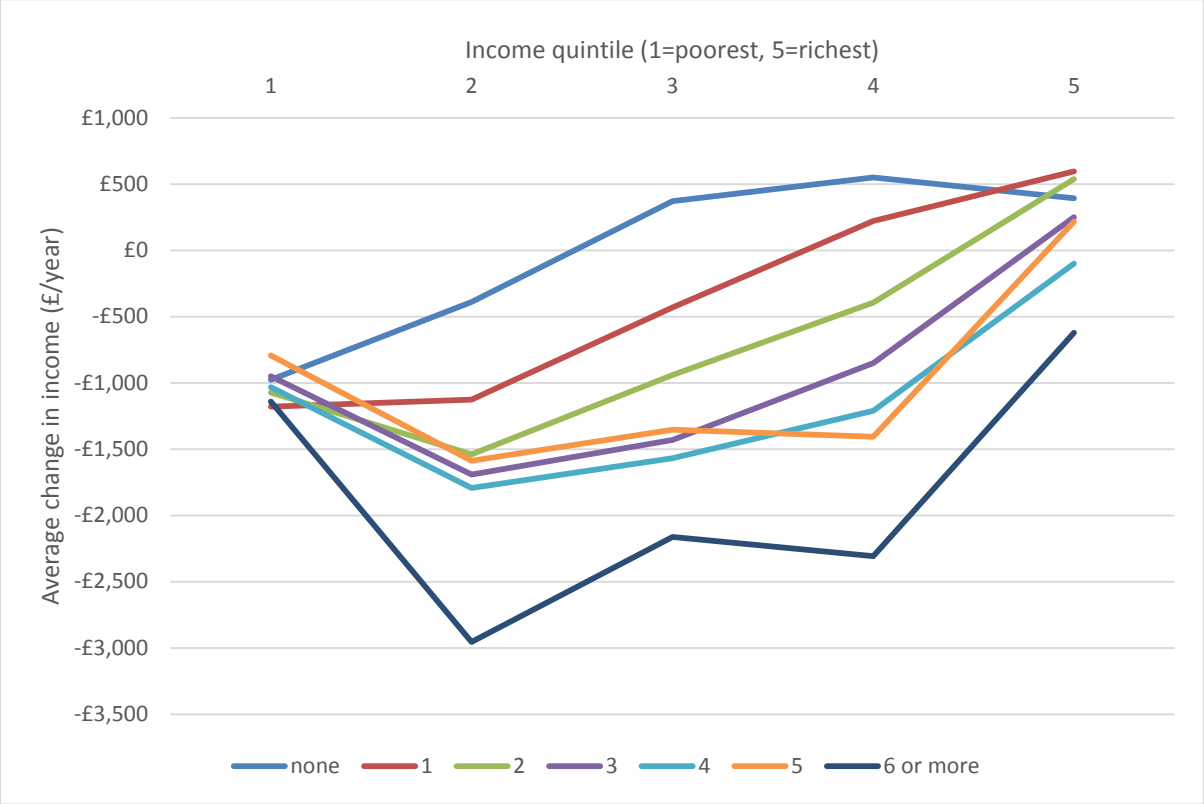
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.10 Impact by disability and income quintile

Figure 5.19 shows the overall cash impact of reforms at the individual level by disability score and income quintile. For quintiles 2 to 5, two fairly clear patterns emerge from the figure. First, net income losses are larger for the most part for individuals with a higher disability score. Second, losses are larger for individuals lower down the net income distribution. Both of these findings are consistent with results shown already in this and the previous chapter.

However, the bottom net income quintile looks quite different. Losses are smaller for individuals with a disability score of 2 or more in the bottom quintile than they are in quintile 2. Moreover, there is less variation in the size of losses by disability score in the bottom quintile than anywhere else in the income distribution. To a large extent, this seems to be a consequence of non-take-up of means-tested benefits and tax credits in the lowest quintile, as well as of benefits such as DLA/PIP, which are designed to meet the extra costs arising from disability. Since disabled people in this quintile are less likely to be claiming benefits and tax credits, they have less to lose from cuts to transfer payments. The corollary is of course that their net incomes are very low, even in the baseline scenario.

Figure 5.19 Overall cash impact of reforms to direct tax and transfer payments by individual disability 'score' and income quintile, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

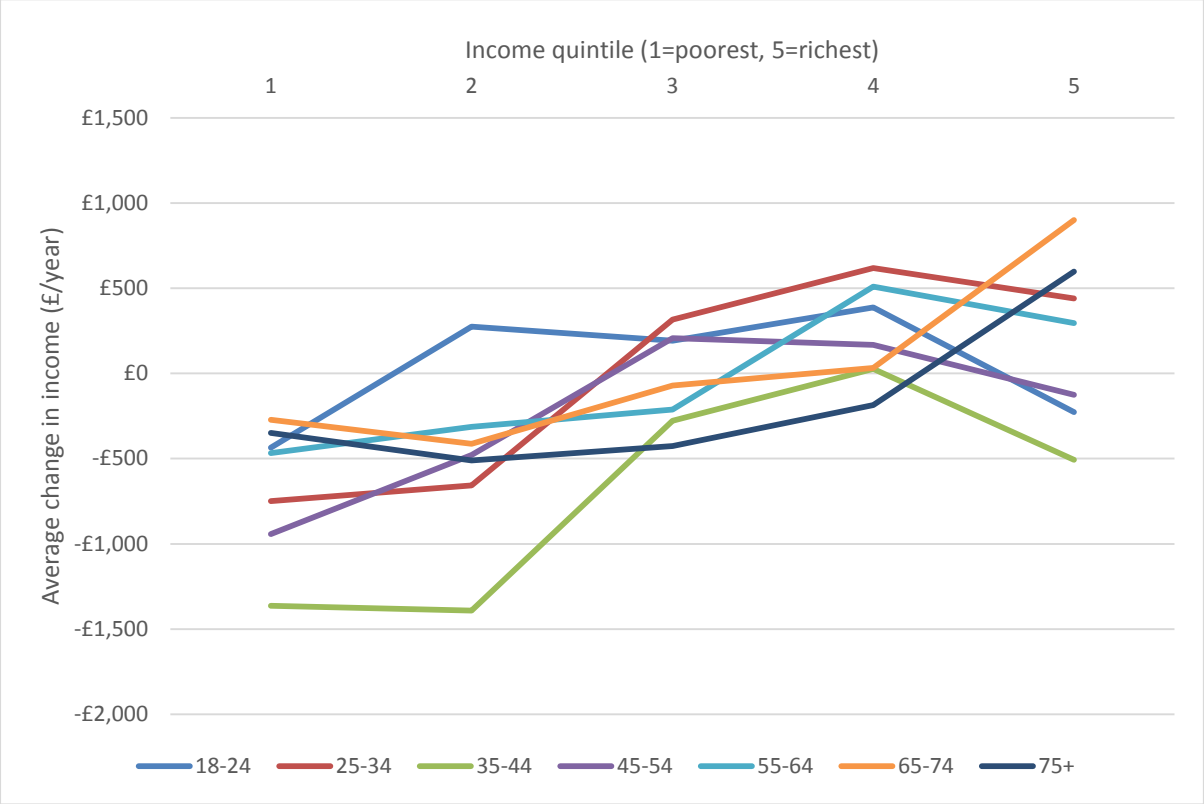
5.11 Impact by age group and income quintile

Figure 5.20 shows a two-way analysis of the average cash impact of reforms to direct taxes and transfer payments by age group and household net income quintile (dividing the income distribution into five equally sized segments from poorest to richest). Three findings stand out from the graph. First, losses for the bottom two income quintile groups are concentrated among those aged 35 to 44 and 25 to 34, and, to a lesser extent, those aged 45 to 54. This reflects the patterns seen by age group and gender in Figure 5.10. Second, there is a positive slope to the lines between quintiles 1 to 4 for every age group except for the over-75s; that is, individuals further up the income distribution are doing better on average than those lower down the income distribution. Third, the pattern of gains and losses in the top

quintile compared with the fourth quintile is different for pensioner age groups (65 and over) compared with younger age groups (45 and below).

For the younger age groups, people in the top income quintile fare slightly worse than those in the fourth quintile, partly because of increases in employee NICs for people above the Upper Earnings Limit (£866 per week in the 2017–18 tax year). For the older age groups, the top quintile gains more than the fourth quintile on average for two reasons. First, the extra personal allowance for pensioners in the baseline system is withdrawn for high-income pensioners whereas the personal allowance in the reformed system (which is worth more than the over-65s allowances in the baseline system in any case) is not. Second, since employee NICs are not payable for workers over state pension age (66 by 2021–22), there are larger gains for pensioners who are still in work.

Figure 5.20 Overall cash impact of reforms to direct tax and transfer payments by age group and household income quintile, 2021–22 tax year: Great Britain



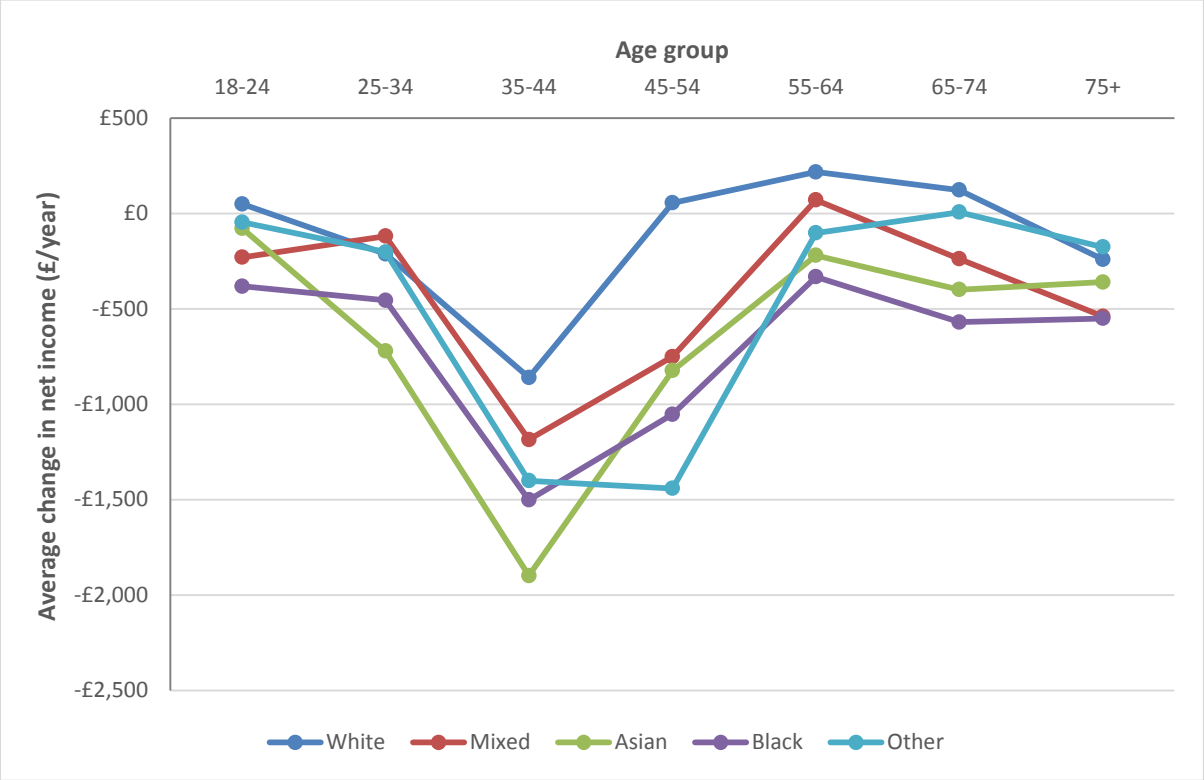
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.12 Impact by age group and ethnicity

Figure 5.21 presents the results of a two-way intersectional distributional analysis of the impacts of reforms to direct taxes and transfer payments by age group and ethnicity. Two findings stand out. First, the overall broad pattern of distributional impacts by age is similar for each ethnic group, with the 35 to 44 age group faring worse than any other group (except for the 'Other' ethnic group, where the 45 to 54 age group fares worst). The 18 to 24, 65 to 74 and over 75 age groups tend to do better than other age groups mainly because they are less likely to lose out from changes to transfer payments than the other age groups (as seen in the analysis by age and gender in Section 5.4).

Second, there is a clear pattern to the results by ethnicity. White adults experience higher average gains (or lower average losses) than other ethnicities (except in the 25 to 34 age group, where Mixed ethnicity adults fare slightly better; and in the over 75 age group, where adults of Other ethnicity fare slightly better). Asian adults experience higher losses in the 25 to 34 and 35 to 44 age groups. This may be due to the substantial losses for adults of Pakistani and Bangladeshi ethnicities seen in Figure 4.7, but unfortunately the sample of adults using the more detailed FRS ethnic classification, which separates out different sub-groups of Asian adults, was too small to perform a reliable intersectional age–ethnicity analysis.

Figure 5.21 Overall cash impact of reforms to direct tax and transfer payments by age group and ethnicity, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

5.13 Conclusions

This chapter has shown that intersectional analysis of the distributional effects of reforms to direct taxes, transfer payments and the NLW is a powerful tool for scrutinising the results from the empirical modelling conducted for this report,

allowing us to isolate impacts for groups suffering multiple disadvantages as a result of policy reforms. In particular, the following findings stand out:

- Lone parents in the bottom quintile of the household income distribution suffer particularly large average losses from the reforms – equivalent to around 25% of their net income, or one pound in every four.
- Lone parents who are FRS core disabled with at least one disabled child fare even worse on average, losing almost three out of every ten pounds of their net income. In cash terms their average losses are almost £10,000 per year.
- Couples with children in a similar position (at least one FRS core disabled adult, and at least one disabled child) also experience substantial average losses, of slightly under one in every five pounds of net income (a cash average of almost £8,000 per year).
- Lone parents with six or more functional disabilities lose over £11,000 on average from the reforms (slightly over 30% of their net income).
- Taken across the whole income distribution, women lose an average of around £400 from the reforms compared with £30 for men.
- For couples, the assumption about which partner receives UC (when rolled out) is crucial for the pattern of results. If we assume that UC is paid to the partner with the highest weekly earnings in every couple, women's losses average around £3,650 in the bottom decile of the income distribution and £3,850 in decile 2. The equivalent figures for women if we assume a 50/50 split of UC between partners are losses of around £1,450 in decile 1 and £2,100 in decile 2.
- Women aged 35 to 44 lose over £2,200 per year from the reforms on average compared with less than £550 for men.
- The pattern of losses for FRS core disabled men and women across the income distribution is similar, with larger losses (around £1,700) for men and women in the bottom income tertile.
- Women from ethnic minorities experience greater losses from the reforms on average than either White women or men of any ethnic group.
- An intersectional analysis by disability and ethnicity shows that the greatest losers from the reforms in this intersectional analysis are disabled women of Mixed ethnicity (with average losses of almost £2,300 per year) and disabled women of Other ethnicity (with average losses of £2,350 per year).

- Analysis of the reforms by individual disability ‘score’ and age group shows that average losses from the reforms are greater for disabled adults in the 18 to 44 age group than for older adults. Over-75s with a disability score of six or more lose slightly over £600 on average from the reforms compared with almost £5,400 for under-25s in the same group.

6 |Distributional impact of specific reforms

6.1 Introduction

All the distributional analysis in earlier chapters has focused on the cumulative impact of reforms to taxes and transfer payments. This chapter looks at the distributional impact of specific reforms introduced since 2010. The aim is to show how useful distributional assessment techniques are for delving into the aggregate results and showing the impact of specific policies. In particular, we focus on several policies that could be expected to have large and disproportionate impacts on protected groups. These reforms are described in more detail in Hudson-Sharp *et al*. (2018), which complements the quantitative analysis here and readers should refer to this report for a more detailed and contextualised description of the reforms.

6.2 Description of policies

This chapter analyses a range of different policies introduced at various points between 2010 and the time of writing:

- **The four-year freeze in uprating of transfer payments for working-age individuals and families**. Most elements of the transfer payments system for children and working-age adults – including tax credits, Universal Credit (UC), Child Benefit, Housing Benefit, Jobseeker's Allowance (JSA) and Income Support – will not be uprated with inflation for four years starting from 2016–17. The only exceptions are some of the benefits for disabled people (such as Disability Living Allowance (DLA) and Personal Independence People (PIP), the support component of Employment and Support Allowance, and the higher disability additions in UC) and Carer's Allowance (CA).
- **DLA-PIP reassessment**. At the time of writing, adult DLA claimants below state pension age were being reassessed for PIP. The Department for Work

and Pensions estimates this process will be complete by 2020. However, following a High Court ruling in December 2017 that the PIP assessments carried out to date had been 'blatantly discriminatory' against people with mental health conditions (Butler, 2018), the UK Government agreed that all PIP claims made to date – around 1.6 million – should be reassessed. This process is likely to result in higher awards for around 220,000 PIP claimants (Butler, 2018). The modelling of the DLA-PIP reassessment in this report was completed before the announcement of the review of existing PIP claims. It uses the Office for Budget Responsibility (OBR)'s forecast of a reduction of around 5% in total expenditure on PIP compared with DLA as a benchmark in calculating the impact of the reassessment (OBR, 2016: 92). Given the court ruling, this should be viewed as a significant overestimate of the negative impacts of DLA-PIP reassessment, although it represents a reasonable assessment of the original policy intention.

- **UC work allowance reductions**. The UC system contains tax-free work allowances for some types of claimant (for example, lone parents). These allow claimants to earn a certain amount each month before UC payments are reduced (earnings above the work allowance are subject to a 'taper', which reduce UC payments by 63 pence for every additional pound) (Hudson-Sharp *et al*., 2018: 137). Since UC started to be rolled out (initially on a pilot basis in only a handful of local authorities) in April 2013, the value of these work allowances has been repeatedly cut and abolished altogether for some types of claimant. Table 6.1 shows the current value of the work allowances for different types of claimant, and what the value would be if these allowances had been maintained at the level set when UC was introduced in 2013 and uprated with CPI inflation each year.

Table 6.1. Universal Credit maximum work allowances in 2017–18 compared with their value if the 2013–14 system had been uprated with CPI

	Taper-free work allowance per month (£)	
Claimant type	Actual value, 2017–18	Value if 2013–14 system had been CPI-uprated
No housing costs:		
Lone-parent family	397	769
Couple with children	397	562
Disabled adult(s)	397	678
Single adult, no children	0	116
Couple adult, no children	0	116
With housing costs:		
Lone-parent family	192	276
Couple with children	192	233
Disabled adult(s)	192	201
Single adult, no children	0	116
Couple adult, no children	0	116

Source: analysis of original Universal Credit work allowance regulations in 2013–14 and current (2017–18) regulations.

- **Two-child limit on Housing Benefit, tax credits and Universal Credit**. In the July 2015 Budget, it was announced that premiums for children in Housing Benefit, tax credits and UC would be limited to a maximum of two children only for new claimants and would not be available for existing claimants for most third and subsequent children born after April 2017 (Hudson-Sharp *et al*., 2018: 115–16).
- **Removal of the spare room subsidy ('bedroom tax')**. Since April 2013, tenants in the local authority or housing association sector who are deemed by the UK Government to have one or more spare bedrooms have had their Housing Benefit (or the housing costs component of their UC, if they are claiming UC) reduced by either 14% (for one spare bedroom) or 25% (for two or more spare bedrooms) (Hudson-Sharp *et al*., 2018: 99–114). This policy only applies in England and Wales; in Scotland, the Scottish Government has provided extra funding to offset the effect of the removal of the spare room subsidy for social housing tenants.

The analysis also looks at a set of policies being introduced in (and only in) Scotland as a result of the Scottish Government making use of new powers (devolved by the

UK Government's Scotland Act 2016) to set its own income tax rates, to vary the level of certain social security benefits, and to introduce new benefits to replace some of those available in England and Wales. At the time of writing, the Scottish Government was committed to the following changes to the tax and transfer payment system in Scotland (see Scottish Government, 2018a, for more details):

- **Changes to the income tax rates schedule** (starting in the 2018–19 tax year). These raise additional revenue while making the system slightly more progressive and also lowering the rate of income tax for people earning between £11,850 and £13,850. Table 6.2 below shows the new rates for the 2018–19 tax year and a comparison with the tax rates in England and Wales.

Table 6.2 Income tax rates in Scotland and England/Wales: 2018–19

	Income tax rate (%)	
Gross income level	Scotland	England/Wales
£11,850-£13,850	19	20
£13,850-£24,000	20	20
£24,000-£43,430	21	20
£43,430-£46,350	41	20
£46,350-£150,000	41	40
Above £150,000	46	45

Source: Scottish Government (2018b).

- **A new Best Start Grant** (beginning summer 2019). This replaces the Sure Start Maternity Grant (SSMG), which is a grant for new mothers in low-income families. Since 2010 the SSMG has been paid only for the first child in a low-income family. The Best Start Grant pays qualifying families £600 on the birth of their first child (compared with £500 for the SSMG) and £300 on the birth of any subsequent children. Qualifying families also receive £250 when each child begins nursery, and a further £250 when they start school.
- **An increase in the value of Carer's Allowance** (effective from summer 2018). This is being raised to the level of the JSA payment for a single unemployed adult. At the time of writing (2017–18), CA was paid at £62.70 per week, whereas JSA was paid at £73.10 per week.

6.3 Distributional impacts of policies that apply to England and Wales

Since the Scottish Government's new reforms to taxes and social security benefits apply only in Scotland, and the bedroom tax does not apply to Scottish social tenants, this section focuses on the impact of the five policy reforms that apply to England and Wales. Some of the graphs in this section use data from English households in the Family Resources Survey (FRS), whereas others use Welsh data. Sources are made clear in the text and the figure headings.

6.4 Impact of reforms by household income decile

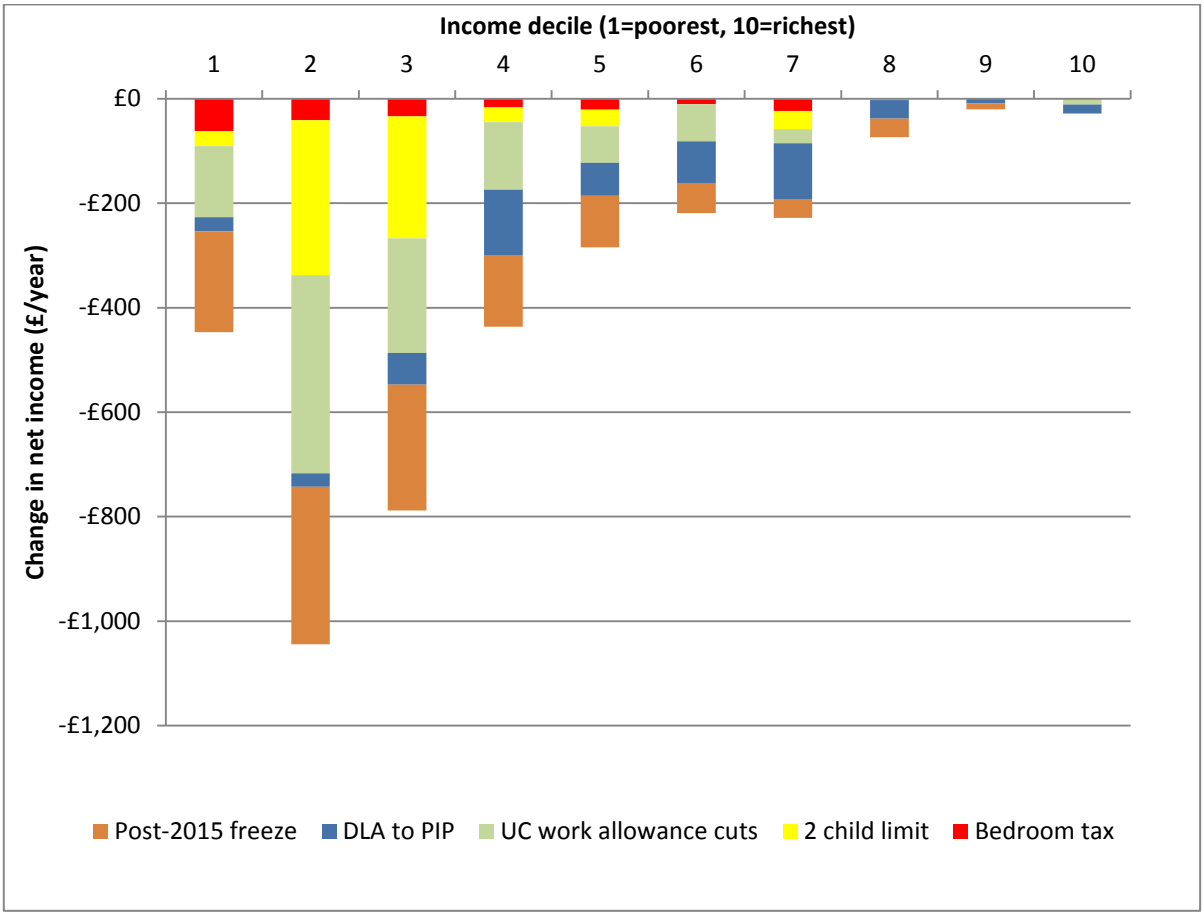
Figure 6.1 shows the impact of each of the five policy reforms for England and Figure 6.2 shows the impacts for Wales. As in Chapters 4 and 5, the policies are modelled for the 2021–22 tax year.

Figures 6.1 and 6.2 show very similar distributional impacts of the various reforms for England and Wales across the household income distribution. Specifically:

- The post-2015 freeze in benefits for working-age adults and families with children has a very regressive impact. This might be expected: people in households at the lower levels of the income distribution are far more likely to rely on means-tested transfer payments. Losses are largest for the bottom three deciles at between £200 and £350 per year in each case.
- The reassessment of DLA clients for PIP causes losses which are largest in the lower-to-middle part of the income distribution (deciles 3 to 6), which is where current working-age DLA claimants are most likely to be located. However, given that the UK Government has agreed to reassess all existing PIP claims, the distributional impacts of DLA-PIP reassessment modelled here should be viewed as probably an overestimate of the negative impacts.
- The cuts to UC work allowances have the largest negative impacts for households in deciles 2 and 3 of the income distribution. This reflects the fact that the households which would have benefited most from the work allowances as originally introduced in 2013–14 are located relatively low down, but not right at the bottom, of the income distribution. These are mostly households with one adult in work but on relatively low earnings (often working part-time).

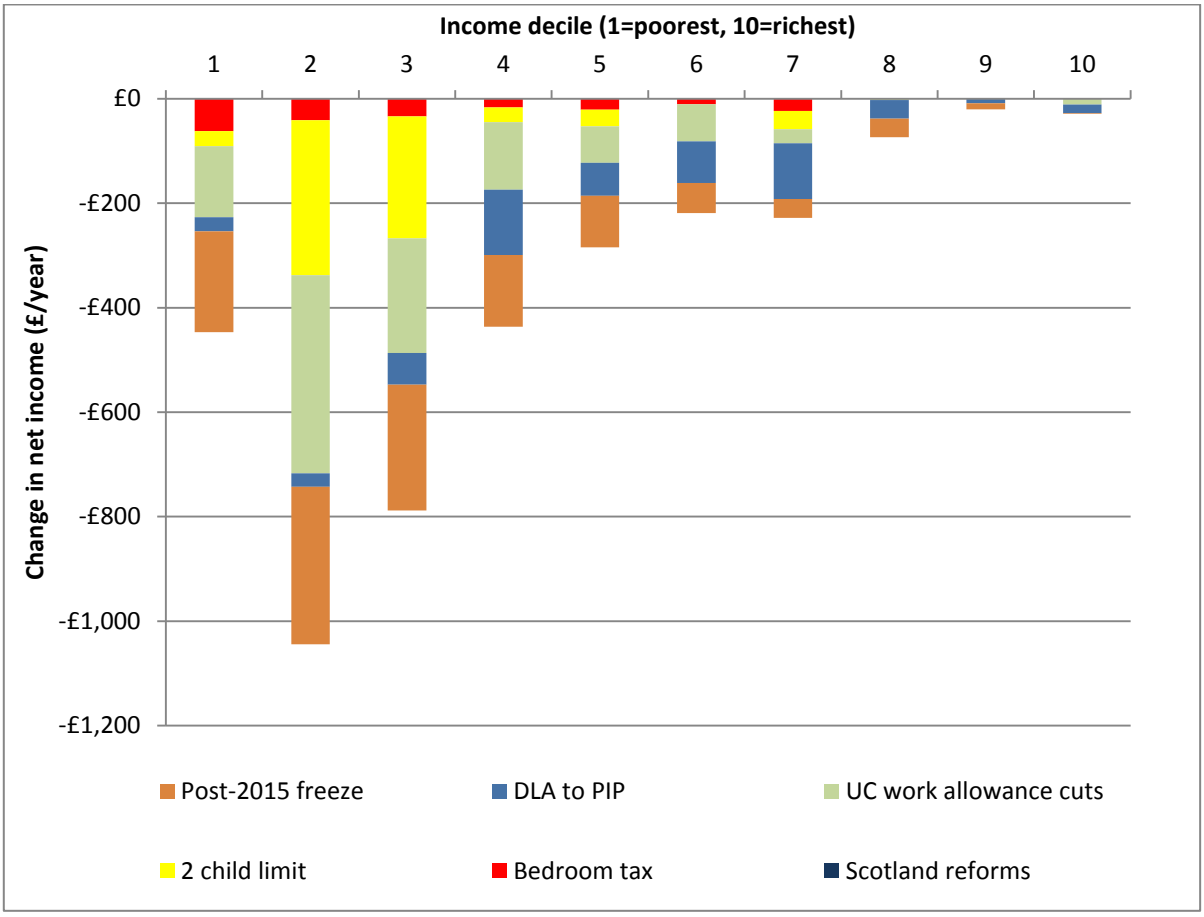
- The two-child limit on means-tested transfer payments has the largest negative impact in deciles 2 and 3 of the income distribution because households with three or more children are particularly likely to be located at this point in the income distribution.
- The bedroom tax has the largest impact in the lowest decile of the income distribution. This policy has a relatively small average impact on incomes compared with most of the other policies (average impacts of between £60 and £70 per year in the bottom decile for both England and Wales) but will have a much greater impact on the specific households who are affected.
- Overall, with the exception of DLA-PIP reassessment, all the policies modelled here have the largest cash impact on households at the bottom of the income distribution. The largest average cash losses from the combined set of policies are in decile 2 (over £1,100 per year).

Figure 6.1 Cash impact of specific policy reforms by household net income decile, 2021–22 tax year: England



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

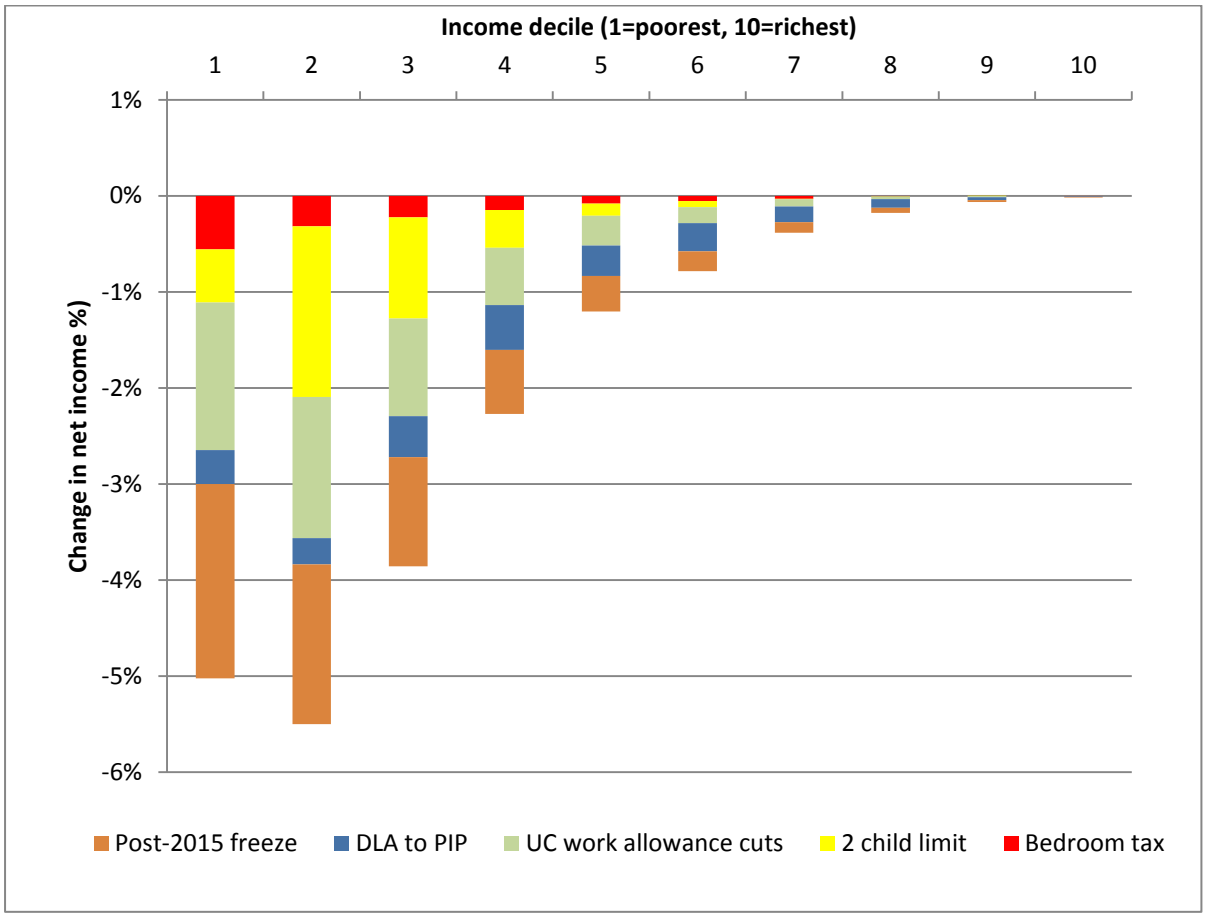
Figure 6.2 Cash impact of specific policy reforms by household net income decile, 2021–22 tax year: Wales



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Putting all five policies together, Figure 6.3 shows (for England) that the package of modelled reforms is regressive across all deciles except the lowest, with a negative impact on net incomes of 5% in the bottom decile, 5.5% in decile 2, and smaller negative impacts in the higher deciles. In decile 8 and above, the impact is negligible.

Figure 6.3 Percentage impact of specific policy reforms by household net income decile, 2021–22 tax year: England



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

6.5 Impact of reforms by household ethnicity

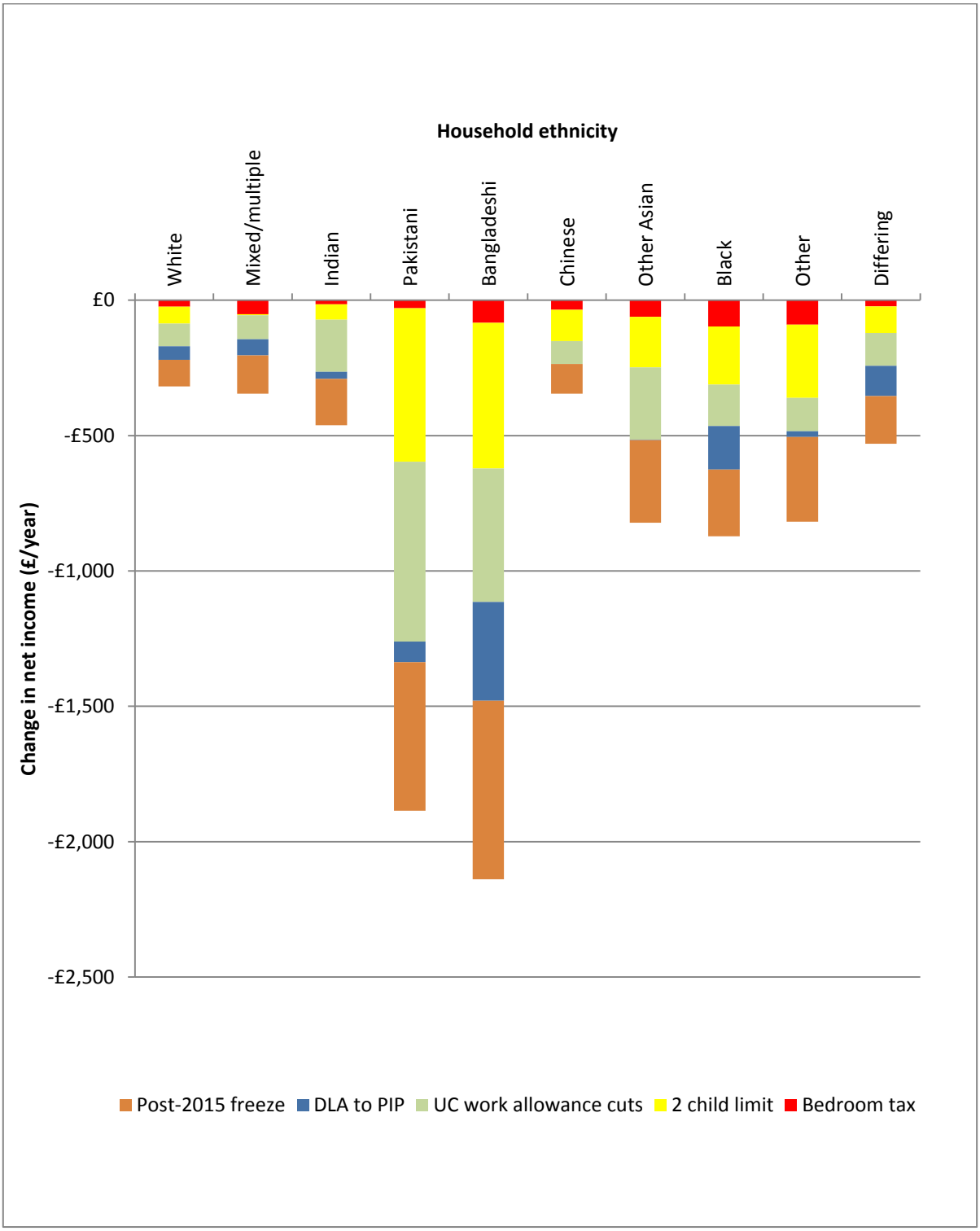
Figure 6.4 shows the average cash impact of the five featured reforms for England by household ethnicity. (We do not present the results by household ethnicity for Wales because the sample size of ethnic minority households in Wales is too small to produce reliable results.) **The uprating freeze, the two-child limit, and the cuts to UC work allowances have an especially large impact on Pakistani and Bangladeshi households,** with Bangladeshi households losing an average of almost £2,150 and Pakistani households losing an average of almost £1,900. These

very large losses for Pakistani and Bangladeshi households are the result of two factors, in particular:

- Households in these groups are much more likely to have three or more children than other households and so are hit particularly hard by the two-child limit (as well as the uprating freeze). In our FRS sample, around 25% of Pakistani and Bangladeshi households have three or more children compared with an overall sample average across all ethnicities of 5%.
- Pakistani and Bangladeshi households are more likely to be in work but earning low weekly earnings than other groups and therefore suffer disproportionately from the cuts to UC work allowances.

‘Other Asian’ households are also affected to a greater than average extent by these reforms, with overall losses of almost £900 per year. Black, Indian, and Other ethnicity households also lose out from the working-age uprating freeze and the two-child limit but not as much from the cuts to UC work allowances. The bedroom tax has a particularly large impact for Bangladeshi, Black and Other ethnicity households, with losses from the policy of between £80 and £100 per year for each of these groups. The DLA-PIP reassessment has the largest negative impact on Bangladeshi households (losses of over £350 per year on average) and Black households (losses of slightly over £160 per year on average). At the other end of the scale, the smallest combined impact from the reforms is for White households, Chinese households and households within which all the adults are from Mixed or Multiple ethnic groups, with total losses of between £300 and £350 per year in each case.

Figure 6.4 Cash impact of specific policy reforms by household ethnicity, 2021–22 tax year: England

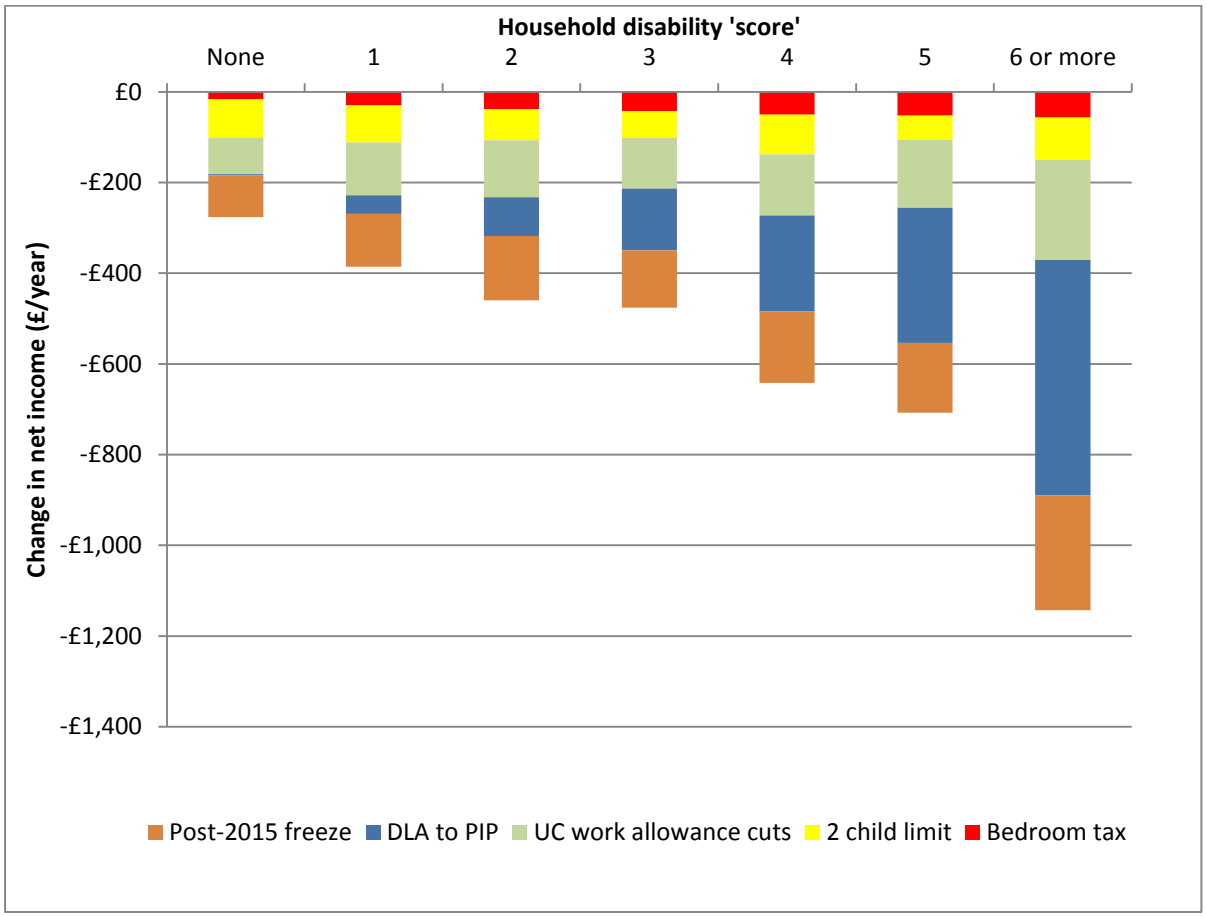


Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

6.6 Impact of reforms by household disability 'score'

Figure 6.5 shows the average impact of the featured reforms by household disability 'score' as defined in Chapter 4. The DLA-PIP reassessment has the clearest 'disability gradient'. This is not surprising: households with a high disability score are far more likely to have one or more working-age adults who are DLA claimants in the FRS data, and we have assumed that the reduction in total spending on PIP is in the region of 5%, based on findings from the *Welfare trends report* (OBR, 2016). Households with a disability score of six or more lose an average of £520 per year from the DLA-PIP reassessment process. Under our assumptions, this average figure will be made up of some households where a DLA claimant is transferred to PIP at a lower level of eligibility for either the Daily Living or Mobility components (or both), and other households where a DLA claimant loses eligibility for PIP completely on reassessment. For the other reforms, the disability score gradient is considerably less steep, if it exists at all. For the post-2015 uprating freeze, the bedroom tax and cuts to UC work allowances, losses are slightly higher for households with more disabilities. There is no clear pattern for the effects of the two-child limit by disability score. However, the increase in size in the overall effects of the DLA-PIP reassessment by disability score means that households with six or more disabilities lose out by almost £1,200 per year on average from the combined set of reforms.

Figure 6.5 Cash impact of specific policy reforms by household disability 'score', 2021–22 tax year: England



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

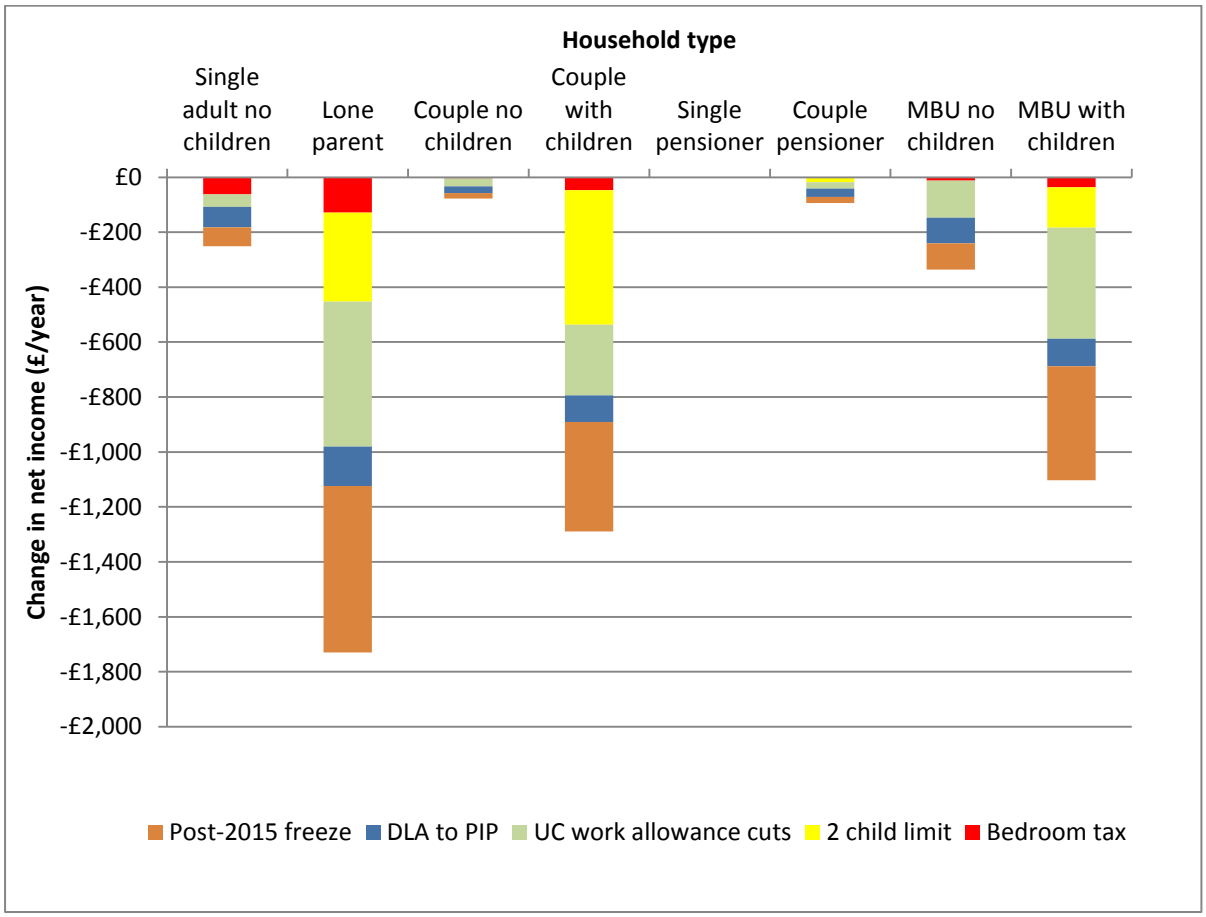
6.7 Impact of reforms by household demographic composition

Figure 6.6 shows the average cash impact of featured reforms by household demographic composition for households in England. There are evident patterns for the impact of the different reforms:

- By definition, the two-child limit on transfer payments only has an impact on households with children. Couples with children are the most affected by the policy, with losses of slightly under £500 per year on average, compared with slightly over £300 for lone parents and around £150 for Multiple Benefit Unit (MBU) households with children.

- The cuts to UC work allowances also have the largest negative impact on households with children. Lone parents – who are particularly likely to be in work, but on low weekly earnings – experience particularly large losses from this policy, with average losses of slightly over £500. MBUs with children also experience substantial average losses of around £400.
- The post-2015 uprating freeze for transfer payments for working-age claimants and families also has the largest negative impact on families with children, especially lone parents (with average losses of slightly over £600 per year).
- The DLA-PIP reassessment has smaller average impacts for households than most of the other reforms, with the biggest negative impact being for lone-parent households (average losses of slightly under £150).
- The bedroom tax has the largest negative impact for lone-parent households (average losses of around £130 per year) and single adults without children.
- The overall combined impact of all reforms is substantial for all household groups with children – over £1,700 per year on average for lone parents, almost £1,300 for couples with children and around £1,100 for MBUs with children.

Figure 6.6 Cash impact of specific policy reforms by household demographic composition, 2021–22 tax year: England



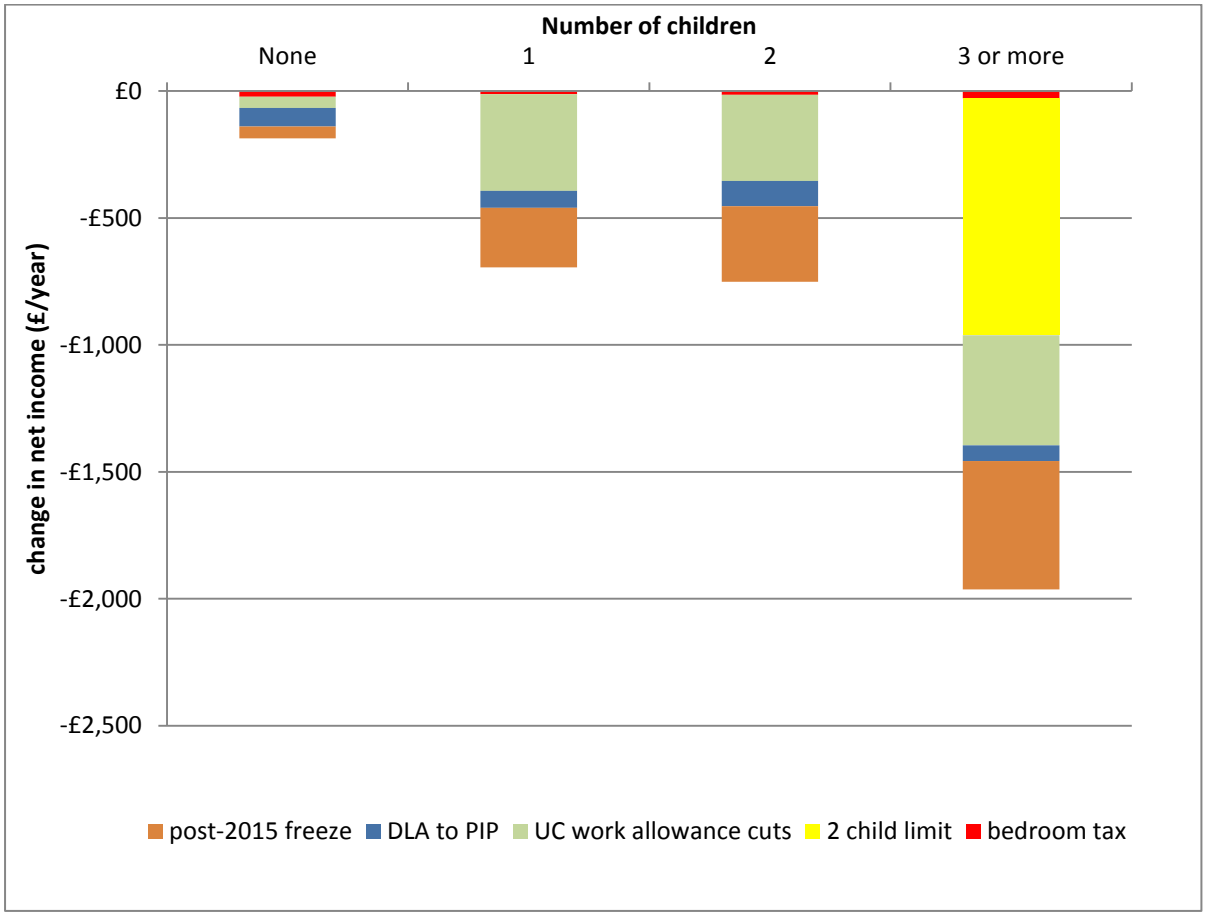
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

6.8 Impact of reforms by number of children in household

Figure 6.7 shows the impact of the reforms by number of children in the household for Welsh households (the results for English households look very similar). The main finding to note here is that the two-child limit on most transfer payments has a substantial negative impact on households with three or more children (slightly over £900 per year). While the post-2015 uprating freeze also has a larger impact on households with three or more children than for households with one or two children, the differential is not as large (average losses from the uprating freeze of slightly over £500 for households with three or more children compared with around £300 for

households with two children). Cuts to UC work allowances have a fairly even negative impact for households with children, at around £350 to £400 per year regardless of the number of children. The other two reforms (DLA-PIP reassessment and bedroom tax) show no clear pattern with this breakdown.

Figure 6.7 Cash impact of specific policy reforms by number of children in household, 2021–22 tax year: Wales



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

6.9 Impact of Scotland-specific tax and social security reforms

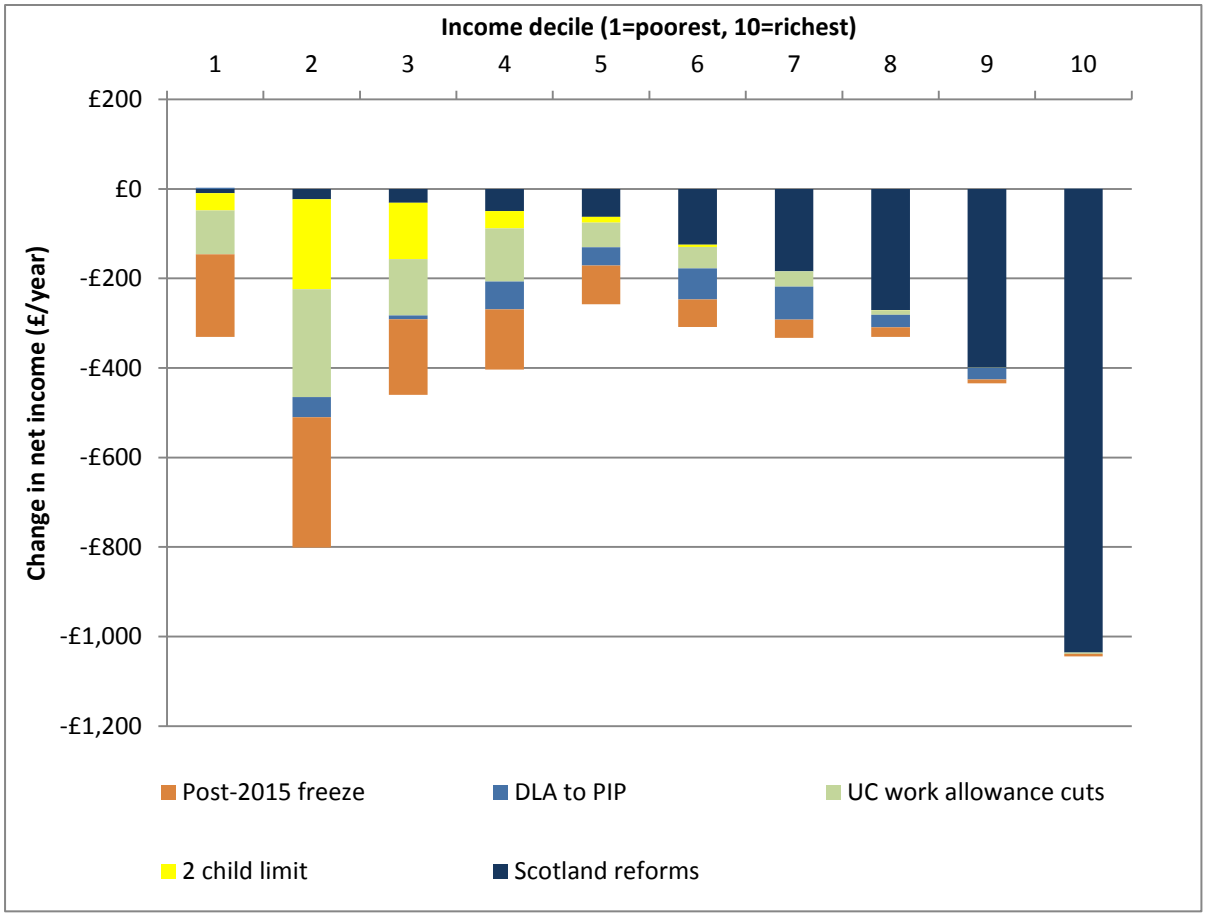
The final section of this chapter discusses the distributional impact of the three Scotland-specific tax and social security reforms that we model in this report: the revised income tax rates for Scotland, the Best Start Grant and the increase in CA payments. The effect of these is presented as a single block alongside the other

reforms discussed so far (except for the 'bedroom tax', which has been offset in Scotland using additional funding provided by the Scottish Government).

Figure 6.8 shows the average cash impact of each of the featured reforms for Scottish households, including the Scotland-specific reforms (in dark blue). Unlike the other reforms, the Scotland-specific reforms result in a much larger income reduction for households at the top of the income distribution than at the bottom. The overall impact is negative for each of the income deciles, due to the impact of the introduction of differential rates of income tax for Scotland (a tax-raising measure overall), which vastly outweighs the impact of increased CA and the Best Start Grant (both measures increasing benefit expenditure and hence household incomes). CA is only paid to around 2% of Scottish households.[11] Moreover, the annual value of the Best Start Grant for qualifying households with newly born children (and additional payments when starting school and nursery) is not anywhere near large enough, in overall expenditure terms, to offset the impact of increases in the basic and higher income tax rates in particular.

[11] Statistic based on our own analysis of the FRS data for Scotland for 2014–15 and 2015–16.

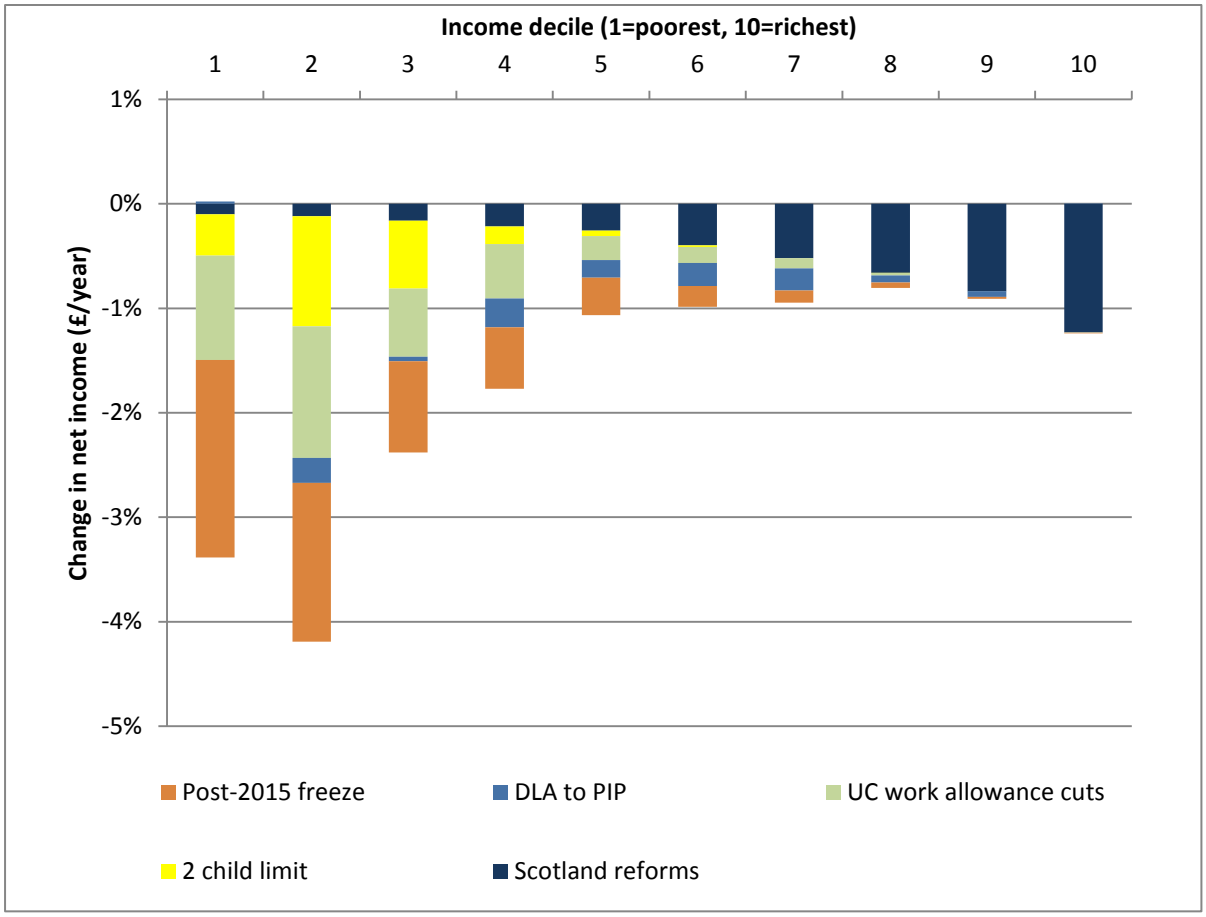
Figure 6.8 Cash impact of specific policy reforms by household income decile, 2021–22 tax year: Scotland



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

The reforms to Scottish income tax rates result in average income losses of slightly under £1,050 per year for households in the top income decile and around £400 in decile 9. The impact of the Scotland-specific reforms vis-à-vis the other reforms as a percentage of household net income by decile is shown in Figure 6.9. Figure 6.9 shows that the impact of Scottish-specific reforms is to make the overall package somewhat more progressive –losses from all reforms considered together for the top decile are around 1.2% of net income compared with 0.8% for decile 8. However, the impact of the other reforms means that the overall package is still broadly regressive in the lower half of the household income distribution.

Figure 6.9 Percentage impact of specific policy reforms by household income decile, 2021–22 tax year: Scotland

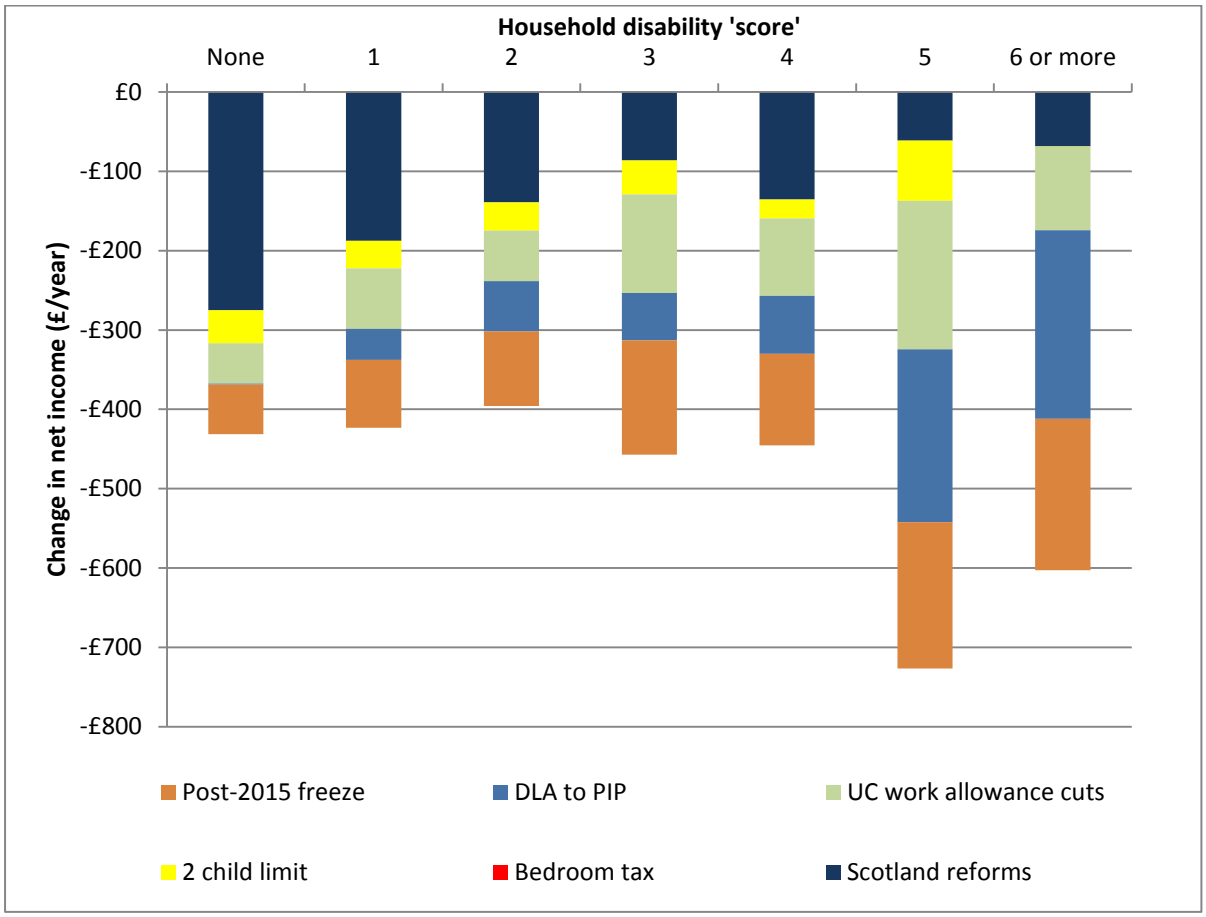


Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 6.10 shows the impact of Scotland-specific tax and social security reforms by household disability score. Unlike the other reforms featured in this chapter, the Scotland-specific reforms result in larger losses for households with a lower disability score. This is due to the fact that households with a lower disability score are more likely to have higher gross incomes and therefore more likely to be paying higher income tax as a result of the Scottish reforms. The reforms to CA also have a modest impact; households with a higher disability score are more likely to have an adult in the household who receives CA (our analysis of the pooled FRS Scottish dataset showed that around 14% of households with a disability score of six or more received CA compared with only 0.3% of households with a disability score of zero). The overall impact of the Scottish reforms is that the distribution of net income losses from the reforms taken together is significantly more equal across the disability

profile for Scottish households than for households in England (shown in Figure 6.5). However, households with disability scores of five and six or more are still hit harder than other households, with overall average losses of over £700 and around £600 respectively.

Figure 6.10 Cash impact of specific policy reforms by household disability 'score', 2021–22 tax year: Scotland



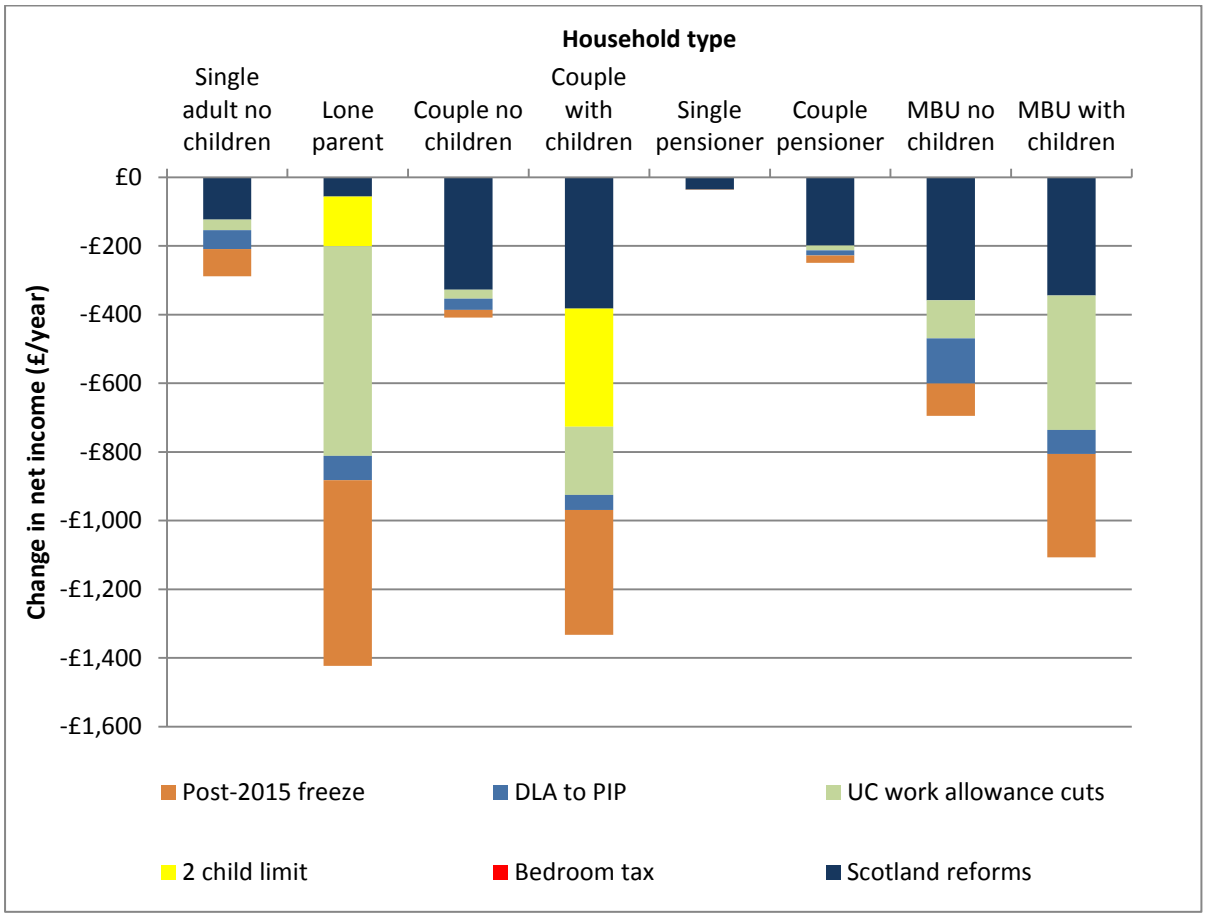
Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 6.11 shows the distributional impact of the reforms for Scotland by household demographic status. The largest negative impacts from the Scotland-specific reforms are for working-age couples (with and without children) and MBU households (with and without children). All these groups lose between £320 and £390 from the reforms. This reflects the fact that households in these categories are more likely to have more than one adult in full-time work and earning enough to pay additional income tax as a result of the changes to Scottish income tax rates. At the other end of the scale, the smallest negative impacts of the Scotland-specific reforms are for lone parents (average losses of around £60 per year) and single pensioners

(average losses of £35 per year). The small impact for lone parents reflects the fact that their employment rate is lower than other working-age groups and they are more likely to be in part-time work and/or on low weekly earnings. They are therefore less likely to pay more income tax due to the Scottish reforms (and in some cases, will be paying less income tax as a result of the reforms). Furthermore, lone parents are more likely than other groups to qualify for the Best Start Grant, which provides a boost to annual incomes for low-income parents with young children. The result for single pensioners reflects the fact that they are less likely than other household types to have gross incomes high enough to pay more income tax as a result of the Scottish reforms.

Overall, as with the results for England presented in Figure 6.6 earlier, households with children lose most on average from the combined package of reforms in Scotland (including the Scotland-specific reforms and the reforms due to UK Government policy). Lone parents lose slightly over £1,400 per year on average compared with slightly under £1,350 for couples with children and around £1,100 for MBUs with children.

Figure 6.11 Cash impact of specific policy reforms by household demographic status, 2021–22 tax year: Scotland



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

6.10 Conclusions

This chapter has analysed in detail the distributional impact of specific policy reforms that, at the time of writing, had recently been introduced by the UK Government, plus a package of reforms about to be introduced by the Scottish Government. The main findings are:

- In England and Wales, four of the five policies assessed in this chapter – the post-2015 uprating freeze on transfer payments; the cuts to work allowances in UC; the two-child limit on Housing Benefit, tax credits and UC; and the removal of the spare room subsidy ('bedroom tax') – all have their largest impacts at or near the bottom of the income distribution. Overall, households

in England in decile 2 of the income distribution lose around £1,100 per year on average from the reforms. This is equivalent to over 5% of their net income.

- The uprating freeze, the two-child limit, and the cuts to UC work allowances have an especially large impact on Pakistani and Bangladeshi households in England, with Bangladeshi households losing an average of almost £2,150 from the reforms modelled in this chapter and Pakistani households losing almost £1,900 on average.
- Households with a disability score of six or more in England lose an average of £520 per year from the DLA-PIP reassessment process, and around £1,200 from the five reforms modelled here.
- The cuts to UC work allowances have the largest negative impact for households with children. Lone parents suffer particularly badly from this policy, with average losses of slightly over £500 per year. This means that the monthly work allowance for lone parents is now worth only £397, compared with £769 if it had been uprated in line with Consumer Price Index inflation since 2013.
- Households in Wales and England with three or more children lose at least £900 per year on average by 2021–22 from the two-child limit on most benefits, tax credits and UC introduced in 2017.
- The impact of the package of Scotland-specific reforms is considerably more progressive than any of the other reforms featured here, with households in the top decile losing over £1,000 per year on average, compared with less than £50 on average in deciles 1 to 4.
- Couples and MBU households see the largest average loss from the package of Scottish reforms by household demographic type (average losses of between £300 and £400 per year).

7 | Impact of the reforms on people below an adequate standard of living

7.1 Introduction

The previous chapters of this report have focused on the impact of reforms to the tax and transfer payment system on net incomes according to households' and individual's positions in the income distribution and according to various protected characteristics. This chapter considers a different consequence of changes in net income arising from the reforms: the impact on the number of people in England, Scotland and Wales falling below an adequate standard of living.

A key human rights aspect of welfare state policies is the right to an adequate standard of living. This right is included in human rights treaties established by the United Nations. Article 27 of the UN Convention on the Rights of the Child states that: 'states parties recognise the right of every child to a standard of living adequate for the child's physical, mental, spiritual, moral and social development' (United Nations Human Rights Office of the High Commissioner, 1990). The extent to which policy reforms affect the capability of households to reach an adequate standard of living is an important component of any comprehensive evaluation of the human rights impact of policies. Previous research for the Commission on cumulative impact assessment by Reed and Portes (2014) did not consider this aspect of policy, but it has been included in other previous research (for example, Reed *et al*., 2013).

The UN human rights treaties do not specify a specific measure of an adequate standard of living, and a wide range of measures can be used. In this chapter, we focus on two measures commonly used in the UK:

- Relative income poverty (measured using one of the definitions in the UK Government's Households Below Average Income (HBAI) statistics published by the Department for Work and Pensions) (DWP, 2017).
- The Minimum Income Standard (MIS) developed by researchers at the University of Loughborough for the Joseph Rowntree Foundation (JRF, 2017).

7.2 Relative income poverty

Definition

The HBAI statistics published annually by the DWP use a range of four different poverty measures. This chapter focuses on the relative poverty measure, through which a household is defined as being in poverty if its disposable income, adjusted for family size,[12] is below 60% of contemporary median household incomes in the UK population. The measure is calculated using data from the Family Resources Survey (FRS).

The HBAI statistics present two sets of relative poverty measures, calculated using income Before Housing Costs (BHC) and After Housing Costs (AHC). In this chapter, we focus on the AHC measure. Appendix F contains additional results for the BHC relative poverty measure as well as BHC and AHC measures of **absolute poverty**, defined as households below 60% of the median income as measured in the 2010–11 tax year (uprated to the current year using the Consumer Prices Index).[13]

Estimating relative income poverty before and after reforms

The tax-transfer model is used to estimate the number of households in poverty before and after the full set of reforms to the tax and transfer payments system since 2010. As with the distributional results shown earlier in the report, the poverty estimates are modelled for the 2021–22 tax year. Forecasts from the Office for Budget Responsibility (OBR) are used to uprate gross incomes to 2021–22 levels, and the estimation procedure ensures that the estimated poverty rates are consistent with the HBAI relative AHC poverty rates for the 2015–16 tax year (the most recent year, at the time of writing, for which the HBAI micro-data are available). More details of the poverty estimation procedure are contained in Appendix A.

7.3 Overall poverty estimates for England, Scotland and Wales

Table 7.1 shows overall estimates for household, child and adult AHC relative poverty rates in the baseline scenario. This assumes that none of the reforms to the tax-transfer system since 2010 had happened, and that the 2009–10 system had

[12] The OECD equivalence scale is used to adjust household income to take account of family size. See Anyaegbu (2010).
[13] The other two poverty measures used in the HBAI statistics are **combined relative income poverty and material deprivation** and **persistent income poverty**.

instead been uprated by inflation to 2021–22. It also shows estimates for the reform scenario after all the reforms introduced since the May 2010 election have been implemented.

Table 7.1 Estimated AHC relative poverty rates for households, children and adults before and after reforms: England, Scotland and Wales, 2021–22

Poverty measure	Numbers (millions)			Percentage of group		
	Baseline	Reform	Change	Baseline	Reform	Change
England						(pp)
Households	4.49	4.90	+0.41	18.4%	20.1%	+1.7
Children	4.01	5.37	+1.36	31.4%	42.1%	+10.7
Adults	9.09	9.77	+0.68	20.3%	21.8%	+1.5
Scotland						
Households	0.39	0.41	+0.02	15.9%	16.8%	+0.8
Children	0.24	0.32	+0.08	25.1%	33.1%	+8.0
Adults	0.67	0.70	+0.03	16.1%	16.9%	+0.8
Wales						
Households	0.25	0.27	+0.02	17.6%	18.6%	+1.0
Children	0.20	0.25	+0.05	29.6%	37.4%	+7.7
Adults	0.46	0.49	+0.03	18.3%	19.3%	+1.0
Great Britain						
Households	5.14	5.59	+0.45	18.2%	19.7%	+1.6
Children	4.44	5.94	+1.49	30.9%	41.3%	+10.4
Adults	10.22	10.96	+0.74	19.9%	21.3%	+1.4

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

In the baseline scenario, AHC relative poverty rates are projected to remain very high by historic standards, with more than 10 million adults and nearly 4.5 million children – more than 30% of all children – in poverty. Table 7.1 shows, however, that reforms are likely to increase relative poverty rates still further, in particular for children. The estimated increase in poverty rates is far higher for children than for adults, or for households as a whole.

Across Great Britain, child poverty is forecast to increase by over 10 percentage points as a result of the reforms – from slightly under 31% to more than 41%. At the same time, household poverty and adult poverty are forecast to increase by 1.6 and 1.4 percentage points respectively. The substantial increase in

child poverty is driven by the same factors that produce the patterns seen in Figure 4.11 in Chapter 4: households with children receive larger amounts of benefits and tax credits (and Universal Credit (UC), when rolled out) than households without children, on average. Cuts to these transfer payments therefore result in particularly large increases in poverty rates for households containing children. This contravenes the Sustainable Development Goal 1 that the UK Government has committed to achieve (namely: to reduce by at least half the proportion of people living in relative poverty and to ensure social protection for all by 2030) (Department for International Development, 2017; UN General Assembly, 2015, Goal 1.2).

The increase in child poverty is much larger than the increase in either household or adult poverty. This reflects two factors. First, only around 30% of households have children in them. Consequently, an increase in child poverty of 10 percentage points would show up as an overall increase in the household poverty rate of around 3 percentage points, if poverty in households without children were unchanged. Second, poverty is forecast to fall in some categories of households without children (for example, couples with no children) and this contributes to the overall increase of 1.6% for households.

Looking at the results for England, Scotland and Wales, the estimated increase in child poverty by 2021–22 as a result of the reforms in England, at slightly under 11 percentage points, is larger than in either Scotland (8 percentage points) or Wales (slightly under 8 percentage points). Research by Reed and Stark (2018) for the Scottish Government on forecasting child poverty shows that the particular reforms introduced by the Scottish Government (changes to income tax rate, increases in Carer's Allowance, and the Best Start Grant, which are discussed in more detail in Chapter 6) only slightly reduce the growth in poverty resulting from the reforms introduced by the UK Government. However, the reforms in Scotland cannot explain the smaller increase in child poverty in Wales, where the package of reforms implemented is almost identical to that in England.[14] Instead, the fact that the estimated increase in child poverty is greater in England than Wales or Scotland seems to be a consequence of the underlying distribution of gross incomes in England, which is more unequal than in Wales or Scotland.

A key question concerning these results is whether forecast increases in child poverty of this magnitude are realistic. After the Coalition Government entered office in 2010, researchers have forecasted a substantial increase in child poverty as a

[14] With the significant exception of the Council Tax Reduction Scheme which offsets cuts to Council Tax Support for working-age households.

result of cuts in benefits and tax credits in particular. However, the headline HBAI relative poverty measures were broadly stable between 2010–11 and 2015–16 (DWP, 2017). This is partly due to weak growth in earnings, which has helped offset the impact of cuts in transfer payments. Increased employment rates have also played a role in preventing a rise in poverty since 2010–11.

However, the forecasts in this chapter reweight the four-year FRS data sample to take account of the OBR's forecast changes in employment rates, and the analysis also takes account of forecast growth in real earnings.[15] Therefore, these results should be taken as our best estimate of what is likely to happen to child poverty as a result of the reforms to the tax and transfer payments system, and the introduction of the National Living Wage (NLW). The actual outturn will, of course, also be driven by other economic developments (for example, the impact of Brexit on the wider economy) especially those that impact median earnings and the earnings distribution.

7.4 Detailed analysis of the impact of reforms on child poverty for various protected characteristics

The estimated increase in child poverty as a result of reforms to taxes and transfer payments since 2010 is significantly greater than the estimated increase in poverty for adults or for households as a whole. The rest of this chapter therefore focuses on breaking down the estimated increase in child poverty according to various household characteristics. Table 7.2 shows the child poverty rate (in percentage points) for households with children, classified according to various Equality Act 2010 protected characteristics, across Great Britain. Comparable results for England, Scotland and Wales are contained in the country-specific appendices published alongside this report.

[15] A full explanation of the methodology used for producing the child poverty forecasts is given in Appendix H.

Table 7.2 Estimated AHC relative child poverty rates for children in households classified by Equality Act 2010 protected characteristics: Great Britain, 2021–22

Group	Base	Reform	Change
Demographic type			(percentage points)
Lone parents	37.3%	62.1%	+24.8
Couples with children	26.9%	38.5%	+11.7
Multiple Benefit Units (MBUs) with children	41.3%	46.6%	+5.3
Ethnicity			
White	27.0%	34.9%	+7.9
Mixed/multiple	51.6%	53.3%	+1.8
Indian	25.9%	33.8%	+7.9
Pakistani	46.5%	65.9%	+19.4
Bangladeshi	60.7%	74.5%	+13.8
Chinese	47.9%	47.2%	-0.7
Other Asian	52.1%	64.7%	+12.5
Black	54.5%	68.5%	+13.9
Other	53.5%	59.5%	+6.0
Differing	35.2%	43.2%	+8.0
Child disability status			
Households with disabled children	23.1%	41.6%	+18.5
Households without disabled children	31.9%	42.8%	+10.9
Number of children			
1	29.7%	30.6%	+0.9
2	24.0%	26.9%	+2.9
3 or more	35.2%	51.7%	+16.5

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Table 7.2 shows significant variations in the impact of the reforms on child poverty by household demographic type. **The relative AHC child poverty rate for children in lone-parent households increases from slightly over 37% to slightly over 62%,**

an increase of almost 25 percentage points. The increase for children in households headed by an adult couple increases from slightly under 27% to 38.5%, a substantial increase of almost 12 percentage points, but only around half the increase for lone-parent households. MBU households with children have a higher child poverty rate in the baseline scenario than other demographic types (slightly over 41%), but the increase in poverty for this group as a result of the reforms is much smaller (at slightly over 5 percentage points.) The size of the increase in child poverty for lone-parent households is explained by the particularly large reductions in their average net incomes relative to other households with children, due to reductions in transfer payments to working and non-working lone parents (shown in Figure 4.11 in Chapter 4).

Looking at trends in **the increase in child poverty rates by household ethnic group, the largest percentage point increases are for Pakistani households (over 19 percentage points), Black households (slightly under 14 percentage points), Bangladeshi households (slightly under 14 percentage points) and 'Other Asian' households (12.5 percentage points).** The smallest increases are for children in households where the adults are from mixed or multiple ethnic groups (less than 2 percentage points) and other ethnic groups (6 percentage points). Children in Chinese households are the only group that see a slight decrease in the poverty rate. These results reflect the distributional pattern of losses by household ethnicity shown in Figure 4.7; generally, there is a greater increase in child poverty rates for ethnic groups where the average losses from the reforms are larger.

A comparison of child poverty rates before and after the reforms for households containing disabled children with those for households without disabled children shows that the child poverty rate for the former group increases by 18.5 percentage points, whereas for the latter group the increase is less than 11 percentage points. As a result, after all reforms to taxes and transfer payments have been implemented, the child poverty rate for households with disabled children in 2021–22 is forecast to be only slightly below the rate for non-disabled children (41.6% compared to 42.8%), By contrast, in the baseline scenario, we estimate that the child poverty rate for households with disabled children would have been almost nine points below the rate for households without disabled children. This reflects the substantial reduction in transfer payments for households with disabled children after the reforms (shown in the right-hand bars on Figure 4.8 in Chapter 4).

Finally, an analysis of child poverty rates according to the number of children in the household shows that **the increase in the rate of child poverty is much higher for**

households with three or more children (16.5 percentage points) than it is for households with two children (slightly under 3 percentage points) or one child (slightly under 1 percentage point). This reflects the fact that the cuts to transfer payments have had a considerably larger impact on households with three or more children, as shown in Figure 4.12. Chapter 6 demonstrated that several of the specific policies introduced since 2010 have had a disproportionate impact on households with three or more children (see Figure 6.7).

7.5 Minimum Income Standard

Definition

As noted in Section 7.1, the MIS was developed by researchers at the University of Loughborough for the JRF. Whereas the HBAI poverty measures are a 'mechanistic' definition of income adequacy based on a poverty line drawn at 60% of median household incomes, the MIS takes a completely different approach. This is based on detailed focus group research which aims to establish 'what members of the public think people need to achieve a socially acceptable living standard' (JRF, 2017: 1).

The MIS research establishes minimum weekly spending levels for various goods and services, including food, clothing, insurance, fuel, other household goods and services, childcare (where relevant), travel costs, social and cultural participation and rent, and other household costs such as Council Tax and water rates.

Importantly, the level of the MIS varies according to family size and composition (for example, single/couple, working age/pensioner, and number of children). The outcome of the MIS research is an annual publication showing the MIS levels for various family types.

The MIS publication includes calculations of MIS based on different definitions of income, including definitions that correspond to the BHC and AHC income definitions used in the HBAI child poverty calculations. In this section we use a definition of MIS that corresponds to BHC income in HBAI.[16]

Comparison between MIS and HBAI relative poverty

It is instructive to compare the results from the MIS research with the HBAI relative poverty lines using net income measures calculated on a consistent basis. Table 7.3

[16] The figures for the impact of the reforms on poverty rates earlier in this chapter use an AHC definition of income, but Figures in Appendix F use BHC.

compares the relative poverty line from the HBAI research, calculated using the BHC measure of net incomes, with the MIS level for income calculated using the same BHC definition, for a range of different household compositions. The comparison uses the HBAI income data for 2015–16 (the most recent available year) and the MIS results for 2015.

Table 7.3 shows that, for all the household compositional types included, the BHC relative poverty line is below the level of the MIS, meaning that the number of households in poverty is larger. The discrepancy between the two measures of income adequacy is larger for lone parents than for other household types. There is a slightly larger percentage gap between the two measures for households with higher numbers of children. The gap is also larger for working-age adults than pensioners, reflecting the fact that the MIS research finds that pensioners have lower weekly expenditure requirements to reach the minimum standard than working-age adults do.

Table 7.3 BHC relative poverty line (2015–16) and MIS level (2015), various household types

Household composition	BHC poverty line, 2015–16 (£/week)	MIS level, 2015 (£/week)	BHC Poverty line as % of MIS
Single working-age adult, no children	193	268	72
Working-age couple, no children	289	397	73
Single pensioner	193	247	78
Couple pensioner	289	331	87
Lone parent, one child	251	360	70
Lone parent, two children	309	459	67
Lone parent, three children	367	574	64
Couple, one child	346	461	75
Couple, two children	404	554	73
Couple, three children	462	675	68

Notes: Authors' calculations based on DWP (2017a) and JRF (2017). Calculation of BHC poverty line assumes that all children are aged under 14 years. Children's ages for MIS level calculation are as featured in the examples given in CRSP (2017).

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Uprating the MIS

At the time of writing, the most recent MIS data available were for 2017. These needed to be uprated to the 2021–22 tax year to be usable for our analysis of the impact of reforms to the tax and transfer system on the number of households below MIS. The MIS level has increased significantly in real terms since its inception, and the results in this chapter assume that the MIS levels for various household types continue to grow at the same annual rate observed over the 2010–17 period (relative to the Consumer Price Index). Our calculations estimate that, on average across all the household types, the MIS line will be approximately 11% higher in real terms by 2021–22 compared with its level in 2015.

The forecast growth in MIS in real terms means that the estimated discrepancy between the HBAI poverty line and the MIS level is larger by 2021–22 than the calculations for 2015–16 in Table 7.3 above. As an alternative, Appendix G presents versions of the forecast impact of the tax and transfer reforms on MIS using a MIS level which is constant in real terms between 2017 and 2021–22 , and which is therefore significantly lower.

Another difference between the results for the impact of reforms on HBAI poverty and the results for the impact of reforms on the number of households below MIS in this chapter is that the MIS level used here is based on BHC income, whereas the HBAI relative poverty measure is based on AHC income. However, using an AHC income definition for the MIS level does not significantly change the overall pattern of the results.

7.6 Overall estimates of the number of households below MIS for England, Scotland and Wales

Table 7.4 shows the estimated numbers of households, children and adults below the MIS level before and after the reforms to taxes, transfer payments and the NLW. The format of this table is exactly the same as Table 7.1 for relative AHC poverty, allowing an easy comparison between the two sets of results.

Table 7.4 Estimated numbers of households, children and adults below MIS level before and after reforms: England, Scotland and Wales, 2021–22

Country	Numbers (millions)			Percentage of group		
	Baseline	Reform	Change	Baseline	Reform	Change
England				%	%	(percentage points)
Households	10.13	10.34	0.21	41.5	42.4	+0.9
Children	7.36	7.85	0.50	57.7	61.6	+3.9
Adults	19.13	19.13	0.00	42.7	42.7	0.0
Scotland						
Households	1.02	1.04	0.02	41.2	42.0	+0.8
Children	0.51	0.53	0.03	53.1	55.8	+2.6
Adults	1.64	1.66	0.02	39.6	40.1	+0.5
Wales						
Households	0.68	0.69	0.01	47.5	47.7	+0.2
Children	0.41	0.42	0.01	61.2	62.9	+1.7
Adults	1.22	1.21	-0.01	48.1	47.6	-0.5
Great Britain						
Households	11.83	12.06	+0.23	41.8	42.6	+0.8
Children	8.27	8.81	+0.54	57.5	61.3	+3.7
Adults	21.99	22.00	+0.01	42.7	42.7	0.0

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Table 7.4 shows that in the baseline scenario (that is, if none of the reforms to taxes, transfer payments and the NLW had been introduced since 2010), around 11.8 million households (containing 8.3 million children and 22.0 million adults) would be forecast to be below the MIS level by 2021–22. These baseline numbers are far higher than the statistics in Table 7.1 for the number of households, adults and children below the AHC poverty line in the baseline scenario (for example, the number of adults in AHC poverty in Table 7.1 is around 10.2 million – less than half the number below the MIS in Table 7.4). These differences reflect the fact that the MIS line is substantially higher than the AHC (or indeed the BHC) poverty line, and so there are many more households, adults and children below the MIS. Most strikingly, almost 58% of children are forecast to be in households which are below the MIS by 2021–22, even in the baseline scenario.

We now consider the impact of the reforms to taxes, transfer payments and the NLW. Table 7.4 shows an overall forecasted increase of 3.7 percentage points in the number of children below the MIS level in Great Britain as a result of the reforms. This is a much smaller increase than the forecasted increase in the number of children below the AHC relative poverty line in Table 7.1 (10.4 percentage points). The discrepancy between the two sets of estimates appears to be mainly due to the fact that many of the households with children who are adversely impacted by the reforms are already below the MIS level in the baseline scenario. The reforms mean these households will fall further below the MIS, but the number of households with children who move from above the MIS to below the MIS as a result of the reforms is more limited.

The forecasted increase in the overall number of households in Britain below the MIS is considerably smaller (less than one percentage point), and there is almost no change in the number of adults below the MIS. The results regarding the number of winners and losers from the reforms (detailed in Chapter 8) show that a large number of households without children gain from the reforms (not including the impact of indirect taxes). The headline result for adults in Table 7.1 suggests that the number of adults falling below the MIS as a result of cuts to benefits and tax credits (and UC) is almost exactly balanced by the number of adults pushed above the MIS by reductions in income tax and the increase in gross earnings resulting from the NLW. There is consequently zero net impact.

As with the relative poverty results in Table 7.1, the results in Table 7.4 show smaller percentage point increases in the number of children below the MIS for Scotland and Wales than for England. Table 7.4 also shows a small reduction in the number of adults below the MIS in Wales as a result of the reforms, as opposed to a small increase in Scotland. However, the absolute numbers are small for both cases (a decrease of 10,000 adults below the MIS for Wales and an increase of 20,000 for Scotland).

7.7 Detailed analysis of the impact of reforms the proportion of children below MIS for various protected characteristics

Table 7.4 shows that the reforms have essentially no impact on the overall proportion of adults below the MIS in Great Britain. Table 7.5 therefore focuses on disaggregating the results for the impact of reforms on the proportion of children

below the MIS, using the same set of household protected characteristics as in Table 7.2 for relative poverty.

Table 7.5. Estimated proportions of children below MIS level for households classified by Equality Act 2010 protected characteristics: Great Britain, 2021–22

Group	Baseline	Reform	Change
Demographic type	**Percentage:**		(percentage points)
Lone parents	74.5	90.5	+16.0
Couples with children	52.4	56.6	+4.3
MBUs with children	70.2	70.4	+0.3
Ethnicity			
White	51.9	55.8	+3.9
Mixed/multiple	58.8	60.3	+1.5
Indian	58.0	56.7	-1.3
Pakistani	87.9	89.3	+1.4
Bangladeshi	93.2	96.1	+2.9
Chinese	47.1	48.4	+1.3
Other Asian	70.4	71.7	+1.4
Black	68.0	76.9	+9.0
Other	75.9	79.5	+3.6
Differing	53.0	54.8	+1.8
Disability status			
Households with disabled children	60.1	70.8	+10.7
Households without disabled children	56.7	58.2	+1.5
Number of children			
1	54.1	53.8	-0.3
2	42.6	43.6	+1.0
3 or more	67.0	73.0	+6.0

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

The results by demographic type show that **the proportion of children below the MIS in lone-parent households increases by 16 percentage points**. This compares with slightly over 4 percentage points for couples with children and almost no increase at all for MBU households with children. This pattern is similar to the patterns exhibited in Table 7.2 for increases in relative poverty by demographic type,

but the absolute size of the percentage point increases is smaller (reflecting the results from Table 7.3 across all households with children). **We forecast that, after all reforms are implemented, more than 90% of lone-parent households will be below the MIS, as will 96% of Bangladeshi households with children and 76% of Black households with children.**

The pattern of results by household ethnicity shows that the largest increase in the proportion of households with children below MIS is for Black households (nine percentage points), followed by White, 'Other' ethnicity and Bangladeshi households. Indian households with children are the only group to see a slight fall in the proportion of households below the MIS level. This pattern of results is different from the results in Table 7.2 for the impact of the reforms on the proportion of households below relative poverty.

A comparison of households that have disabled children with those that have children, none of whom are disabled, shows that the increase in the proportion below MIS is much greater for the former group (almost 11 percentage points) than the latter (1.5 percentage points). This is a similar pattern to the effects of the reforms on relative AHC poverty rates but, again, the absolute magnitude of the increases is smaller for the MIS analysis.

Breaking down the estimated increase in the proportion of children below MIS by the number of children in the household shows a 6 percentage point increase for households with three or more children, compared with a 1 percentage point increase for households with two children, and a very slight fall for households with one child. After the reforms, 73% of households with three or more children are below the MIS.

7.8 Conclusions

This chapter has shown that the package of reforms to direct taxes, transfer payments and the introduction of the NLW has significantly increased the number of children living below an adequate standard of living, particularly if the relative AHC poverty line is used as a measure of adequate living standards. The key findings from the chapter are:

- Across Great Britain, relative AHC child poverty is forecast to increase by over 10 percentage points as a result of the reforms.

- The forecasted increase in child poverty for England, at slightly under 11 percentage points, is larger than in either Scotland (8 percentage points) or Wales (slightly under 8 percentage points).
- The child poverty rate for children in lone-parent households in Great Britain is forecast to increase from slightly over 37% to slightly over 62% as a result of the reforms – an increase of almost 25 percentage points.
- By household ethnic group, the largest percentage point increases in child poverty are for Pakistani households (over 19 percentage points), Black households (slightly under 14 percentage points), Bangladeshi households (slightly under 14 percentage points) and 'Other Asian' households (12.5 percentage points).
- Child poverty for households containing disabled children increases by 18.5 percentage points.
- The increase in the rate of child poverty is much higher for households with three or more children (16.5 percentage points) than for households with two or fewer children.
- Overall, there is an increase of slightly under 4 percentage points in the number of children below the MIS level as a result of the reforms.
- The proportion of children below the MIS in lone-parent households increases by 16 percentage points as a result of the reforms.
- We forecast that, after all reforms are implemented, over 90% lone-parent households will be below the MIS, as will 96% of Bangladeshi households with children, and 76% of Black households with children.

8 | Winners and losers from the reforms

8.1 Introduction

The analysis in Chapters 4, 5 and 6 looked at average distributional impacts of the cumulative set of reforms to taxes and transfer payments and the National Living Wage (NLW) across various household and individual characteristics. Within each group of households and individuals, there are winners and losers from the set of reforms, and considerable variation in the size of gains or losses. This chapter interrogates the results from the tax-transfer model further to establish the size and pattern of winners and losers, at the household level and from the full set of reforms.

This chapter uses, for the most part, Family Resources Survey (FRS) data, and analyses the winners and losers from direct tax reforms (including National Insurance Contributions (NICs)), benefits, tax credits, Universal Credit (UC), and the NLW only. Indirect tax effects are excluded from the FRS analysis because the FRS does not contain expenditure information. An alternative approach would have been to analyse the impact of the full package of direct and indirect tax reforms (plus transfer payments and wage changes) using the Living Costs and Food Survey (LCF) rather than the FRS. We have used FRS for the analysis of winners and losers because it was not possible for this project to model certain parts of the algorithms used for the FRS transfer payments analysis using the LCF data. This included, in particular, the Disability Living Allowance-Personal Independence Payment (DLA-PIP) reassessment algorithm, and the algorithm used to model partial take-up of means-tested benefits, transfer payments and UC. The end of this chapter includes a brief discussion of the winners and losers from indirect tax reforms that makes use of the results from the LCF.

8.2 Proportions of winners and losers by country

Table 8.1 shows the percentage of households that lose out from the package of reforms to direct taxes, transfer payments and wages as a whole (in the top row) and then breaks these down by household income decile, household demographic type,

number of children in the household and household disability 'score'. Of the remaining households – those which do not lose out from the reform – the overwhelming majority are gainers; there are relatively few households whose net income is unchanged by the reforms (only around 0.5% of total households, and almost all of these are made up of self-employed adults making losses). The results are presented for England, Scotland, Wales and Great Britain as a whole.

Table 8.1 Percentage of households losing net income from reforms to direct taxes and transfer payments by household income decile and various protected characteristics, for England, Scotland and Wales

	Percentage of losing households (%)			
Group	**England**	**Scotland**	**Wales**	**GB**
All households	47.0	48.6	49.0	47.3
Household income decile				
1 (poorest)	64.5	63.2	63.3	64.3
2	73.9	67.5	73.6	73.4
3	65.7	65.9	71.3	66.1
4	61.7	63.5	61.9	61.9
5	52.8	52.4	53.7	52.8
6	43.7	45.1	47.0	44.0
7	35.6	35.9	33.6	35.5
8	27.4	28.6	25.5	27.4
9	17.6	20.4	14.7	17.7
10	34.5	49.8	28.3	35.4
Household demographic type with gender				
Single woman, no children	37.3	35.1	37.3	37.0
Single man, no children	36.7	37.6	33.1	36.6
Lone parent, female	87.6	87.2	87.2	87.5
Lone parent, male	72.6	80.0	*	73.8
Couple no children	21.2	26.3	22.9	21.8
Couple with children	64.8	65.5	61.1	64.7
Female single pensioner	86.9	88.9	89.7	87.3
Male single pensioner	78.5	80.0	81.2	78.8
Couple pensioner	36.7	35.8	39.7	36.7
MBU no children	24.4	30.8	33.2	25.3
MBU with children	55.8	45.7	51.6	55.0

Number of children in household				
None	42.6	46.1	46.4	43.1
1	46.9	45.4	44.0	46.7
2	55.7	57.0	54.0	55.7
3	79.3	75.2	73.9	78.8
Household ethnicity				
White	46.6	50.2	48.8	46.9
Mixed/Multiple	48.8	*	*	48.5
Indian	42.2	*	*	42.7
Pakistani	66.8	*	*	67.1
Bangladeshi	74.6	*	*	74.9
Chinese	28.3	*	*	27.9
Other Asian	54.1	*	*	53.2
Black	50.0	*	*	50.2
Other	62.1	*	*	61.9
Differing	40.5	70.3	*	40.3
Household disability 'score'				
0	36.9	37.6	36.7	37.0
1	49.7	52.2	55.6	50.3
2	59.4	60.2	66.1	59.8
3	66.6	67.2	68.0	66.8
4	68.1	70.2	73.6	68.6
5	71.0	68.9	60.9	70.3
6 or more	71.1	72.9	68.9	71.2

Note: * denotes that results not reported because sample size too small for robust analysis.

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

The top row of Table 8.1 shows that, across Great Britain as a whole, slightly under half (47.3%) of households lose from the package of reforms (excluding indirect taxes). The proportion of households in Great Britain that gain from the reforms (not shown in Table 8.1) is 52.2%, since, as noted above, relatively few households see their net incomes unchanged. The proportion of losing households in Scotland and Wales is slightly higher than for England, but in all three countries less than 50% of households are losers (similarly, the proportion of gaining households in Scotland (50.9%) and Wales (50.7%) is slightly lower than for England (52.5%). By income decile, the biggest proportion of losers (over 73% across Great Britain) is found in

decile 2, followed by decile 3 and decile 1. The smallest proportions of losing households are in deciles 9 (around 18%) and 8 (around 27%). The proportion of losers in the top decile across Great Britain is double that for decile 9, at 35%; this reflects the fact that the reforms to NICs result in higher payments for individuals above the upper earnings limit (£866 per week in 2017–18). Notably, Scotland has a much higher proportion of losing households (almost 50%) than anywhere else in Britain due to the reforms to Scottish income tax that increased income tax payments for gross incomes above £26,000 per year. Wales, by contrast, has fewer losing households in the top decile than England or Scotland, which is largely explained by fewer households in Wales with very high incomes (that is, in the top 5% or higher) that are more likely to lose out from the reforms than households in the lower part of the top decile.

The breakdown by household demographic status splits single-adult households into men and women to show differences in the numbers of winners and losers by gender. Female lone parents are the household type with the highest proportion of losers (87.5% across Great Britain as a whole), followed by female single pensioners (87.3%) and male single pensioners (78.8%). Within each single-adult household type, there is a lower proportion of male losers than female losers.

The fact that so many single pensioners lose from the reforms contrasts with the distributional analysis in Chapter 4. This analysis showed that single pensioners lost less than £600 per year on average, compared with over £5,000 on average for lone parents and around £3,000 for couples with children. The result for single pensioners is due to changes in the uprating formula used for the State Pension, which moved from the Retail Price Index (RPI) to ‘triple lock’ (the maximum of either Consumer Price Index inflation, average earnings growth, or 2.5%) in 2011. Because all three measures were slightly below RPI inflation in some of the years between 2011 and 2015, a large number of single pensioners who receive the State Pension lose out very slightly in the reform scenario compared with the baseline. Couples without children and Multiple Benefit Units (MBUs) without children have the smallest proportion of losers from the reforms (around 22% and 25% respectively). Slightly under 65% of couples with children lose from the reforms. If the winners/losers analysis were performed at the individual level within couples, there would tend to be a higher proportion of women losing from the reforms than men, reflecting the distributional patterns shown in Section 5.4. There would be an especially large proportion of female losers within couples with children if we assumed that UC is paid to the primary earner in each couple when rolled out (reflecting the distributional patterns shown in Figure 5.9).

An analysis of the pattern of losing households by number of children in the household shows that there is a clear gradient to the results, with a greater proportion of losers for households with more children. The severity of losses from cuts to transfer payments for households with three or more children ensures that almost 79% of these households are losers in Great Britain (although the proportion is slightly lower in Wales and Scotland than in England).

Looking at the results by household ethnicity, Bangladeshi and Pakistani households, and households with adults of 'Other' ethnicities, have the largest proportion of losers from the reforms – almost 75% of Bangladeshi households are in this group. At the other end of the scale, only around 28% of Chinese households lose from the reforms. Indian households and couple or MBU households made up of adults of differing ethnicities also have a lower than average proportion of losers.

There is a clear relationship between household disability 'score' and proportion of households losing from the reforms. Overall, only 37% of households containing no members with functional disabilities lose from the reforms. Over 71% of households with a disability score of six or more lose out. Most of the increase in the proportion of losers occurs between a disability score of zero and three.

8.3 Size distribution of gains and losses by protected characteristic

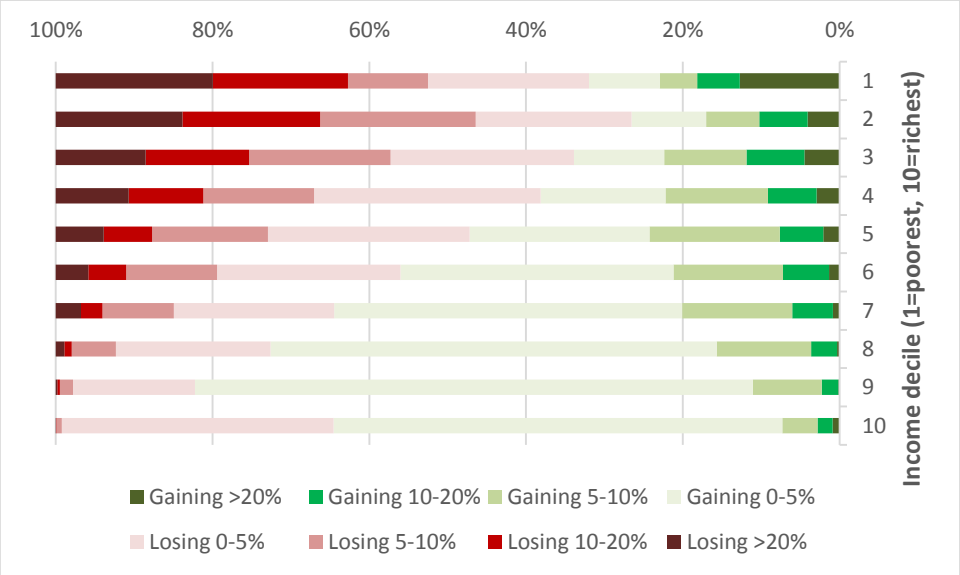
While Table 8.1 provides a useful overview of the proportion of winners and losers for households classified according to various characteristics, a more finely grained analysis of the size of gains or losses provides important additional information for a cumulative impact assessment. The figures in this section divide households into eight categories based on the size of their overall gains or losses from the package of direct tax, transfer payment and wage reforms, going from the 'best' to the 'worst' outcome, as follows:

1) Gain of more than 20%
2) Gain of between 10 and 20%
3) Gain of between 5 and 10%
4) Gain of less than 5% (including no change)
5) Loss of less than 5%
6) Loss of between 5 and 10%
7) Loss of between 10 and 20%
8) Loss of more than 20%

Figure 8.1 gives a graphic representation of the distribution of gains and losses by household net income decile. The green bars on the right-hand side of the graph show gainers, with darker shades of green for larger percentage gains. Conversely, the red bars on the left-hand side of the graph show losers, with darker shades of red for larger percentage losses. Comparing the size of the green bars with the red bars gives an overall impression of how households in each category fare as a result of the reforms.

Figure 8.1 shows that there are considerably more losers – and considerably more losers experiencing large losses of more than 10 or 20% – for households with low incomes than high incomes. However, there are also more gainers in the lower deciles who see large gains, particularly in the bottom decile. Many of the gains of more than 20% in this decile reflect increased take-up as a result of the introduction of UC. Also notable in the graph are the large proportions of households in deciles 7 and above who gain by less than 5% from the reforms and the relatively large proportion in the top decile who lose by less than 5%.

Figure 8.1 Size distribution of gains and losses by household income decile, Great Britain, 2021–22 tax year

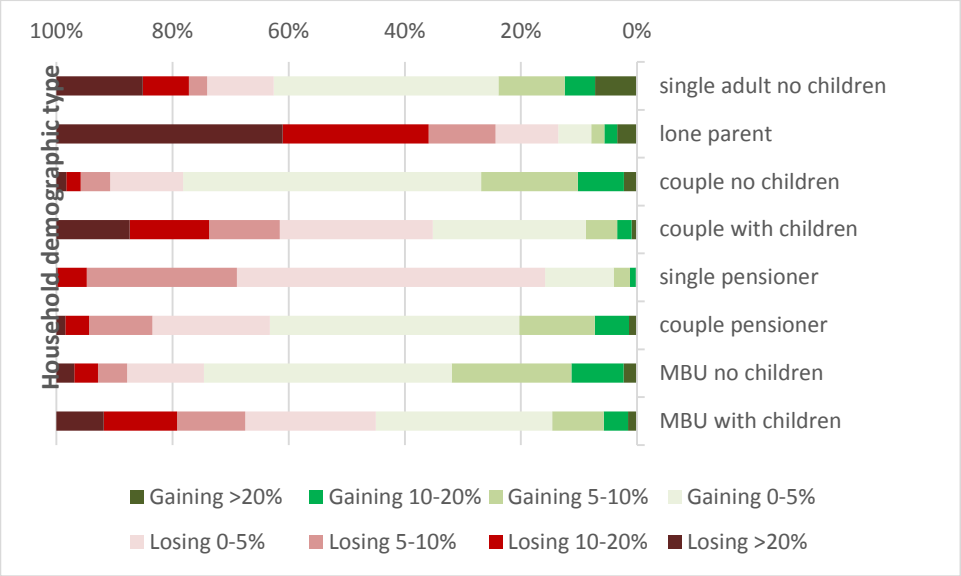


Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 8.2 shows the size distribution of winners and losers by household demographic status. Two main findings stand out. First, lone-parent households are particularly adversely affected, with more than three fifths losing at least 10% of their

net incomes from the reforms, and almost two fifths losing more than 20% of their net incomes. These households vastly outnumber the approximately 5% of lone parents who gain more than 10% from the reforms. Second, while the overall proportion of single pensioners who lose from the reforms is similar to the proportion of lone parents who lose, the pattern of losses for single pensioners is very different; almost half of them lose less than 5%, with few losing more than 10%. This pattern of losses helps to explain why average losses for lone parents are so much higher than for single pensioner households. For couple pensioners, as with single pensioners, relatively few households lose more than 10% of net income, but many more gain from the reforms. After lone parents, single adults without children have the second highest proportion (around one in six households) of losses of more than 20%.

Figure 8.2 Size distribution of winners and losers by household demographic status, Great Britain, 2021–22 tax year

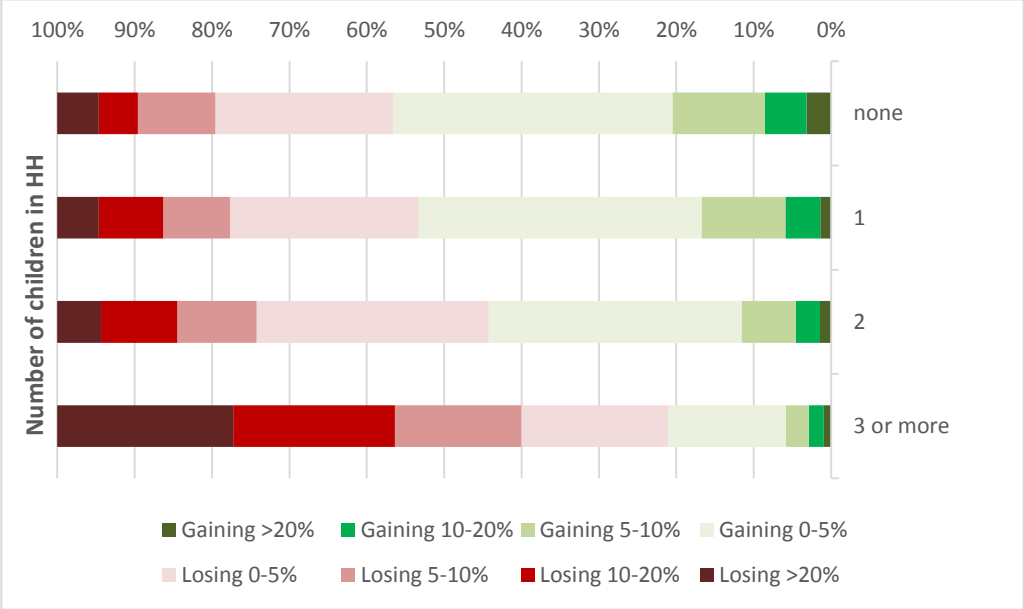


Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 8.3 shows the size distribution of winners and losers by number of children in the household. The figure confirms that households with three or more children are losing out from the reforms to a far greater extent than either households without children or those with one or two children. Over two fifths of households with three or more children lose at least 10% of net income from the reforms, while over one fifth

lose more than 20%. Only around one fifth of households with three or more children gain from the reforms, and very few gain more than 10%.

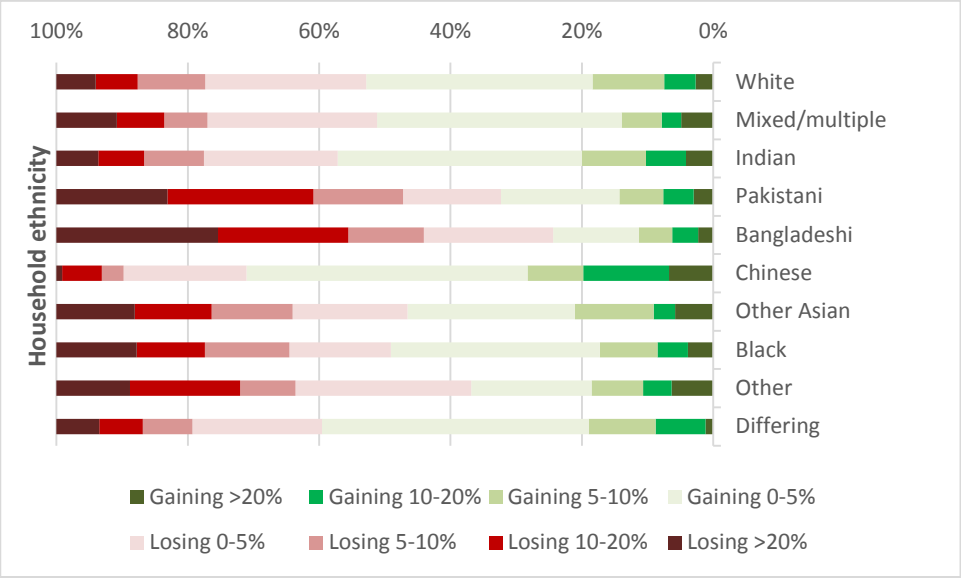
Figure 8.3 Size distribution of winners and losers by number of children in household, Great Britain, 2021–22 tax year



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 8.4 shows the distribution of winners and losers using the FRS's detailed household ethnicity classification. Some household ethnic groups experience notably worse outcomes from the direct tax, transfer payment and wage reforms than average, particularly Pakistani and Bangladeshi households, but also (to a less marked degree) Black, 'Other Asian' and 'Other' households. This is likely to be primarily driven by larger numbers of children in such households and lower average incomes. The size distribution of gains and losses for White households, households where all adults are of mixed ethnicity, Indian households, and couple and MBU households where the adults are of differing ethnicities are reasonably similar. Chinese households experience better outcomes than any other ethnic group on average, with a far higher proportion of households gaining at least 10% (around one in five).

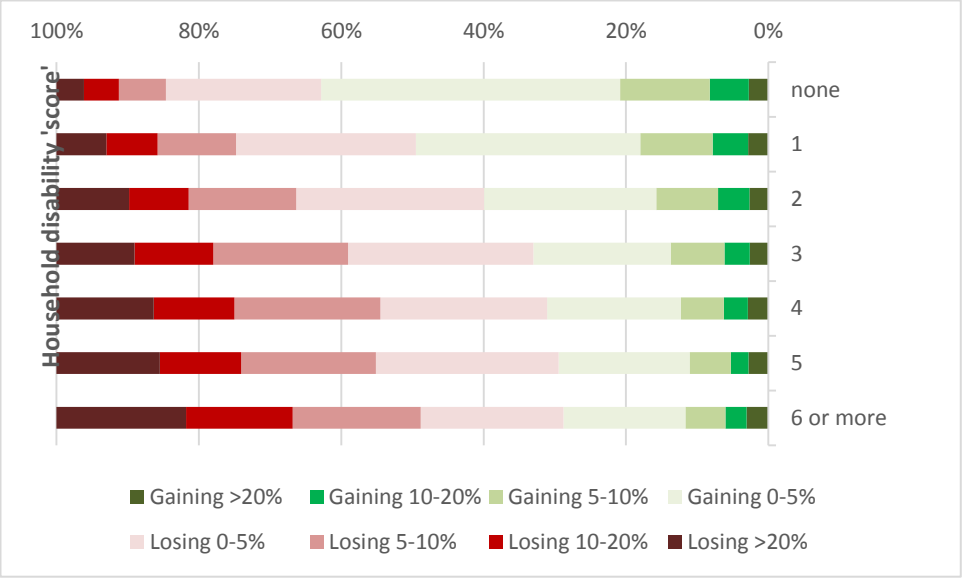
Figure 8.4 Size distribution of winners and losers by detailed household ethnicity, Great Britain, 2021–22 tax year



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Figure 8.5 shows the size distribution of winners and losers by household disability 'score', demonstrating an underlying pattern. The overall proportion of losers is not much larger for households with a disability score of 6 or more compared with households with a disability score of 3. However, households with disability scores of 4 or above see a much larger proportion of households with losses of 10% or more (and 20% or more). For example, over 18% of households with a disability score of 6 or more lose at least 20% of their net income from the reforms, compared with less than 11% of households with a disability score of 3.

Figure 8.5 Size distribution of winners and losers by household disability 'score', Great Britain, 2021–22 tax year



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

8.4 Winners and losers from indirect tax changes

Appendix H contains an analysis of the distribution of winners and losers from the changes to indirect taxes, modelled using the LCF data. Overall, over five in six households (84%) lose out from the changes to indirect taxation. This result is mainly driven by the increase in VAT from 17.5% to 20% in 2011, which represented a substantial tax increase (forecast by the Office for Budget Responsibility (OBR) to raise around £17 billion per year by 2021–22). At the time of writing, there had been several reductions in real terms in fuel duty which would in aggregate cost the Exchequer almost £10 billion per year by 2021–22, but these reductions do not represent a large enough indirect tax reduction to counteract the effect of the VAT increase and other indirect tax increases.[17]

An analysis of winners and losers from the indirect tax changes by income decile shows only a slight variation in the proportion of winners and losers across the income distribution (the proportion of losers varies from 86% in the lowest decile to

[17] The net impact of other smaller changes to indirect taxes is also to raise revenues overall; most notably, the increase in Insurance Premium Tax is forecast by OBR to raise slightly over £3 billion by 2021– 22.

82% in decile 8). There is also only slight variation by household ethnic composition. There is some variation in the proportion of losing households by demographic composition; for example, 92% of single pensioner households lose out compared with 79% of couples with children. Households with two or more children are slightly less likely to lose from the package of indirect tax reforms than households without children (79% compared with 85%). However, these differences between household types by protected characteristic are relatively minor compared with the differences in proportions of winners and losers from the package of direct tax and transfer payment reforms (and the NLW) modelled using the FRS.

8.5 Conclusions

This analysis confirms that approximately the same number of households gain as lose from the reforms but the proportion of losers is much higher among some groups. This includes households containing one or more disabled member, those from certain ethnic groups, and households with children (especially those with more than two children). In addition, large losses are more common than large gains for these groups (and for low income households in general).

The key findings from this chapter are:

- Across Great Britain as a whole, around 47% of households lose from the reforms.
- Female lone parents and female single pensioners are the household type with the highest proportion of losers from the reforms (over 87% in both cases).
- Almost 79% of households with three or more children are losers from the reforms.
- Almost 75% of Bangladeshi households lose from the reforms.
- Over 71% of households with a disability ‘score’ of six or more lose from the reforms.
- Looking at the size distribution of gains and losses, more than three fifths of lone-parent households lose at least 10% of their net incomes from the reforms, and almost two fifths lose more than 20% of their net incomes.

- Over two fifths of households with three or more children lose at least 10% of net income from the reforms, while over one fifth lose more than 20%.
- Chinese households experience better outcomes from the reforms than any other ethnic group on average, with around one in five gaining at least 10% of net income.
- Almost one in five households with a disability score of six or more lose at least 20% of their net income from the reforms.

9 | Impact of the reforms on work incentives

9.1 Welfare reform and 'making work pay'

The analysis in this report thus far has been purely static: it does not take account of the potential behavioural impact of policies. As shown in Chapters 4 and 5, this methodology demonstrates substantial average negative impacts for particular groups, including lone parents; couples with children; households with disabled adults and/or children; households with adults from particular ethnic groups (for example, Pakistani, Bangladeshi and Black); households with three or more children; and households in the lower reaches of the income distribution.

A potential criticism of the static methodology is that it ignores the potential behavioural impact of policies and, in particular, the impact on work incentives (see, for example, HM Treasury, 2015b). For at least twenty years, 'making work pay' has been a key component of UK Government policy. The 'New Labour' era from 1997 to 2010 offered a focus on increasing returns to work for low-income families with children, in particular through the Working Families Tax Credit (WFTC) (which replaced Family Credit in 1999) and, subsequently, the Working Tax Credit (which replaced the WFTC in 2003). Alongside this, the era saw an additional emphasis on active labour market policy and increased employment conditionality for particular groups (for example, lone parents with older children).

After the change of government in May 2010, the financial focus of government welfare-to-work policy for low-income families shifted. Instead of increasing the returns to work via in-work tax credits, the policy approach involved significant cuts to in-work and out-of-work transfer payments, coupled with reductions in income tax payments for some low earners via an increase in the income tax personal allowance. Conditionality was also stepped up via more aggressive and wider use of benefit sanctions for, in particular, Jobseeker's Allowance and Employment and Support Allowance claimants (Hudson-Sharp *et al*., 2018). The roll-out of Universal Credit (UC) takes sanctions a stage further, with in-work sanctioning of claimants

who are not deemed as doing enough to reach a sufficient level of gross earnings from employment or self-employment (Child Poverty Action Group, 2018).

As shown in Chapter 6, when UC was introduced on a pilot basis in 2013, its original parameters contained relatively generous 'work allowances' for low-income families, allowing claimants to keep the first part of their gross earnings before their UC started to be tapered away. These work allowances have been successively cut back since 2014. The limits to benefit, tax credit and UC indexation introduced from 2013 onwards (three years of 1% nominal uprating followed by a four-year nominal freeze) have also reduced the level of payments for low-income families both in and out of work. Against this, two policies have acted to increase the returns to work: first, the continued increases in real terms in the income tax personal allowance in successive Budgets and, second, the introduction of the National Living Wage (NLW).

9.2 Impact of reforms on net income by employment status

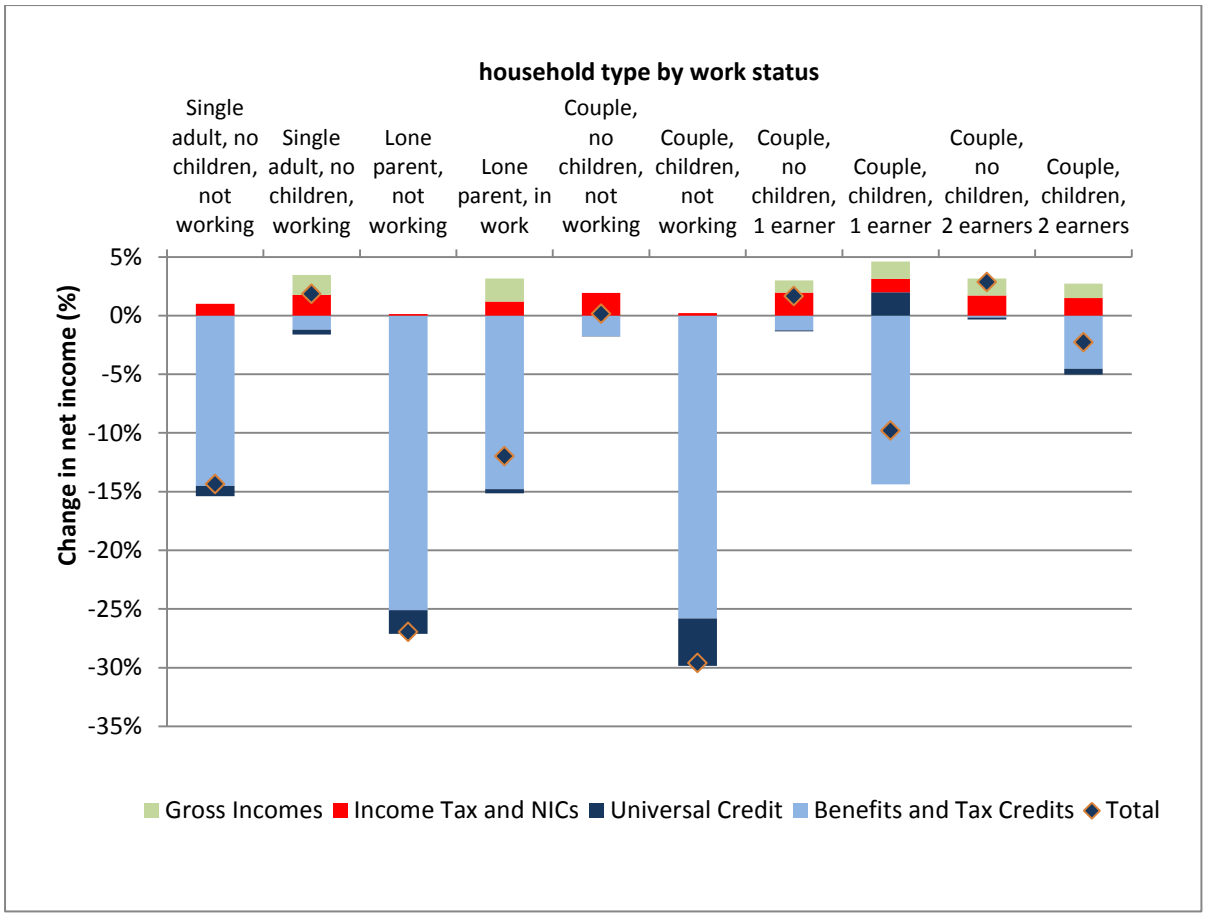
The following section asks what the impact of the policy changes since 2010 has been on the financial returns to work. Figure 9.1 shows a breakdown of the impact of reforms to direct taxes, transfer payments and the NLW since 2010, breaking the working-age population down by employment status of adults in the household. The figure shows that the largest average cash reductions in income are for households with children where there are no adults in work. These reductions average slightly under £6,900 per year for lone parents who are not in work, and over £10,000 for couples with children and neither adult working. Expressed as percentages of net income, these are substantial losses – around 27% for non-working lone parents and almost 30% for non-working couples with children. Single adults without children who are not working also experience sizeable losses of around £2,000 per year.

To the extent that the largest average losers from the reform are workless households with working-age adults, the reform will improve work incentives. However, the improvement in work incentives for lone parents is reduced considerably by the fact that working lone parents also lose substantially from the reforms on average (by around £3,700 in total). In addition, the increases in net income arising from the NLW and changes to the income tax and National Insurance Contributions (NICs) system amount to an average gain of less than £1,000 in total. By contrast, average losses from cuts to transfer payments are almost five times larger, at £4,700. A similar (although less pronounced) pattern is visible for couples

with children. Households in this group with one partner in work lose out by slightly under £4,000 per year on average. This is a smaller loss than the average loss of over £10,000 for couple families with no adults in work, but remains a substantial amount. Even for two-earner couples with children, the gains from the NLW and cuts to income tax are not enough to offset the losses from reduced transfer payments.

In short, the reforms to benefits, tax credits and UC have indeed increased work incentives as measured by the ratio of in-work to out-of-work incomes, but this does not mean that they have increased in-work incomes. Instead, both in-work and out-of-work incomes have been cut. The cuts in out-of-work incomes have been greater, with severe reductions in net income for workless families, but also substantial reductions for low income families claiming in-work benefits.

Figure 9.1 Average annual cash impact of reforms to direct taxes, transfer payments and National Living Wage by employment status of working-age households, 2021–22 tax year



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Table 9.1 builds on the evidence presented in Figure 9.1 by showing how much of a difference the reforms to taxes, transfer payments and the NLW have made to the ratio between out-of-work income and in-work incomes for different household types. The table illustrates how the ratio of median incomes for workless households to median incomes for households with one or more adults in work changes as a result of the reforms. For single-adult households, the table shows the ratio of median incomes for non-working households compared with working households. For couple households we present two different sets of ratios: one for median[18] incomes for workless couples as a proportion of median incomes for one-earner couples, and the other as a proportion of median incomes for two-earner couples. The results are shown separately for households without and with children.

Table 9.1 confirms that the ratio of out-of-work incomes to in-work incomes has fallen as a result of the reforms – that is, the reforms have improved the incentive to work on this measure. However, the pattern of changes looks somewhat different from the pattern of reductions in net incomes shown in Figure 9.1. While the largest fall in the ratio of out-of-work to in-work incomes is for couples with children, the ratio falls less for lone parents than for single adults without children, reflecting the fact that large falls in out-of-work incomes for lone parents have to a large extent been matched by falls in financial support for working lone parents.

[18] We use median rather than mean values of out-of-work and in-work incomes because the mean is more likely to be affected by extremely high or low incomes in either the in-work or out-of-work sample of households respectively.

Table 9.1 Ratios of median incomes for workless households compared with working households classified by number of earners, baseline versus reform scenario, 2021–22

	Ratio of median out-of-work to in-work income (%)		
Group	**Baseline**	**Reform**	**Change in ratio**
Single adult, no children: out of work/in work	52.4%	44.3%	-8.1
Lone parent: out of work/in work	82.7%	76.1%	-6.6
Couple no children:			
Out of work/1 earner	87.9%	83.9%	-4.0
Out of work/2 earners	57.0%	53.3%	-3.7
Couple with children:			
Out of work/1 earner	81.8%	67.9%	-13.9
Out of work/2 earners	56.1%	42.3%	-13.8

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

9.3 Changes in employment for groups affected by cuts to transfer payments

This section asks whether the changes discussed in the previous section have been reflected in employment rates. Table 9.2 uses data from the Labour Force Survey (a large-scale survey of around 60,000 households per quarter) to look at employment rates for various working-age adults. The table compares Spring 2010 (before the reforms that form the subject of the impact assessments in this report were introduced) and Spring 2017 (at the time of writing, the most recent data available for the same quarter of the year as the 2010 data, chosen to avoid needing to seasonally adjust employment rates).

Table 9.2 shows that, between Spring 2010 and Spring 2017, the employment rate for working-age adults as a whole in the UK increased from 76.4% to 80.9%, representing an increase of 4.5 percentage points. All household types saw increases, with particularly large increases for lone parents with younger children.

These data alone do not allow a direct assessment of the extent to which changes in financial incentives drove changes in employment rates. However, there is no obvious correspondence between the groups that saw the largest increases in

employment rates and those that saw the largest increases in financial incentives to work. In particular, the largest increases in employment rates were for lone parents, especially those with young children, but this group faced a significantly smaller increase in financial incentives to work than either single people without children or couples with children. This is obviously not the pattern we would expect if changes to financial incentives were the main driver.

Closer inspection confirms this theory. Lone parents with younger children saw much larger employment gains, which does not reflect a large differential financial impact of reforms on different groups of lone parents. Instead, the trend suggests that other factors are driving the employment increase; in particular, increased conditionality and work-focused interviews for lone parents with a youngest child aged one or above. Similarly, the increase in the employment rate for single men without children is much higher than the increase in employment rate for single women without children. The employment rate rose by 6.4 percentage points for the former group, which is over four times the increase for the latter group (1.5 percentage points). This is despite the fact that the changes to financial incentives arising from the reforms to the tax and transfer payment system, and the introduction of the NLW, are exactly the same for men and women without children.

The increase in employment rates for married or cohabiting men and women with children compared with those without children suggests a similar increase in employment rates for all four groups (between 3.1 and 4.3 percentage points in all cases). This is despite the fact that the changes to financial incentives arising from the reforms are substantially different for couples with children than they are for those without. The cuts to benefits and tax credits produce a huge financial loss to being out of work for couples with children compared with a much smaller loss for couples without children, but the measured increase in employment rates is only slightly larger for couples with children. Once again, this suggests that financial incentives to work are not the key driver of the increases in employment rates that the UK has experienced between 2010 and 2017.

Table 9.2. UK employment rates for working-age adults in Spring 2010 and Spring 2017, disaggregated by demographic characteristics

Group	Employment rate		
	April–June 2010	April–June 2017	increase (percentage points)
	Percentage:		
All working age	76.4	80.9	4.5
All lone parents	56.8	65.6	8.8
Lone parents by age of youngest child:			
0 to 1	32.2	47.9	15.7
2 to 4	43.2	53.9	10.7
5 to 10	58.0	70.4	12.4
11 and above	62.2	67.7	5.5
Single men no children	67.1	73.5	6.4
Single women no children	74.9	76.4	1.5
Married/cohabiting men with children	88.3	91.8	3.5
Married/cohabiting women with children	70.9	75.2	4.3
Married/cohabiting men without children	81.5	84.6	3.1
Married/cohabiting women with children	80.4	83.6	3.2

Notes: Definition of 'working age' is for men ages 18–64; for women ages 18–59. Employment rate equals number of working-age people in work (employees + self-employed) divided by total number of working-age people in population group (excluding full-time students).

Source: Labour Force Survey, April–June 2010 and April–June 2017.

9.4 Discussion

In this report, we do not attempt to quantify the impact of changes to financial incentives resulting from the reforms on employment rates. However, the above discussion suggests it is highly implausible that improvements in financial incentives to work are the main driver of differences in employment rates between different demographic sub-groups. To a large extent, the increase in employment has been 'a

rising tide which lifts all boats', that is, all groups have benefited, regardless of demographic characteristics.

For lone parents, increased conditionality around work-focused interviews and job search conditions has been a more important driver of increases in employment rates than changes to work incentives. Increased conditionality in the welfare system is an approach which brings its own set of dangers and problems (discussed further in Hudson-Sharp *et al*., 2018). For example, a recent report from the House of Commons Public Accounts Committee found that:

> [benefit] sanctions have increased in severity in recent years and can have serious consequences such as debt, rent arrears and homelessness … there is an unacceptable amount of unexplained variation in the [DWP]'s use of sanctions, so claimants are being treated differently depending on where they live. The Department has poor data and therefore cannot be confident about what approaches work best, and why, and what is not working. It does not know whether vulnerable people are protected as they are meant to be. Nor can it estimate the wider effects of sanctions on people and their overall cost, or benefit, to government. (House of Commons Public Accounts Committee, 2017: 3)

However, it is possible to apply conditionality without reducing the generosity of transfer payments for low-income families – the two are separate features of the social security system.

We also demonstrate that the distributional results in Figure 9.1 show substantial reductions to in-work support to families with children on average. This does not improve financial incentives to work and has been one of the factors driving substantial increases in in-work poverty for households with children, as noted by Hick and Lanau (2017).

Regardless of which factors drove the increase in measured employment, over one third of lone parents (a group that has seen very large cuts to means-tested transfer payments) were still not in employment in 2017. The lack of evidence that these cuts have significantly increased employment rates, and the fact that employment rates appear to have largely been driven by other factors, make the cuts hard to justify.

10. Conclusions and policy recommendations

10.1 Introduction

The final chapter of this report reviews the main findings from the project and their implications for protected groups in England, Scotland and Wales. We then present a set of policy recommendations, divided into three main areas:

- mitigating the negative impact of reforms to the tax and transfer payments system
- improving the transparency of decision making
- improving the data used for cumulative impact assessment (CIA).

10.2 Conclusions

Implications of our findings

Our analysis shows that the changes to taxes and transfer payments (benefits, tax credits and the introduction of Universal Credit (UC)) announced since 2010 are, overall, regressive, however the changes are measured. Consequently, the largest impacts are felt by those with lower incomes. This is true even when increases in gross earnings from the National Living Wage (NLW) are taken into consideration. Households in the bottom two deciles will lose, on average, approximately 10% of net income, with much smaller losses for those higher up the income distribution.

Moreover, the reforms will have a disproportionately negative impact on several protected groups, including disabled people, certain ethnic groups, and women:

- Negative impacts are particularly large for households with more disabled members and individuals with more severe disabilities, and for lone parents on low incomes.

- Losses are extremely large as a percentage of income for some family types. For example, households with at least one disabled adult and one disabled child see average annual cash losses of slightly over £6,500, which represents over 13% of average net income.
- The impact of changes to direct taxes and benefits is to reduce the income of Bangladeshi households by around £4,400 per year on average.
- At an individual level, women lose considerably more from changes to direct taxes and benefits than men. Women lose around £400 per year on average and men lose only £30, although this conceals very large variations within both genders. For example, women aged 35 to 44 lose over £2,200 per year from the reforms on average compared with less than £550 for men.
- Lone parents in the bottom quintile of the household income distribution experience particularly large average losses from the reforms – equivalent to around 25% of their net income, or one pound in every four.
- Lone parents who are FRS core disabled with at least one disabled child fare even worse on average, losing almost three out of every ten pounds of their net income. In cash terms, their average losses are almost £10,000 per year.
- Couples with children in a similar position (at least one FRS core disabled adult, and at least one disabled child) also experience substantial average losses of slightly under one in every five pounds of net income (a cash average of almost £8,000 per year).
- Lone parents with six or more functional disabilities lose over £11,000 on average from the reforms (slightly over 30% of their net income).

These negative impacts are largely driven by changes to the benefit system; in particular, the freeze in working-age benefit rates, changes to disability benefits and reductions in UC rates. These benefit changes are also likely to lead to significant increases in the number of households below a minimum acceptable standard of living. A large number of households in vulnerable groups (such as lone parents and couples with children, and households with disabled adults and/or children) lose substantial proportions of their incomes (over 20% in many cases) from the package of reforms to direct taxes and transfer payments, even taking into account increases in gross incomes arising from the NLW.

These reforms took place against a background of a clear and overarching UK Government commitment to deficit reduction; changes to taxes and benefits are

obviously an inevitable consequence of this. However, it does not follow that the precise mix of reforms implemented was inevitable, nor was the impact on vulnerable protected groups that emerged.

The UK is a State Party to the International Covenant on Economic, Social and Cultural Rights (ICESCR), which includes the right to social security. The UN Committee on Economic, Social and Cultural Rights has observed that benefits must be 'adequate in amount and duration' to ensure an adequate standard of living; moreover, any reductions (driven, for example, by wider economic policy considerations) should be temporary, necessary and proportionate (Office of the High Commissioner for Human Rights, 2013). The UK Government's published impact assessments do not indicate, by themselves, that these obligations have been taken into account; nor do they indicate that the Government paid due regard to the Public Sector Equality Duty (PSED) and the impact of reforms on vulnerable groups.

The reforms have improved the financial incentive to work, but this has mainly been achieved through significant reductions in net incomes for non-working households, rather than significant improvements in net incomes for working households. Indeed, where working households are reliant on in-work support from the tax credit (or UC) system, this support has been substantially reduced in many cases. We found no strong evidence that improved financial incentives to work had been a major driver of increased employment rates for specific household types.

The UK Government's response to Future fair financial decision-making

The Commission's 2015 report *Future fair financial decision-making* (EHRC, 2015) made a number of recommendations, including that:

- Improvements were needed to the quality of data used for impact assessment
- HM Treasury (HMT) should extend its existing analysis of the aggregate distributional impacts of tax and spending decisions to analyse the aggregate/cumulative impact of decisions on people sharing different protected characteristics
- The coverage and evidence in HMT's assessment of the impact of the Spending Review on equalities (published alongside each main Spending Review) should be improved
- Spending Review measures should be monitored to understand their impact on protected groups more fully.

The UK Government's response to the EHRC's report has been disappointing. We do not question the good faith, commitment and hard work of officials in HMT and elsewhere in the UK Government on these issues. However, despite high-level commitments to ensuring that equality considerations are properly taken into account in financial decisions, and some indication that progress has been made internally on data quality and availability issues, there is little concrete evidence that the specific recommendations have been properly considered or acted upon. The published Impact on Equalities Analysis and the distributional analysis to accompany the 2015 Spending Review do not appear to represent any significant progress from comparable documents produced in 2010.

The continuing lack of evidence of an assessment of the cumulative impact on protected groups does not appear to be consistent with the PSED. However, the recent Race Disparity Audit, while not directly related, shows that the analytical capacity required to address equality issues is available within the UK Government. Going forwards, the principles underlying the audit need also to be applied to policymaking.

10.3 Policy recommendations

Mitigating the negative impacts of reforms

There is a clear need for government to consider how to mitigate these large negative impacts outlined within this report, particularly given disproportionate impacts on some protected groups and the lack of evidence that these impacts, and possible mitigations, have been considered by HMT**. We therefore recommend that, as a matter of urgency, the UK Government should review the level of welfare benefits to ensure that they provide an adequate standard of living for households who rely partially or wholly on transfer payments.**

Specific reforms which have a particularly adverse impact on living standards for particular groups include, but are not limited to, many of the specific reforms analysed in Chapter 6. These include:

- The four-year uprating freeze on most benefits, tax credits and UC parameters for working-age adults and families from 2016–17 onwards. This has a disproportionate impact on lone-parent families with low incomes.
- The two-child limit for Housing Benefit, tax credits and UC which came into force in April 2017. This has, by design, a particularly large impact on

households with more than two children, but also has a disproportionate impact on some ethnic groups.

- Reductions to work allowances in UC.
- The spare room subsidy ('bedroom tax') for social sector housing tenants deemed to have excess bedrooms.
- The reassessment of the caseload of Disability Living Allowance payments for Personal Independence Payment (we note, however, that these impacts will be substantially mitigated as a result of the recent High Court judgment against the UK Government). This has a disproportionate impact on disabled people, especially the most severely disabled.

We therefore recommend the UK Government reviews these specific measures, with a view to mitigating their impact overall and, in particular, on protected groups.

The UK Government should also commit to the following:

- Demonstrate that regressive reforms to the tax and transfer payment system are temporary, necessary, proportionate and non-discriminatory (the UN criteria for retrogression), and that they do not undercut a core minimum level of protection, putting in place any mitigating measures required to safeguard people's rights.
- Monitor the effect the four-year freeze on transfer payment entitlements has on the rights to an adequate standard of living and social security against the requirements set out by the UN Committee on Economic, Social and Cultural Rights (Pillay, 2012), especially for individuals and groups sharing protected characteristics, and make sure this is in line with children's best interests.
- Reintroduce income poverty-related targets for the eradication of child poverty and establish clear accountability mechanisms (including binding targets) with a set timeframe and measurable indicators, as part of a comprehensive child poverty strategy, ensuring that the best interests of the child are taken as a primary consideration.

Improving the transparency of decision-making

We make the following recommendations to HM Treasury (HMT):

- In advance of the next Spending Review, HMT should publish a detailed explanation of the process by which it will ensure that the Spending Review process is fully compliant with the PSED.

- HMT should convene an independent advisory group, based on the model of the 2010 Independent Challenge Group, to advise on the equality impact of the next Spending Review. The Independent Challenge Group provided internal advice on the likely impacts of the Spending Review and had both internal and external representation.
- All fiscal events (Budgets and Spending Reviews) should be accompanied by an equality impact assessment (EIA). This should incorporate a CIA of the impact on protected groups, showing how distributional impacts vary across groups. In addition, the EIA should discuss and explain any major disparities in outcomes that adversely impact protected groups.
- HMT should prepare a CIA for each fiscal event, as well as analysing the impact of key individual tax or social security measures. These analyses should be conducted, where possible, both at the individual level and for households and families, showing clearly the assumptions made. The analyses should incorporate intersectional analysis which should disaggregate groups by combinations of different protected characteristics, recognising that this will be constrained by the sample size of the data being used to conduct the assessment.

The Scottish and Welsh Governments should also publish EIAs of the key individual tax and social security measures that they plan to introduce.

Improving data for cumulative impact assessments

We make the following recommendations to improve the quality of data for CIAs:

- We were unable to provide impact assessments for some protected characteristics (for example, sexual orientation), due to non-availability of data to End User Licence researchers. The UK Government should therefore assess what steps could be taken to make such data available.
- The Family Resources Survey (FRS) questionnaire should be revised to enable impact assessment of at least some of the welfare reforms that cannot currently be modelled due to data limitations. In particular, information about which benefit claimants have been sanctioned and why (and also about sanctions under UC) should be included in the FRS dataset.
- Where sample size constraints are a barrier to accurate impact assessment (for example, for the Living Costs and Food Survey (LCF) and for some of the intersectional analysis using the FRS), the UK Government should consider

allocating more resources to data collection. This would increase the sample size of these datasets to high-enough levels for robust analysis.

- The Welsh Government should allocate additional resources to enable a boost sample for the FRS and LCF in Wales. The current sample size of the FRS and LCF is too small to allow robust analysis of some of the protected characteristics (in particular, ethnicity).
- The LCF questionnaire should be amended to include a disability question or questions similar to those in the FRS. This would enable the impact of changes to indirect taxes on households to be assessed according to household disability status.
- Increases in sample size, and the addition of a disability question to the LCF, could be accomplished more easily as part of the forthcoming changes to the LCF data collection protocol (through which the LCF is being merged into the Household Finances Survey (HFS) from 2017–18). Expanding the sample size of the LCF expenditure sub-sample within the HFS, and including a disability question or questions in the content of the core HFS data module, will make LCF more fit for purpose for future CIA work.

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Appendix A: Methodological improvements to the tax–benefit model

This appendix gives further details of the main innovations in the IPPR/Resolution Foundation/Landman Economics tax-transfer model (TTM) since the Commission's 2014 report on cumulative impact assessment by (Reed and Portes, 2014).

Individual-level distributional analysis

Analysing distributional impacts by family unit within households is relatively straightforward, but analysing impacts by individuals involves a far greater degree of assumption for couples. This is because it is necessary to make assumptions about how income is allocated within couples. The analysis in this chapter uses the following rules (similar to the assumptions used in Section 5.2 of Reed and Portes, 2014) for the allocation of income within couples:

- Gross incomes (earnings, income from self-employment, investment income, private pension incomes and incomes from other non-state sources such as property income) are allocated to individuals in the Family Resources Survey (FRS) data. This is relatively straightforward: the source of each of these incomes is specified in the FRS data.
- Direct taxes on income (income taxes and National Insurance Contributions (NICs)) are allocated to individuals in the FRS data. This is also straightforward: the tax and National Insurance systems operate at an individual rather than joint basis, and the FRS contains information on individual taxes and NICs.
- Benefits and tax credits received by couples (with the exception of the State Pension) are allocated according to which adult records receipt of the benefit in the FRS data. If neither couple records receipt in the data (which occurs when a couple is assessed as eligible for a means-tested benefit or tax credit but no actual receipt is recorded in the data), the benefit or tax credit is split 50/50 between the couple. If both members of a couple report separate

receipt of a benefit (which occurs with certain benefits such as Disability Living Allowance (DLA) or Personal Independence Payment (PIP)), the benefit is allocated to each person in the couple in proportion to the amount received in the FRS data.

- If the FRS data specifically indicate that State Pension is being received on behalf of a couple (that is, with a dependant addition), the pension amount is shared equally between the couple. If two adults in a couple are receiving separate amounts of State Pension in their own right, the pension is allocated separately to each partner as specified in the data.
- For most couples modelled as being in receipt of Universal Credit (UC) in the reform scenario no individual is recorded as receiving UC in the data. This is because UC had not been rolled out to the vast majority of households in the pooled FRS data (even in the 2015–16 data, only 35 UC cases in payment are recorded out of 22,540 Benefit Units). Our default assumption for households assessed as eligible for UC, but where no actual receipt is recorded in the data, therefore becomes highly significant. The default assumption, as with other means-tested benefits and tax credits above, is a **50/50 split** between both partners. In Chapter 5, we show the impact of varying this assumption so that UC in couples is instead assumed to be paid to the **primary earner** (defined as the partner in work in a one-earner couple, or the partner with the highest weekly gross earnings in a two-earner couple). As shown by Figure 5.9, varying this assumption makes a considerable difference to the modelled gender impacts of UC.

Modelling transitions from Disability Living Allowance to Personal Independence Payment

Introduction

Personal Independence Payment (PIP) was introduced for new claimants in 2013, replacing Disability Living Allowance (DLA) for working-age adults. Since 2013, the stock of working-age DLA claimants is gradually being reassessed for PIP, a process that is expected to be complete by 2020. While new claimants of PIP are recorded as claiming PIP in the FRS data and can be modelled with a high degree of accuracy, accurate modelling of the reassessment of DLA claimants for PIP presents far greater challenges. The main difficulty is that the FRS data do not contain

sufficiently detailed information on disability for the reassessment process for the remaining stock of DLA claimants in the FRS data to be modelled with full accuracy. This is true even though the data contain more information on disability status since the 2012–13 FRS survey than it did before this date (for example, data on specific functional disabilities, as discussed in Section 4.6). Therefore, an econometric algorithm is necessary to simulate the impacts of the PIP assessment process for DLA claimants.

Previous published distributional analyses using the TTM (for example, Reed and Portes, 2014; Reed *et al*., 2013) have used a basic reassignment algorithm based on analysis of a 2012 DWP working paper (DWP, 2012) which reported the results of a simulated reassessment from DLA to PIP for a sub-sample of DLA claimants. This algorithm allocated claimants to a particular combination of PIP Daily Living and Mobility eligibility (or ineligibility) based on the level of their current DLA Care and Mobility eligibility. The methodology was fairly crude and, although the approach achieved the target of reducing overall modelled expenditure on DLA compared with PIP by around 20% (the UK Government's original forecast for reduced spending on PIP compared with DLA (OBR, 2016: 91)), the distributional pattern of reductions for individual claimants (which claimants actually received a reduced entitlement to PIP compared with DLA) was based on informed guesswork at best.

Previous analyses of DLA-PIP reassessment using the TTM were unable to use data on the actual distribution and extent of PIP claims compared with DLA claims because the FRS did not actually record any claims of PIP until the 2013–14 survey (since PIP was only introduced in April 2013). In this report, we are helped by the fact that three years of FRS data (2013–14, 2014–15 and 2015–16) now contain a sample of PIP claimants as well as 'legacy' working-age DLA claimants (although the sample of PIP claimants for 2013–14 is very small). The TTM is therefore now able to use a more sophisticated algorithm to predict the level of receipt of PIP Daily Living component and PIP Mobility component for individuals in the FRS data still in receipt of DLA Care and/or Mobility components.

The DLA-PIP reassessment algorithm

The algorithm operates by using four regressions for receipt of the components of DLA and PIP:

1) DLA Care component
2) DLA Mobility component
3) PIP Daily Living component
4) PIP Mobility component.

In each of these regressions, receipt of the benefit component is regressed against the following variables:

- Disability dummies (core FRS group; wider FRS group; 10 different functional disabilities)
- Age group (18–24; 25–34; 35–44; 45–54; 55–64)
- Ethnicity (aggregated FRS definition)
- Female dummy
- Employment dummy
- Receipt of the 'other' component of the relevant benefit (that is, DLA Mobility in regression 1; DLA Care in regression 2; PIP Mobility in regression 3; PIP Daily Living in regression 4).

The sample for each regression is all working-age adults in the pooled FRS 2014–15 and 2015–16 samples (the FRS 2013–14 sample is not used because the sample of PIP claimants is too small.) The regressions are ordered probit regressions with the outcome variables corresponding to the levels of receipt of each of the four benefits (three levels (High; Middle; Low) plus no receipt for DLA Care; two levels (High; Low) plus no receipt for DLA Mobility and both PIP components).

Each regression produces a set of coefficients relating receipt of each of the four benefit components 1) to 4) above to a common set of variables. To predict receipt of PIP for DLA claimants in the FRS, the coefficients for Regression 3) PIP Daily Living are applied to DLA Care recipients, and the coefficients for Regression 4) PIP Mobility are applied to DLA Mobility recipients.

This gives a predicted level of receipt of PIP Daily Living component for each DLA Care recipient and a predicted level of receipt of PIP Mobility component for each DLA Mobility recipient. A randomly distributed error term is added to each prediction to simulate the distribution of reassessment outcomes for DLA Care and Mobility recipients.

The predicted distribution of recipients (and levels of receipt) is then adjusted so that the total grossed up forecast spending on PIP for the reassessed DLA recipients in the FRS matches the OBR's current projection of a 5% fall in overall spending as closely as possible (OBR, 2016: 92).

Table A.1 shows the simulated level of receipt of PIP Daily Living component for people in the pooled (2012–13 to 2015–16) FRS sample who receive DLA Care in the FRS data, while Table A.2 shows the simulated level of receipt of PIP Mobility

component for people in the pooled FRS sample who receive DLA Mobility in the FRS data.

Table A.1 Simulated PIP Daily Living entitlement after reassessment of DLA Care component claimants in FRS pooled dataset

	Simulated PIP Daily Living receipt within each DLA Care level of receipt (%)			
DLA Care level of receipt	None	Standard	Enhanced	Total
Low	64	36	0	100
Middle	4	67	29	100
High	2	52	46	100

Table A.2 Simulated PIP Mobility entitlement after reassessment of DLA Mobility component claimants in FRS pooled dataset

	Simulated PIP Daily Living receipt within each DLA Care level of receipt (%)			
DLA Care level of receipt	None	Standard	Enhanced	Total
Low	50	25	25	100
High	59	21	20	100

Source: Reassessment algorithm in tax-transfer model

Limitations

This algorithm has the drawback that the subsample of PIP claimants in the FRS dataset is not a random sample of disability benefit claimants; rather, it is a mixture of new claimants (since 2013) and reassessed claimants from the DLA caseload. Conversely, the sub-sample of DLA claimants in the FRS dataset is a 'legacy' stock of claimants and there is no reason to expect the two sub-samples to be similar in terms of individual characteristics (age, type and severity of disability, and so on). To some extent, the regression approach used in regressions 1) to 4) above should control for differences in the subsamples, but this is not certain. However, the algorithm presented here offers the best option using the current information in the FRS dataset. To model the transition from DLA to PIP more accurately than this, we would need data on the actual reassessment of DLA claimants for PIP (which is not contained in the FRS data).

Modelling partial take-up

The take-up algorithm

The results in Reed and Portes (2014) all assumed full take-up of means-tested benefits, tax credits and UC. As part of the Commission's project which produced this report, a partial take-up algorithm was developed for the tax–benefit model. For a range of means-tested benefits (Housing Benefit, Income Support, income-based Employment and Support Allowance, income-based Jobseeker's Allowance, and Pension Credit) and for tax credits, the algorithm operates as follows:

- First, actual benefit or tax credit receipt is compared with modelled receipt of the benefit or tax credit.
- Second, the benefit unit is assigned to a quadrant based on the decision matrix in Table A.3 below, and action is taken (or not taken) based on the assignment.

Table A.3 Decision matrix for partial take-up algorithm: actual receipt versus modelled receipt

Benefit unit status:	Modelled as receiving benefit/tax credit	Not modelled as receiving benefit/tax credit
Actually receiving benefit/tax credit	Award benefit	Don't award benefit
Not actually receiving benefit/tax credit	Award benefit based on take-up algorithm	Don't award benefit

The next course of action for each benefit unit depends on which box of the decision matrix the benefit unit is assigned to, based on a comparison of actual and modelled receipt. Four options are possible:

1) If the benefit unit is **actually receiving** the benefit (or tax credit) and is also **modelled as receiving** the benefit in the TTM, the benefit is paid.
2) If the benefit unit is **not receiving** the benefit and is **modelled as not receiving** the benefit, the benefit is not paid.
3) If the benefit unit is **actually receiving** the benefit but is **modelled as not receiving** the benefit, the benefit is not paid.
4) If the benefit unit is **not actually receiving** the benefit but is **modelled as receiving** the benefit, the partial take-up algorithm is applied.

The remaining explanation in this section relates to option 4) – benefit units who are modelled as receiving a benefit (or tax credit) but do not actually receive that benefit or tax credit.

The partial take-up algorithm for each benefit works as described below.

For benefit units who are modelled as receiving a benefit or tax credit, a take-up regression is estimated. The regression is a probit regression with the dependent variable being actual take-up of the benefit or tax credit in question, and the regressor variables are:

- Ethnicity
- Disability (FRS core group; wider group)
- Family demographic status (couple with children; couple without children; lone parent; single person with no children)
- Region
- Employment
- Housing tenure type (social tenant; private tenant; owner-occupier).[19]

The predictions from this regression (plus a random error term for each benefit unit) are used to create a ranking (from 0 to 100) that is used to calibrate take-up of each benefit and tax credit in the FRS so that the grossed-up percentage of benefit units claiming each benefit in the model matches published DWP and HMRC statistics.

Table A.4 compares estimated take-up rates from the pooled FRS data in the TTM (calculated as number of benefit units actually taking up each benefit, divided by number of benefit units modelled as receiving each benefit) with published take-up statistics from DWP (2017b) and HMRC (2017) (calculated in the same way, but using administrative data combined with FRS-based modelling). The table shows that estimates from the TTM for take-up proportions of each featured benefit and tax credit are below DWP and HMRC's published statistics. This means that the estimated take-up rate in the FRS data needs to be adjusted upwards in the TTM so that estimated take-up matches published take-up rates. For example, our 'raw' estimate of take-up in the TTM is 42%; this needs to be adjusted upwards by 20 percentage points to match DWP's Pension Credit take-up statistics.

[19] The take-up regression for Housing Benefit does not include an owner-occupier dummy variable because Housing Benefit can only be claimed by tenants.

Table A.4. Comparison of estimated take-up rates for FRS data in tax-transfer model with published take-up statistics from DWP and HMRC, by caseload

Benefit/tax credit	TTM estimate (%)	DWP or HMRC estimate (%)	Difference, DWP/HMRC minus TTM (percentage points)
Pension Credit	42	62	20
JSA	46	50	4
IS/ESA	65	82	17
Working Tax Credit	48	68	20
Child Tax Credit	75	87	12

Source: take-up algorithm in tax-transfer model compared to take-up statistics in DWP (2017b) and HMRC (2017).

Using the prediction ranking from the take-up regressions (as explained above), the simulated take-up rate for each benefit or tax credit in the TTM can be adjusted to match any percentage total between 0% and 100%. The parameter files provide the flexibility to do this separately for each of the benefits and tax credits in Table A.4. In the simulations presented within this report, we assume that the take-up rates for each benefit and tax credit match DWP and HMRC's latest published statistics.

Take-up of Universal Credit

UC presents an additional problem because there are, as yet, no official statistics from DWP on the UC take-up rate. However, it is generally assumed that the take-up rate for UC will be higher than the take-up rate for the benefits and tax credits it replaces, for one specific reason: there are currently many benefit units who are eligible for more than one of the benefits or tax credits that are being replaced by UC, but who do not claim the whole package of benefits. For example, there are benefit units eligible for tax credits and Housing Benefit which claim only one or the other. UC is a single payment replacing several different benefits, which means that, when a claim is processed, it is equivalent to the benefit unit applying for all the 'legacy' benefits and tax credits. This should result in a boost in take-up rates.

To estimate the extent to which UC might be expected to boost take-up rates (all else being equal) we used the TTM to calculate the number of benefit units who claimed any of the benefits being replaced by UC (Income Support, income-based

JSA, income-based ESA, Housing Benefit, Working Tax Credit and Child Tax Credit) as a proportion of the number of benefit units modelled as eligible to receive any of those benefits in the TTM. The calculation (adjusted for the gap between TTM estimates of take-up rates for the individual benefits and DWP/HMRC estimates) was a UC take-up rate of 87%. This is a relatively high take-up rate compared with the DWP/HMRC estimates for most of the individual benefits and tax credits. However, we adjust this assumption slightly downwards, by 5 percentage points, to take account of recent evidence from UC sanctions statistics that the sanction rate for claimants of UC is substantially higher than the average sanctions rate for the benefits and tax credits it replaces (Webster, 2017). Thus, **82% is our headline take-up rate assumption for Universal Credit in the reform scenario**.

Simulating changes in poverty and the number of people below Minimum Income Standard

Modelling of the impact of reforms to direct taxes and transfer payments on the number of children, adults and households proceeds as described below.

First, the FRS data from the pooled 2012–13, 2013–14, 2014–15 and 2015–16 Households Below Average Income (HBAI) dataset is analysed to identify households who are below 60% of equivalised median household disposable income on the Before Housing Costs (BHC) and After Housing Costs (AHC) measures.

Second, the FRS data for each of the four years in pooled dataset is run through the TTM using the actual tax–benefit system in place in the year of the data (that is, 2012/13 tax year for the 2012–13 data, 2013/14 tax year for the 2013–14 data, and so on). This generates a 'starting income' for each household in the model.

For the baseline and reform scenarios in this report, the pooled FRS data for 2012–13 through to 2015–16 (with earnings and other gross incomes adjusted to projected 2021–22 levels) is run through the TTM using the relevant parameter files.

The change in income between the baseline and reform systems is calculated for each household.

The change in income is compared with the difference between the relevant poverty line and income in the pooled 2012–13 to 2015–16 FRS HBAI data (uprated to 2021–22 prices).

Households which were below the relevant poverty line, but whose increase in equivalised net income between the initial scenario and the reform scenario would

take them above the poverty line, are assumed to have moved out of poverty in the reform scenario. Conversely, households which were above the relevant poverty line, but whose decrease in equivalised net income between the initial scenario and the reform scenario would take them below the poverty line, are assumed to have moved into poverty in the reform scenario. For households where the change in income is not enough to move them from one side of the relevant poverty line to the other, there is assumed to be no change in poverty status.

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

This procedure is used for all four poverty lines (relative AHC, absolute AHC, relative BHC and relative BHC). The only difference between the relative and absolute poverty calculation procedures is that, for the relative poverty measures, the poverty line is recalculated based on the modelled distribution of incomes in the baseline and reform scenarios whereas, for the absolute poverty measures, the BHC and AHC poverty lines in the 2010–11 tax year are used (uprated by the Consumer Price Index).

The calculation of the number of children, adults and households below the MIS proceeds on a similar basis, except that the MIS line is used for the calculations instead of the poverty line.

Appendix B: Analysis of the distributional impact of reforms by other protected characteristics

This appendix shows distributional analyses by two additional protected characteristics not featured in the main report: married or cohabiting status, and maternity status (but not pregnancy, which is not recorded in the FRS or LCF datasets).

Analysis by married or cohabiting status

Figure B.1 shows the average annual cash impact of reforms to the direct tax and transfer payments systems (and the National Living Wage (NLW)) for couple households in the pooled FRS sample, classified into the following six categories:

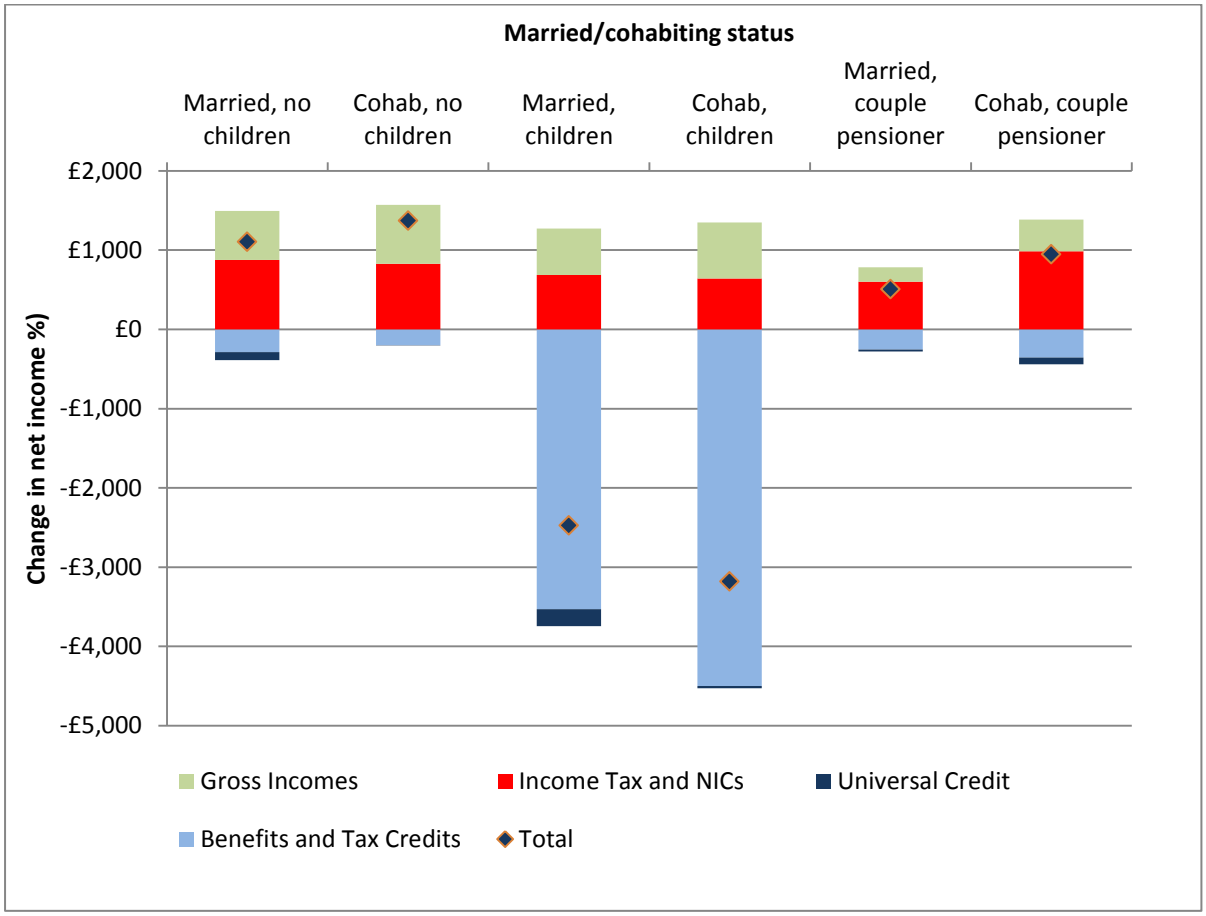
- Married (working age), no children
- Cohabiting (working age), no children
- Married (working age), with children
- Cohabiting (working age), with children
- Married pensioners
- Cohabiting pensioners

Figure B.1 shows a positive impact overall from the reforms for married and cohabiting working-age households without children, and for married and cohabiting couple pensioners. In both of these categories, cohabiting households experience slightly higher average gains than married households (average gains of around £1,375 for cohabiting working-age households without children compared with around £1,110 for married working-age households without children; around £950 for cohabiting pensioners compared with slightly over £500 for married pensioners). The difference between married and cohabiting working-age childless households is mainly driven by cohabiting households receiving lower average amounts of benefits and tax credits than married households. For pensioners, the difference is mainly a consequence of cohabiting pensioners gaining more from the changes to income tax

and NICs and the NLW; cohabiting pensioner households tend to be younger on average than married pensioners and so are more likely to have one or more partners in paid work.

For households with children, cohabiting couples experience higher average losses from the reforms than married couples (average losses of around £3,175 compared with £2,475). This occurs mainly because cohabiting couples receive higher amounts in benefits and tax credits in the baseline scenario, and so lose more from the cuts to benefits and tax credits in the reforms.

Figure B.1 Cash impact of reforms to taxes and transfer payments by married or cohabiting status and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

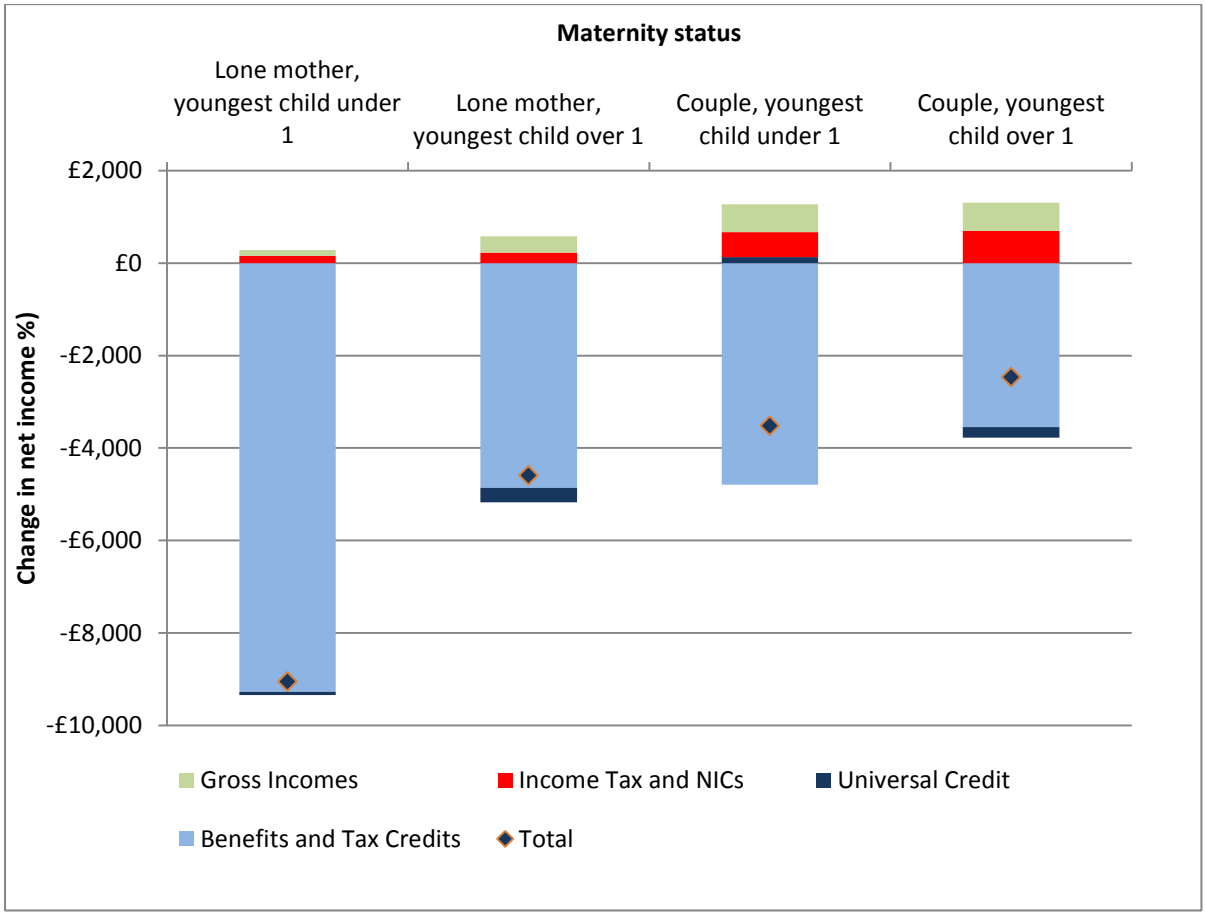
Analysis by maternity status

Figure B.2 presents a distributional analysis of the cash impact of reforms that classifies households with children according to the maternity status of the mother and the number of adults in the household. A four-way classification is used:

- Lone mothers with youngest child aged under one year
- Lone mothers with youngest child aged more than one year
- Couples with youngest child aged under one year
- Couples with youngest child aged more than one year

The child age variable in the FRS does not specify age in months (only years), meaning we were unable to use a more finely graded measure of maternity (for example, mothers with youngest child under six months).

Figure B.2 Cash impact of reforms to taxes and transfer payments by maternity status and type of reform, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2014–15 to 2015–16.

Figure B.2 shows that lone mothers with one or more children aged less than one lose substantially more from the reforms, on average, than either lone mothers with a youngest child aged more than one or couples with children (regardless of maternity status). Lone mothers with children under one lose over £9,000 per year on average from the reforms. This loss occurs mainly because of the large-scale cuts to benefits and tax credits for mothers with children aged under one, including specific changes that affect mothers in this group; for example, the abolition of the 'baby credit' in the Child Tax Credit and the restriction of the Sure Start Maternity Grant (SSMG) to the first child only in low-income families. Lone mothers are more likely to be eligible for the SSMG than mothers in couples and are therefore more affected by this policy. Lone mothers with children under one also claim larger amounts of benefits and tax credits on average than other groups in the figure, even disregarding the changes to benefits that affect them specifically.

Lone mothers with a youngest child aged more than one lose around £4,600 on average from the changes. For couples with children, average losses are around £3,500 for couples with children aged under one, and slightly over £2,450 for couples with children aged more than one. One of the main differences between lone mothers and couples with children is that couples gain more on average from the changes to income tax, NICs and the NLW. This is mainly because couples are more likely to have at least one person in employment than lone mothers. Lone mothers with children aged under one are particularly unlikely to be in employment and therefore gain very little from the income tax changes or the NLW.

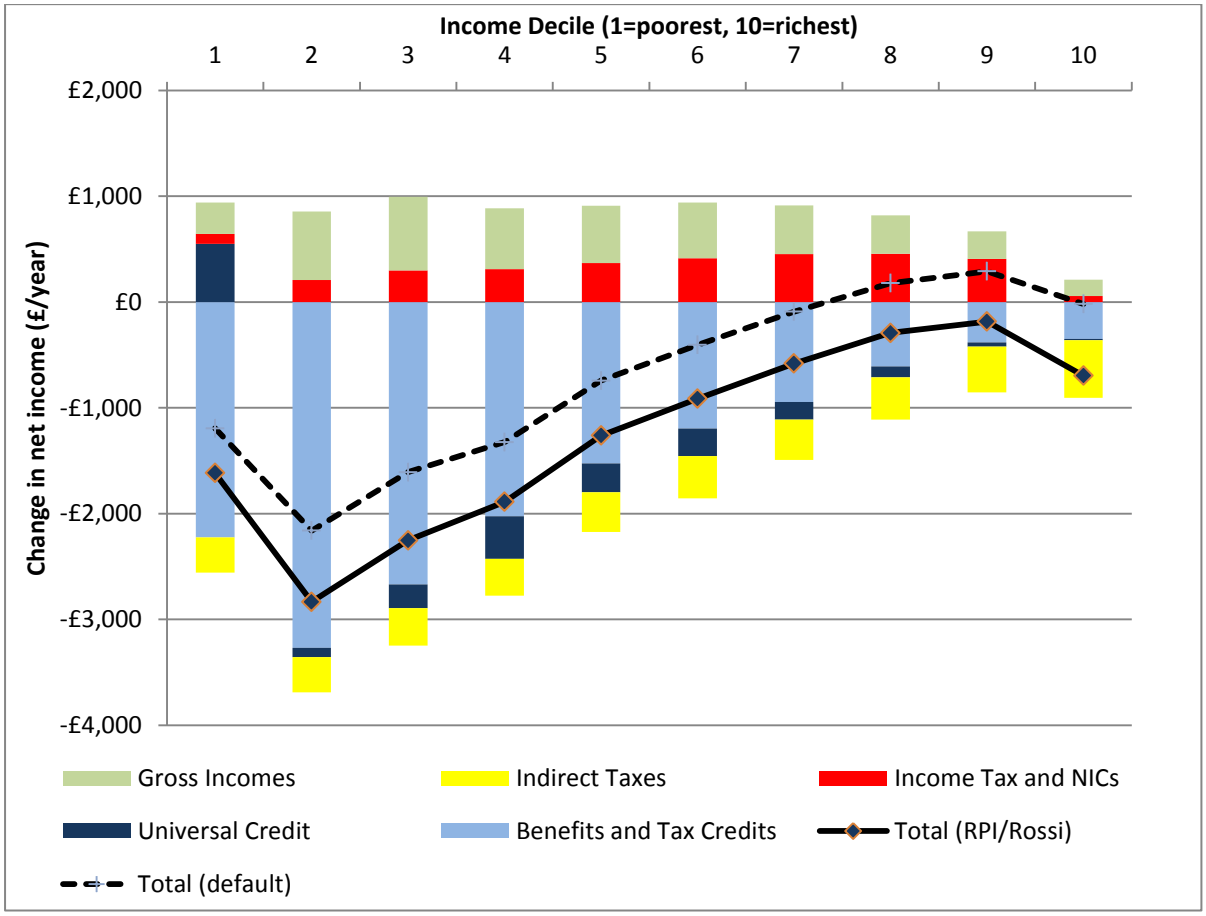
Appendix C: Analysis of the impact of using Rossi/RPI uprating from 2015–16 to 2021–22 in the baseline scenario

As explained in Section 3.6 of the main report, our default assumption regarding uprating for the baseline scenario is as follows:

- For the **2010–15 Parliament**, the baseline scenario involves uprating means-tested benefits by the Rossi index, which excludes housing costs and tax thresholds, non-means-tested benefits, and tax credits by the Retail Price Index (RPI).
- For the **2015–17 and subsequent Parliament**, the baseline scenario involves uprating the State Pension by the 'triple lock' (the maximum of average earnings, the Consumer Price Index (CPI), or 2.5%) and almost all other benefits, tax credits, Universal Credit (UC) and tax thresholds by the CPI.

In this Appendix, we analyse the impact of using the Rossi/RPI uprating formula for the period 2015–22, rather than changing the uprating assumption to the CPI/'triple lock'. Figure C.1 shows the distributional impact of tax and transfer reforms and the NLW in cash terms by household income decile using this alternative uprating assumption. The graph includes the same detail as Figure 4.1 but with an extra line. The black dashed line labelled 'Total (default)' shows the total average change in income for households in each decile using the default uprating assumption (the same line shown in Figure 4.1). The unbroken black line labelled 'Total (RPI/Rossi)' shows the total average change for households using the Rossi/RPI uprating for all years up to 2021–22 .

Figure C.1 Cash impact of reforms to taxes and transfer payments by household income decile using Rossi/RPI uprating for the 2010–22 period, and comparison with total cash impact using default uprating, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2014–15 to 2015–16 and LCF pooled dataset 2010 to 2015–16.

Figure C.1 shows that overall average cash losses from the reform increase substantially if we assume Rossi/RPI uprating over the 2015–22 period as well as 2010–15. For example, average losses in decile 2 increase from slightly over £2,150 under the default assumption to around £2,830 using Rossi/RPI over the whole uprating period. At the other end of the scale, decile 9 goes from making a gain of nearly £300 under default uprating to a loss of slightly under £200 using Rossi/RPI over the whole period.

The more negative overall impact under the alternative uprating assumption reflects two impacts on specific parts of the tax and transfer payments system. First, losses from benefits and tax credits increase when RPI/Rossi uprating is used for the 2015–

22 period. This is unsurprising, given that the level of CPI inflation each year is almost always lower than RPI, by around 0.7 to 1.0 percentage points per year (Johnson, 2015). Second, the changes to income tax and NICs lead to smaller average gains when RPI/Rossi uprating is used for the 2015–22 period. This is because tax and NICs allowances and thresholds are being uprated by RPI instead of CPI in the baseline, which makes the value of the increase in real terms in the income personal allowance and the higher rate threshold for income tax smaller in the reform – leading to smaller average gains.

Appendix D: Analysis of the impact of varying assumptions on take-up rate of Universal Credit

As outlined by Appendix A, our default estimate of the take-up rate for Universal Credit (UC) when fully rolled out is based on the following two assumptions:

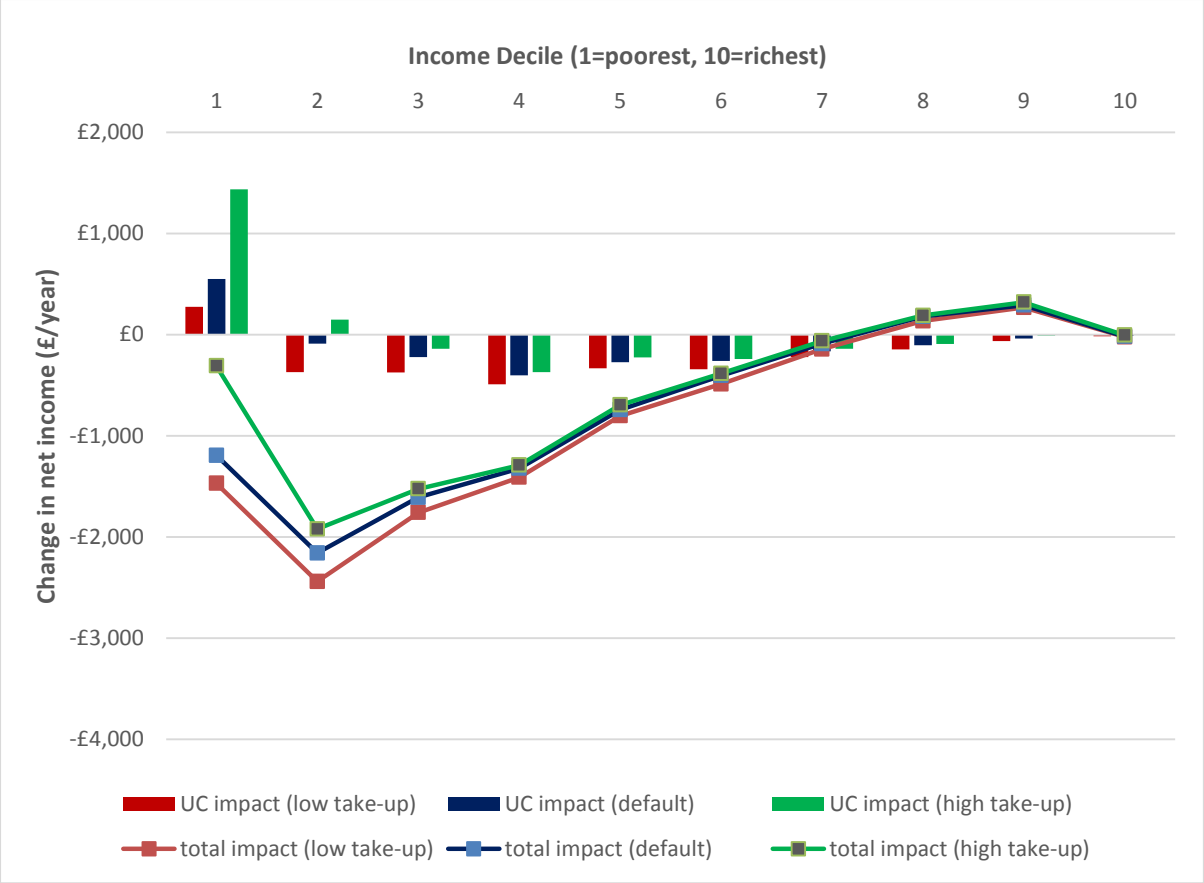
1. Every benefit unit that takes up at least one of the 'legacy' benefits and/or tax credits replaced by UC takes up UC.
2. Take-up of UC is adjusted downwards slightly (by 5 percentage points) to account for research finding that the sanction rate for UC claims is substantially higher than for 'legacy' benefits taken as a whole (Webster, 2017).

Taken together, these assumptions produce an estimated take-up rate for UC of 82% in our default set of results. This Appendix explores the impact of varying the assumptions on the take-up of UC. As well as the default scenario, we present results using two other sets of UC take-up assumptions:

- **High take-up:** assuming UC take-up is 10 percentage points higher than default (that is, 92%).
- **Low take-up:** assuming UC take-up is 10 percentage points lower than default (that is, 72%).

Figure D.1 shows the marginal impact of introducing UC on net incomes (relative to the previous benefit and tax credit system with all other reforms implemented) and the total cash impact of all reforms (including benefits, tax credits, taxes, National Insurance Contributions and gross income changes) in the default scenario and the high take-up and low take-up scenarios. The average impact of UC in each decile for each scenario is presented as bars, while the total payments by decile are presented as lines.

Figure D.1 Cash impact of the introduction of Universal Credit (marginal effects of UC and total change in net income after all reforms) by household income decile under three different assumptions regarding the take-up rate for UC, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2014-15 to 2015-16 and LCF pooled dataset 2010 to 2015-16.

Figure D.1 shows that the average impact of UC payment in the bottom decile is much higher in the high take-up scenario than in the default scenario. The average impact of UC in the bottom decile is over £1,400 per household per year in the high take-up scenario compared with £550 in the default scenario and £275 in the low take-up scenario. There is asymmetry to the distributional effects of varying take-up of UC in the lower deciles: in the high take-up assumption, most of the increase in payments of UC occurs in the bottom decile, with relatively small increases in decile 2 and above. The deciles of household net income are constructed based on net

incomes from the tax-transfer model under the assumption of less than 100% take-up of means-tested benefits and tax credits, meaning that households which do not take up means-tested benefits and tax credits are more likely to be located in the bottom decile than anywhere else in the distribution (due to having exceptionally low net incomes). Therefore, when assumed take-up is increased, most of the increase in net income occurs in the bottom decile. By contrast, in the low take-up scenario, the introduction of UC results in smaller gains for decile 1 and a bigger loss for decile 2 compared with the default take-up assumption, but the net losses are distributed more evenly over the bottom three deciles.

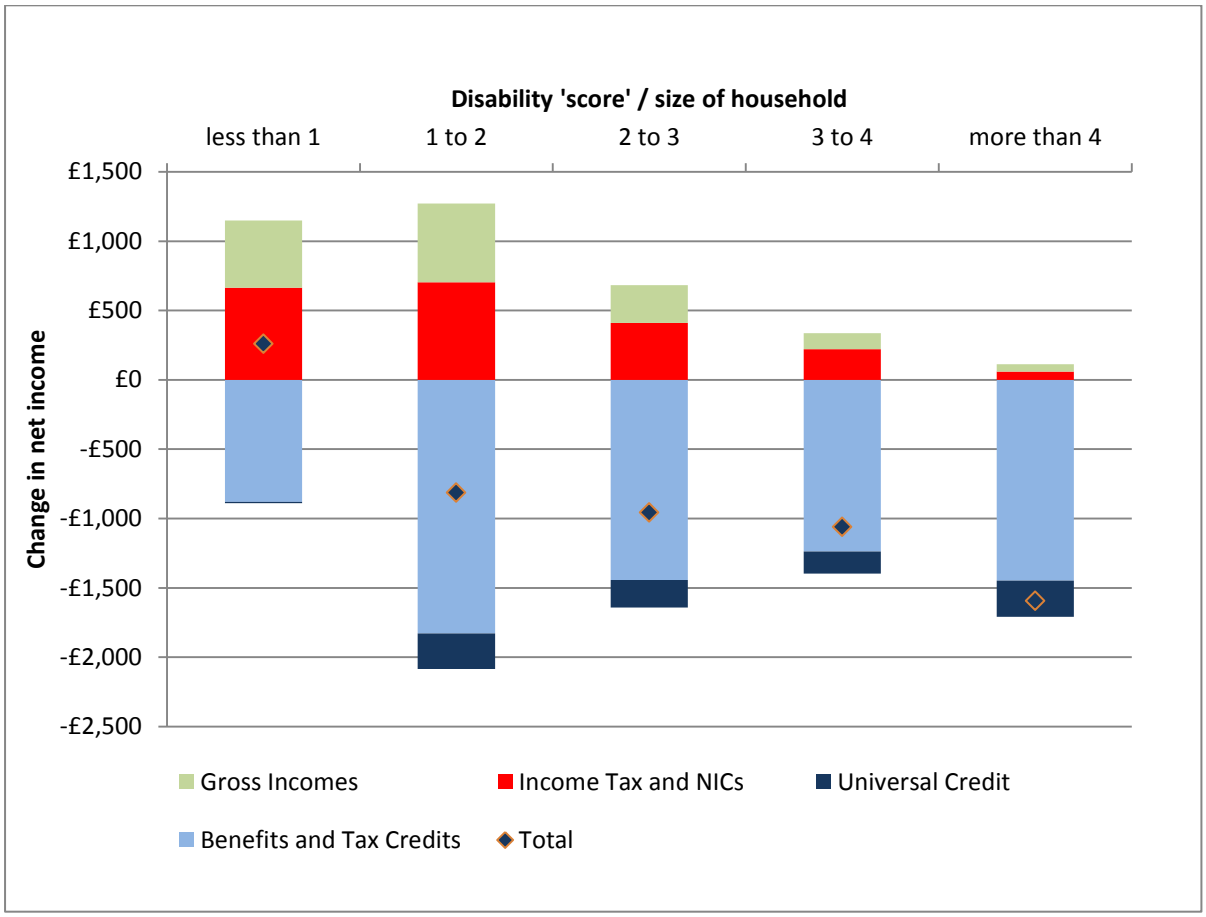
The overall results for changes in total income arising from all reforms (including UC) in the different UC take-up scenarios show that varying the assumptions regarding the take-up rate for UC makes a substantial difference to estimated net income losses in the lower deciles, but very little difference to decile 5 and above. This is mainly because UC claimants tend to be located in the bottom part of the net household income distribution.

Appendix E: Distributional effects of reforms using a measure of household disability 'score' divided by household size

Figure 4.9 in the main body of the report shows the average cash impact of the reforms to direct taxes and transfer payments using a household disability 'score' measure that sums the number of specific functional disabilities across all members of each household. A potential criticism of this measure is that it tends to be larger for households with more adults (and children) in them, incurring the risk that analysis of the impact of reforms by household disability score analysis may partly reflect larger losses for larger households rather than, or as well as, larger losses for households containing a greater number of functional disabilities. A method of avoiding this risk is to use a household disability score measure divided by the number of people in the household. Figure E.1 presents a distributional analysis of the average impact of reforms using this modified score measure. The score is now divided into bands of 0 to 1; 1 to 2; 2 to 3; 3 to 4; and more than 4 as division by household size means that the score is often a non-integer.

Figure E.1 demonstrates that – as with the 'raw' household disability score shown in Figure 4.9 – the outcomes for households with a higher (size-adjusted) disability score are worse than for those with a lower score. For households with a disability score of more than 4, the average loss from the package of reforms is around £1,600, compared with an average gain of slightly over £250 for households with a score of less than 1. Using this size-adjusted score measure, a large part of the disability 'gradient' arises from the fact that households with a higher score are far less likely to benefit from increases in net income from the National Living Wage and income tax changes. This is because households with a higher size-adjusted disability score are far less likely to have someone in paid employment in the household. By contrast, there is no clear pattern in overall losses from benefits, tax credits and Universal Credit for households with a size-adjusted disability score of more than 1; households with a score of more than 4 lose slightly less from changes to benefits, tax credits and UC than households with a score of between 1 and 2.

Figure E.1 Cash impact of reforms to taxes and transfer payments by household disability score divided by size of household, 2021–22 tax year: Great Britain



Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2014–15 to 2015–16.

Appendix F: Additional results from poverty analysis

The analysis of the impact of the reforms to taxes and transfer payments on poverty rates in Chapter 7 used the relative AHC (After Housing Costs) measure of poverty from the UK Government's Households Below Average Income (HBAI) statistics (DWP, 2017).

For comparison purposes, Table F.1 shows the poverty rates and the increases in poverty forecast as a result of the reforms in Great Britain by 2021–22 under four different poverty measures. The four measures correspond to the four versions of the 'below 60% of equivalised household median disposable income' measures used in the HBAI publication:

1) AHC relative poverty (as used in the main report)
2) AHC absolute poverty
3) BHC (Before Housing Costs) relative poverty
4) BHC absolute poverty.

The results show a similar increase in the numbers and rates of poverty for children, adults and households as a result of the reforms, whichever poverty measure is used.

Table F.1. Estimated poverty rates for households, children and adults before and after reforms under four different poverty rate definitions: Great Britain, 2021–22

Poverty measure	Numbers (millions)			Percentage of group		
	Baseline	Reform	Change	Baseline	Reform	Change
AHC relative						(percentage points)
Households	5.14	5.59	0.45	18.2	19.7	1.6
Children	4.44	5.94	1.49	30.9	41.3	10.4
Adults	10.22	10.96	0.74	19.9	21.3	1.4
AHC absolute						
Households	4.35	4.88	0.53	15.4	17.2	1.9
Children	3.65	5.25	1.60	25.4	36.5	11.2
Adults	8.63	9.52	0.89	16.8	18.5	1.7
BHC relative						
Households	4.58	5.04	0.46	16.2	17.8	1.6
Children	2.67	4.13	1.45	18.6	28.7	10.1
Adults	10.75	11.30	0.55	20.9	22.0	1.1
BHC absolute						
Households	4.98	5.56	0.58	17.6	19.6	2.0
Children	3.03	4.56	1.53	21.1	31.7	10.7
Adults	11.56	12.36	0.81	22.5	24.0	1.6

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Appendix G: Additional results from Minimum Income Standard analysis

The analysis in Chapter 7 of the impact of the reforms to taxes and transfer payments on the number of households, adults and children below the Minimum Income Standard (MIS) used a measure of MIS that was extrapolated for the period 2017 to 2021–22 from growth in real terms in MIS levels for families of different types between 2010 and 2017, as shown in CRSP (2017).

As an alternative, Table G.1 presents results for an estimated MIS measure that is held constant in real terms between 2017 and 2021–22 . This leads to estimates of the MIS which are approximately 11% below the extrapolated MIS by 2021–22 .

The results show higher increases in the rates of poverty using the MIS line that is constant in real terms from 2017 to 2021–22 compared with the headline measure based on extrapolating the 2010–17 MIS growth rate used in Chapter 7.

Table G.1. Estimated number and rates of households, children and adults below the Minimum Income Standard before and after reforms under two different definitions of MIS: Great Britain, 2021–22

MIS definition	Numbers (millions)			Percentage of group		
	Baseline	Reform	Change	Baseline	Reform	Change
Extrapolated from 2010–17 real growth rate						(percentage points)
Households	11.83	12.06	0.23	41.8	42.6	0.8
Children	8.27	8.81	0.53	57.5	61.3	3.7
Adults	21.99	22.00	0.00	42.7	42.7	0.0
Constant in real terms 2017–22						
Households	9.71	10.21	0.50	34.3	36.1	1.8
Children	7.03	8.00	0.97	48.9	55.7	6.8
Adults	18.22	18.79	0.57	35.4	36.5	1.1

Source: Landman Economics tax-transfer model analysis using FRS pooled dataset 2012–13 to 2015–16.

Appendix H: Proportion of households losing out from changes to indirect taxes

Table H.1 shows the estimated percentage of households losing out from the changes to indirect taxes by 2021–22 by various household characteristics. The results show that more than five sixths of households (84%) lose out from the indirect tax changes overall. Looking across different household characteristics, significantly less variation in the pattern of winners and losers by household income decile, demographic type, number of children and ethnicity is evident than for direct taxes and transfer payments in Table 8.1. For example, according to household ethnicity, the proportion of losers ranges from slightly under 80% for Asian households to slightly under 85% for Black households.

Table H.1 Percentage of households paying more tax as a result of reforms to indirect taxes by household income decile and various protected characteristics, Great Britain, 2021–22

Group	Proportion of losing households, Great Britain (%)
All households	84.0
Household income decile	
1 (poorest)	86.2
2	85.2
3	84.6
4	83.7
5	84.2
6	83.3
7	83.4
8	82.3
9	83.2
10	84.4
Household demographic type with gender	
Single adult, no children	84.1
Lone parent	84.7
Couple no children	82.2
Couple with children	79.1
Single pensioner	87.3
Couple pensioner	86.9
MBU no children	82.5
MBU with children	82.6
Number of children in household	
None	85.4
1	82.0
2	80.0
3	79.2
Household ethnicity	
White	84.3
Mixed/Multiple	82.6
Asian	79.6
Black	84.8
Other	81.9
Differing	83.9

Source: Landman Economics tax-transfer model analysis using LCF pooled dataset 2010 to 2015–16.

Contacts

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