
Were we really all in it together? The distributional effects of the UK Coalition government's tax-benefit policy changes

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Preface

This paper presents a detailed analysis which will form part of an overall discussion of Coalition policy towards cash transfers, which will be published early in 2015. This is one of a series of papers examining aspects of the social policy record of the Conservative/Liberal Democrat Coalition in England from 2010-15, with a particular focus on poverty, inequality and the distribution of social and economic outcomes.

The research is taking place from October 2011 to May 2015. More detail and other papers in the series will be found at:

http://sticerd.lse.ac.uk/case/new/research/Social_Policy_in_a_Cold_Climate.asp

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Summary

- This paper examines the distributional impacts of the changes to benefits, tax credits, pensions and direct (but not indirect) taxes between the systems in place in May 2010 at the time of the Election and in 2014/15. It also looks ahead to the longer-term effects of already announced changes and plans, such as the complete introduction of Universal Credit and changes to the ways benefits, pensions and tax brackets are changed (indexed) from year to year, modelling what effects these would have by 2019/20.
- We compare the actual 2014/15 system with the amounts people would have paid and received under the May 2010 system adjusted either in line with price (CPI) inflation or by earnings growth (over this period meaning slower increases).
- The overall fiscal effect of the changes after May 2010 up to 2014/15 compared to a price-linked base system was *neutral* overall, rather than contributing to deficit reduction. The revenue gains from some tax changes and benefit cuts were offset by the cost of tax reductions, particularly the increase in the income tax personal allowance.
- But some groups were clear losers on average – including lone parent families, large families, children, and middle-aged people (at the age when many are parents), while others were gainers, including two-earner couples, and those in their 50s and early 60s.
- Across the income distribution as a whole, the changes were regressive. On this comparison, the bottom half lost (with the poorest groups losing most as a proportion of their incomes) and the top half gained, with the exception of most of the top 5 per cent (but excluding the very top, gaining from the cut in the highest rate of income tax).
- This resulted from the combination of: changes to benefits and tax credits making them less generous for the bottom and middle of the distribution; changes to Council Tax (and support) from which those in the bottom half lost but the top half gained; changes to income tax (higher personal allowances) which meant the largest gains for those in the middle, but with some income tax increases for the top 5 per cent; and state pension changes (the 'triple lock') which were most valuable as a proportion of their incomes for the bottom half.
- Other analysis, including from the Treasury, also shows the tax and benefit changes as being regressive between the bottom of the distribution and middle of the top half, with losses being a greater share of lower incomes. However, that analysis also suggests that the top tenth has lost more proportionately than the bottom tenth. This is mainly the result, however, of comparing the 2014/15 system with that in place in *January* 2010, before the changes affecting those with the highest incomes in April 2010, already in place by the election.
- The paper also discusses the effects of other decisions that affect this kind of comparison. As well as the indexation used for the base system, this includes: the size of income groups considered in the analysis across the income distribution; whether all benefits are assumed to be taken up; how individuals are ranked between poor and rich; and whether there is adjustment for under-representation of top incomes in the survey used.
- We also look ahead at changes that have already been announced or planned, including introducing Universal Credit and changes to indexation agreed by the government, if carried through to 2019/20.
- Overall, they would intensify the distributional effects seen by 2014/15, including increases in the losses of lone parent and large families, children in general and of most of the bottom half of the

income distribution. Over the whole period from May 2010 to 2019/20 people aged over 65 (those over 80 in particular) would also lose on average.

- A potential exception is that while all other income groups in the bottom half would be losers on average over the nine years as a whole, the bottom twentieth could be *gainers* on average as a result of some of them receiving the new Universal Credit (UC) who do not currently receive all the benefits and tax credits it replaces. This depends, however, on whether it is assumed that all those receiving *any* benefit being replaced by UC will claim it. If failure to claim is a result of stigma, and this affects UC, these gains would not occur.

1. Introduction

One of the most important issues in assessing the record of the Conservative-Liberal Democrat Coalition government since it came into office in May 2010, is who has borne the heaviest burden from the combination of 'austerity' aimed at reducing the public sector deficit and from its reform programmes across the public sector. Who has lost, and who has gained?

This paper looks in detail at one of the central, and most highly-charged, parts of this – the effects of reforms and other changes to social security benefits and tax credits and to the personal tax system. It does not look at the effects of the substantial cuts in spending on certain other public services, such as those provided by local government. Nor does it look at other changes in the tax system outside personal taxes; indeed, its detailed focus is on *direct* taxes (income tax and employee National Insurance Contributions), with some discussion of the effects of the increase in the rate of VAT to allow comparison with other analyses.¹

With that restricted focus, it might be thought that this is a straightforward exercise with a clear set of answers: who have been the losers and who the gainers? At the heart of this is that we are trying to isolate how people *are* affected by the tax and benefit system put in place by the Coalition (focussing on the system in place in 2014-15) compared with how they *would have been* affected by a system with no reforms and no cuts. There are several ways of approaching what seems like a simple question, depending on the choices made as to what to compare the actual system with, and how this is done.

One central issue is what should count as the 'inherited' system? Should it be that in place in May 2010 when the election happened – and so including, for instance, a top income tax rate of 50 per cent, introduced by Labour from April 2010? Or should it be the system as it was in the previous tax year, 2009-10, when the top rate was still 40 per cent? In this paper we use what was actually in place at the time of the May 2010 election as our starting point on the basis that this was the inherited system that would have continued unchanged without Coalition intervention. We discuss in Section 6 the effects of taking the base system as being that in January 2010, as is done in related analysis by the Treasury.

Second, to compare the 'inherited' system with the actual one in place in 2014-15, how should we assume the inherited system would have been changed each year as the overall economy changed? Would a 'neutral' assumption be that the original levels of benefits and tax allowances should increase in line with *price* inflation or in line with some measure of average *income* growth? Depending on the exact question, either of these might be appropriate. We show results on both bases.

Third, if we are looking at how different parts of the income distribution, from poor to rich, are affected, how should we rank households? Should we look at them as they were before the changes we explore, or after? Should we include changes in the relative rank position of households or hold the ranking constant? These decisions can have a major influence on the picture that is drawn of the

¹ It should also be remembered that other factors, generally less under government control (not least, what happens to relative earnings and employment patterns) also affect the overall income distribution.

distributional effects. Our results use the ranking of individuals as they were under the 'pre-reform', base system.

Further, in presenting distributional analysis, how big should be the income groups that we consider? Are we interested, for instance, in how the top or bottom 10 per cent as a whole have been affected, or in differences – which turn out to be important – *within* the top or bottom groups? We show our main results by vingtile (twentieth) of the population (and some results by percentile in the appendix).

Modelling of this kind can be carried out assuming that everyone who is entitled to benefits and tax credits receives them, or can allow for what is known to be only partial take-up of means-tested benefits and tax credits. In our analysis we allow for partial take-up, as this gives the best representation of what will be the effects of changes on actual (rather than potential) living standards and revenue flow to government.

Finally, should we take account of reforms that have been announced but not implemented yet – such as the introduction of Universal Credit to replace several existing means-tested benefits, or the long-run effects of measures such as the switch to using the Consumer Price Index (CPI) to adjust most working-age benefits from year to year while, contrastingly, state pensions are being adjusted by the 'triple lock' (the higher of earnings, prices, or 2.5 per cent each year)? In our main analysis we look only at changes that are already in place in 2014/15, but in Section 7 we examine potential effects of these longer-term reforms.

The analysis in the following sections shows that these choices make a considerable difference to the picture painted. In particular, it suggests that whether the base system is taken as that in place at the election (May 2010) or in the financial year 2009/10 (January 2010) and whether the focus is on tenths ('decile groups') of the population by income or on finer divisions significantly changes the impression of the distributional effects of what the government has done. However one looks at it, it is clear that those with low incomes at the start of the period have lost more proportionately than those in the middle and just above it. But some at the top have also lost. Some previous analysis has suggested that those in the top fifth or top tenth may have lost as much or nearly as much as the poorest groups, but our analysis suggests that this picture flows from making one set of assumptions about the appropriate starting point and from grouping those near the top with those right at the top.

We look at our results in detail in section 4. Before that, in section 2 we describe the range of policy changes and reforms that are covered by the analysis, and in section 3 the data and methods we use. Following discussion of the main results on distributional effects in section 4 we look at alternative breakdowns in section 5, including by household type, age and region. In these results we concentrate on comparing the systems as they are in 2014-15 with how they were in 2010. In section 6 we compare our overall results with the overall distributional analysis provided by the Treasury and by the Institute for Fiscal Studies. Given that so few households are yet affected by it,² we do not include the introduction of Universal Credit in our main analysis. However, in the longer-term, this will be one of the Coalition's major reforms, so in section 7 we model what might be the

² Just 12,000 in August 2014, compared with the government's current aspiration that 7.5 million households will be on Universal Credit by 2017.

situation in 2019/20, if Universal Credit as currently envisaged was in place (which, of course, it might not be). We also take account in this longer-term view of other changes already announced for 2015/16 and the effects of the new regimes introduced by the Coalition for uprating benefits and pensions from year to year – such as by the CPI (rather than the RPI) for working-age benefits or by the ‘triple lock’ for state pensions. Section 8 summarises the findings and reflects on their implications.

In this analysis there are some general points to bear in mind. First, the modelling does not take account of any behavioural effects of policy change – for instance changed patterns of working as Universal Credit is introduced (with no minimum working hours rule), or changes in how the richest families choose to receive their investment returns with different top levels of income tax. Second, there are important changes which we do not cover,³ such as the greatly increased level of ‘sanctioning’ and removal of benefits for a period,⁴ or tighter conditions for receiving Universal Credit in the future, compared to existing benefits and tax credits.

Also, the data source we use (see below) has incomplete coverage of those with the very highest incomes. We do not, as in, for instance, the Department for Work and Pensions *Households Below Average Incomes* analysis, adjust for this using data from tax records. The analysis therefore is likely to understate the overall value of the *gains* to the top one or two per cent of the distribution from the cut in the top income tax rate from 50 to 45 per cent (if starting from the system as it was in May 2010) or the *losses* from its increase from 40 to 45 per cent and the restriction of personal allowances for those with income above £100,000 (if starting from January 2010).⁵

³ Appendix 1 lists the changes to the system that are taken into account in the modelling, and Appendix 2 includes a description of those that we cannot account for.

⁴ By the end of 2013 the rate had reached 900,000 people being sanctioned each year, compared to between 200,000 and 300,000 per year earlier in the 2000s (see Hills, 2015, chapter 9 for more discussion).

⁵ We do not model the restrictions on pension contributions eligible for tax relief (reduced from £50,000 to £40,000 per year in 2014/15 and from £1.5 million to £1.25 million on a lifetime basis). These tend only to affect those with the very highest incomes, and may affect their savings patterns and incomes in the long run, rather than immediately, depending on how they adjust their behaviour, which is hard to allow for. In addition, there are currently transitional protection schemes in place.

2. How were policies changed?

The Coalition government has introduced some headline-grabbing reforms to taxes and benefits, such as the replacement of most working age means-tested benefits by Universal Credit and a major increase in the income tax personal allowance, made some less-heralded changes that may have a large effect on some households, and announced other changes whose effect will take some years to become fully apparent. The ways in which benefit amounts and tax thresholds were indexed has also played a role in reshaping the distributional effects of benefits and taxes. Initially, one of the government's important decisions (or non-decisions) was *not* to cut benefits as real wages fell as, for instance, had been done by the 'National Government' in the early 1930s. This meant that initially people receiving benefits were protected from parts of the effects of the recession, contributing to the way in which overall inequality fell at the start of the recession. But subsequent decisions to freeze benefits (such as Child Benefit and parts of tax credits), to increase many benefits by only 1 per cent for three years, below the inflation rate, and to switch from RPI-based inflation adjustment to using the CPI, will unwind the effects of this initial decision.

Each of these types of change has distributional implications, and in this section we consider them in detail, first for the period in which the full extent of change is known (2010/11 to 2014/15) and then for an additional period (2014/15 to 2019/20) that allows us to assess the effects of Coalition government changes that have been announced but not yet implemented.

2010/11 to 2014/15

The policy changes implemented in this period and captured in our analysis, in full or in part, are listed in Appendix 1. These should be put in the context of the "business as usual" indexation regime which is set out in Appendix 3. Unless specified in Appendix 1, each element of the system was indexed as specified in Appendix 3. So, for example, the increase in Child Benefit in 2014/15 of 1 per cent was less than what CPI indexation would normally have achieved (2.2 per cent in that year) and less than the increase in the cost of living.

The Coalition government started with a commitment to increase the **income tax** personal allowance to £10,000 and this was achieved (in nominal terms) in 2014/15. The value of the increase is no greater for higher rate taxpayers than others because the basic rate limit (the top of the basic rate band) was reduced accordingly. Taken together, the sum of the personal allowance and the basic rate limit, which is the threshold for higher rate (40 per cent) tax, fell in real terms over the period as a whole. At the same time, the top rate of tax for income above a threshold fixed in cash terms, introduced not long before the Coalition government came to power, was reduced from 50 per cent to 45 per cent.

National Insurance contributions (NICs) were increased by 1 percentage point and the lower thresholds for employee and self-employed contributions were increased by more than regular indexation.

The **tax credits** were adjusted so that they are less generous in real terms, and their reach up the income distribution has been reduced. While the maximum amount of Child Tax Credit paid *per child* has increased in real terms, the 'family' element has been frozen and restricted to low income

families, the addition for babies was removed, and the proportion of childcare costs covered has been reduced (see Appendix 3), alongside cuts in the generosity of Working Tax Credit. Hours of work conditions in Working Tax Credit have been adjusted to require more from couples with children, but less from older people and those receiving Carer's Allowance.

Child Benefit was cut in real terms and reduced for families with anyone earning more than £50,000 (and withdrawn entirely for those earning £60,000 or more). The **Winter Fuel Payment** was cut substantially in cash terms in 2011 when the Coalition did not continue the temporary increases introduced by Labour.

The conditions to receive benefits for disability and incapacity have been made more restrictive, with fewer people entitled, and contributory Employment and Support Allowance time-limited to one year and means-tested thereafter.

Housing support for private sector tenants (**Local Housing Allowance**) has been subject to major restrictions on the maximum amount of rent that may be covered and **Housing Benefit** for public sector tenants has been reduced for tenants deemed to be under-occupying their accommodation, and the deductions that are made automatically for resident non-dependants were increased.

A **maximum cap** on all working age benefits has been introduced except for those in receipt of disability payments or Working Tax Credit.

While **Council Tax** has been frozen for part of the period (and all of it in Scotland) and increases have been restricted in the remainder, so that it has generally fallen in value in real terms, **Council Tax Benefit** has been abolished, with local authorities taking responsibility for any replacement 'Council Tax support'.⁶

In the last two years of the period most working age benefits have been **indexed** by 1 per cent instead of the customary index (see below) which would have resulted in larger increases. On the other hand, over the period, the **Basic State Pension** has been indexed by the highest of the Consumer Prices Index (CPI), the growth in average earnings and 2.5 per cent, and the Guarantee Credit in **Pension Credit** has been increased by the same cash amount. The Savings Credit part of Pension Credit has seen real reductions, however.

The regime of default indexation has also been reformed, generally abandoning the use of the Retail Prices Index (RPI) and the related 'Rossi' index in favour of the CPI. The argument for this has been that the technical construction of the RPI can lead to it over-stating the rise in the prices that people actually pay when they have the ability to switch between similar items. Additionally, the CPI omits the effects of inflation in the housing market, which for some benefit recipients is less relevant if, for instance, their housing costs are covered by Housing Benefit. On the other hand, both the RPI and CPI are measures of general inflation across the UK population: with fuel and food costs rising faster

⁶ See Appendix 2 for an explanation of how this change is modelled.

than other prices,⁷ and forming a greater part of the spending of those with low incomes, either index may well be under-stating the increase in the cost of living for low income households.

Aside from the conceptual and principled issues over the choice of index, the switch in the default basis of indexation implies a lower growth in benefit levels and tax thresholds than would have otherwise been the case (see Table 1 below). There have been other changes in the basis for indexation, as set out in Appendix 3. In addition, also shown there, some parts of the tax-benefit system are traditionally not indexed at all and have remained the same in cash terms for many years (these include capital limits and earnings disregards in means-tests). Furthermore, some of the thresholds introduced in recent income tax reforms have remained fixed in cash terms (see Appendix 4). The effects of such measures may be small on a year to year basis and when inflation and income growth are low, but accumulate over longer periods to play a significant role in changing the fiscal and distributional effects of policies (Sutherland et al., 2008).

2014/15 to 2019/20

Looking five years further ahead we explore the implications of the indexation regime as set out in Appendix 3, and also capture the effects of reforms that have been announced but will not be implemented until 2015/16 or later. These are listed in Appendix 1.

The major reform due to be rolled out in the period up to 2017 is the replacement of the existing regime of almost all means-tested benefits and tax credits for working age people and their families by the **Universal Credit** (UC). This will require a single application and will replace Income Support, income-based Job Seekers Allowance, income-based Employment and Support Allowance, Child Tax Credit, Working Tax Credit and Housing Benefit. It will also replace Pension Credit for couples where one partner is aged under pension age. The maximum amount is the total of a standard allowance, additions for disabled children and adults and for carers; there are additions for housing costs support and childcare costs support. Each of these components has its own rules of entitlement (which are often similar to their equivalents in the pre-existing means-tested benefits and tax credits). As with the out-of-work benefits it replaces, but unlike tax credits, those with financial capital of £16,000 or more are ineligible.

The amount of earnings that is disregarded depends on the composition of the benefit unit, including the capacity to work of the adults and whether UC includes the housing costs element. The maximum amount less earnings disregard is then reduced by one pound for each pound of unearned income, and by 65p for each pound of earned income.

A key feature of UC for those in part-time work is that it does not have a minimum hours of work rule, unlike the current Working Tax Credit. This will mean that some of those working shorter hours than the current rules could gain significantly from the new regime. However, as well as these changes to the way that benefit entitlements are calculated, the conditionality regime faced by UC recipients in work will be substantially different from that which currently applies. In particular, conditionality will apply to two groups of UC recipients who currently face no forms of conditionality: some part-time

⁷ Over the period 2010 to 2014 (second quarter) the all-items CPI rose by 11 per cent while the food component rose by 18 per cent and household fuel by 34 per cent.

workers will face obligations to seek better-paid or longer-hours work, and some adults not in paid work whose partners are in low-paid work will face obligations to look for work.⁸

The restriction on childcare costs introduced into Working Tax Credit will be reversed and up to 85 per cent (instead of 70 per cent) of eligible costs will be covered. In addition, eligible childcare costs for those not qualifying for UC and with sole/both parents in paid work but not paying higher-rate tax will become eligible for a top-up equivalent in value to tax relief at the basic rate.

There are two reforms to **income tax** to be introduced in 2015/16. The first is the introduction of partial transferability of the personal allowance between spouses in married couples. This will apply to 10 per cent of the personal allowance and be limited to basic rate taxpayers. The second is a reform to the way savings income is taxed for those with low incomes: the 10 per cent tax rate charged on an initial tranche of savings income for those without other income above the tax threshold has been replaced by a wider zero rate band for such income.

Finally, the changes also include a further year of restricted indexation of working age benefits, Child Benefit and Local Housing Allowance, increasing levels by 1 per cent rather than the CPI (which is projected to be higher). In contrast, the income tax personal allowance will rise by more than inflation in the same year.

Assessing the effects of the policy changes

Our approach to assessing the effects of these policy changes is to simulate the incomes that a given set of households would have under the policy regimes in place in 2014/15 (and then in 2019/20), and to compare these to what they would have if no reforms had been made to the policy regime in place in 2010/11. A key question is then is what this “no reform” scenario would look like, given that prices and incomes have changed and will continue to do so. There are a number of options for indexing the 2010/11 system, corresponding to natural interpretations, but no neutral or definitive choice can be made (Hills et al., 2014). For example, if all monetary parameters in the 2010/11 regime were adjusted for changes in the price level up to 2014/15, then the benefit system would maintain real living standards (other things being equal) for those at the bottom. On the other hand, if the tax-benefit system kept pace with the growth in market income, then this would achieve fiscal neutrality (and incidentally, would also be close to maintaining incomes at the bottom relative to the middle, so holding relative poverty constant). In the analysis that follows we create counterfactuals by indexing by the change in both the index of average earnings and in the CPI, and we sensitivity-test the price indexation option by also indexing by the RPI. The next section gives the actual values of these indices over the period.

Most previous microsimulation analysis of the effects of policy changes in the UK constructs counterfactuals based on price indexation (see section 6). Both in times of economic fluctuation and also in times of persistent real income growth, it seems important to be aware of the different distributional implications of alternative counterfactuals.

⁸ For more on UC, see Brewer, Browne and Jin (2012), Pennycook and Whittaker (2012) and Brewer and De Agostini (2013, 2014). For an overview of the issues around the change, see Hills (2015), chapter 4. Up to date information can be found at this website: <http://www.dwp.gov.uk/policy/welfare-reform/universal-credit/>

3. Data and methods

To calculate household disposable income under the different policy scenarios, our analysis makes use of the UK component of EUROMOD, the EU tax-benefit microsimulation model and information from the Family Resources Survey (FRS) micro-data. EUROMOD simulates cash benefit entitlements and direct personal tax and social insurance contribution liabilities on the basis of the tax-benefit rules in place and information available in the FRS. Market incomes are taken from the data, along with information on other personal and household characteristics (e.g. age and marital status). Policy instruments which are not simulated are also taken directly from the data: these include most contributory benefits and pensions (due to the lack of information on previous employment and contribution history) and disability benefits (because of the need to know the nature and severity of the disability, which are not present in the data). See Sutherland and Figari (2013) for further information about EUROMOD and De Agostini and Sutherland (2014) for a detailed description of the UK component.

Appendix 2 explains some of the details behind the modelling and the assumptions made. In particular, we have chosen to try to reflect non take-up of means-tested benefits and tax credits because of the importance of representing those not receiving their entitlements in the income distribution. The main effect is through the ranking of people according to their household income. Those not taking up naturally appear at or near the bottom of the distribution. As explained in the Appendix, we assume (to the extent that is possible) that take-up behaviour remains the same across policy regimes.

More generally, the measure of income that is used to rank individuals in the analysis of the effect of policy change across the income distribution is critical to the picture that emerges. In this analysis, except where noted otherwise, we use a common ranking by household income from the starting point of our analysis in 2010/11, using 2010 simulated disposable household income and adjusting for differences in household size and composition using the modified OECD equivalence scale. Other analytical choices are made in other studies (as illustrated in section 6 of this paper).

In this analysis we make use of 2009/10 FRS data and update the values of market incomes to 2014/15 levels using appropriate indices. Benefits, pensions and Council Tax which cannot be simulated with the information available in the FRS are also updated to 2014/15 levels using available information on the indexation or change in average amounts of these (see Appendix 2). No adjustments are made for changes in the labour market, household composition or demographic characteristics of the population over this period. Tax-benefit policies for 2014/15 are then simulated using EUROMOD and the resulting levels of household income are compared with those applying the policy system that the Coalition government inherited in May 2010.⁹

As explained above, we explore the implications of indexing the 2010/11 tax benefit system forward to 2014/15 by a range of different factors. We also evaluate 2019/20 policies in 2014/15 terms. Table 3.1 shows the value of the three indexes, taking 2014/15 as the base year.

⁹ We refer to this as the 2010/11 system since the Coalition did not make any major relevant policy changes that were implemented later during the 2010/11 fiscal year.

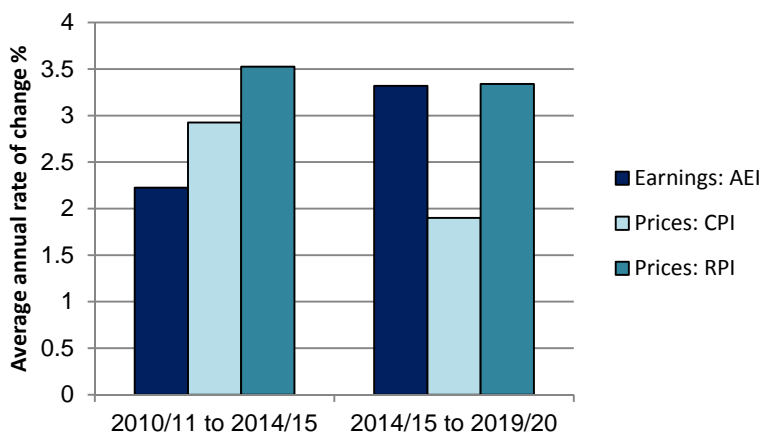
Table 3.1 Counterfactual indexation factors

	Earnings: AEI	Prices: CPI	Prices: RPI
2010/11	1.089	1.117	1.141
2014/15	1.000	1.000	1.000
2019/20	0.834	0.905	0.833

Sources: Earnings: Fiscal year average of monthly ONS Average Weekly earnings Index (K54U) <http://www.ons.gov.uk/ons/datasets-and-tables/data-selector.html?cid=K54U&dataset=emp&table-id=AWE15>; Consumer Prices Index (CPI): Fiscal year average monthly Eurostat prc_hicp_midx <http://epp.eurostat.ec.europa.eu/portal/page/portal/hicp/data/database>; Retail Prices Index (RPI): Fiscal year average All Items ONS (CHAW). Projections from the latest data to 2019/20 use assumptions from OBR March 2014 <http://budgetresponsibility.org.uk/economic-fiscal-outlook-march-2014/> Table 3.5.

The annual average rates of change of the three indexes in the two time periods are plotted in Figure 3.1. This illustrates how the relative movements of the three indexes are different in the two periods and, generally, differ within periods. The choice of which to use in constructing the counterfactual will clearly affect our assessment of the size of the policy changes.

Figure 3.1: Annual average rate of change of earnings and price indexes 2010/11-2014/15 and 2014/15-2019/20



Sources: See Table 3.1.

In the first four years of Coalition government real earnings fell on average (adjusted using either price index, as nominal earnings grew more slowly than either). Indexing the 2010/11 system by CPI would make it seem more generous relative to the 2014/15 system than if nominal average earnings growth (AEI) is used. Current OBR forecasts for 2014/15 to 2019/20 are for earnings to grow faster than CPI and so using earnings indexation will make actual policy changes seem less generous than if we assume price indexation. In both periods RPI rose faster than CPI (for the kind of reasons discussed in Section 2), showing how the policy to change the basis of most indexation from RPI to CPI tends to reduce the nominal rate of growth of benefit levels and tax thresholds.

The effect of these “business as usual” counterfactuals compared with what actually happened between 2010/11 and 2014/15 for some example tax thresholds and benefit rates is shown in Table 3.2. For instance, in 2010/11 Child Benefit for the first child was £20.30 per week. If it had been uprated by the CPI each year until 2014/15 it would have been worth £22.67 by then, or £22.10 uprated by earnings growth, or £23.16 if it had been uprated by the RPI. In fact it was only worth £20.50 in 2014/15. As it was barely increased in nominal terms, its value was cut compared to any of the counterfactual indexes.

Table 3.2: The value of selected benefit levels and tax thresholds in 2010/11 and 2014/15 under a range of assumptions

Indexed by:	2010/11	2010/11 policies in 2014/15			2014/15
		AEI	CPI	RPI	
Child Benefit: first child £/w	20.30	22.10	22.67	23.16	20.50
Pension Credit Guarantee: single person £/w	132.60	144.38	148.09	151.27	148.35
Income Support single person £/w	65.45	71.27	73.09	74.67	72.40
Income tax threshold £/y	6,475	7,050	7,231	7,387	10,000
Income threshold for higher rate income tax £/y	43,875	47,774	48,998	50,054	41,865

Pension Credit, on the other hand, maintained its real value (using CPI) and grew faster than earnings but would have been uprated by more if it had still been linked to the RPI in this period. Income Support (and income-tested Jobseeker’s Allowance and Employment and Support Allowance) for working age people out of work, on the other hand, fell in value relative to the CPI, though still rose by more than the average earnings of those in work. The income tax threshold was substantially increased when considered relative to any of the counterfactual indexes. The effect of this on reduced tax liability was mitigated for higher-rate taxpayers by a nominal reduction in the level of the threshold for higher rate tax.

The information in Table 3.2 suggests that, other things being equal, children may lose out relatively to older people and that middle-to-high income households will gain relative to those at the bottom and the top. However, there are many other monetary parameters within the tax-benefit system, and the net effect of changes in them all for any household will be the result of a complex combination of calculations, the results of which will vary depending on their composition and circumstances. In the following sections we analyse the effects of all the changes across the whole population.

4. Effects of Coalition policy changes 2010/11-2014/15 across the income distribution

Figure 4.1 (a) and (b) show our central results – the effects of Coalition changes to taxes and benefits and indexation decisions compared with what the system they inherited in May 2010 would have become if unreformed but uprated in line with CPI inflation (in the top panel) or with the growth in average earnings (in the bottom panel).¹⁰ The results show average gains or losses from six broad parts of the direct tax and benefit systems, and (as the solid line) the net effect of all of them together combining the various negative and positive effects. Negative effects (downward pointing parts of the bars) are due to increases in tax and contribution liabilities, or to reductions in benefit and pension entitlements (for those receiving them), positive effects to tax and contribution cuts or benefit increases. This is shown for each twentieth ('vingtile') of individuals. We divide the population this finely because of the importance of the differences in results between groups right at the top and the bottom of the distribution. There is a limit to how finely we can make these divisions because our results would not be statistically reliable if the sample sizes became too small. Confidence intervals at the 95% level around the net effects are shown on the Figures (and some others later in the paper), indicating that the broad shape of the effect is reliable.¹¹

The components are: income tax; National Insurance contributions (employee and self-employed); "state pensions" (including the Basic State Pension, War Pension and Widow's Pension); Council Tax, net of Council Tax benefit or Council Tax support (referred to in graphs as Net Council Tax); non means-tested benefits (including Child Benefit, Winter Fuel Payments, Attendance allowance, Disability Living Allowance, contributory Jobseeker's Allowance, contributory Employment and Support Allowance, Industrial Injuries pension, Carer's Allowance, Severe Disablement Allowance, Statutory Sick Pay, Statutory Maternity Pay, Maternity Allowance, training allowances, Student payments, Student Loan); and means-tested benefits (including Working Tax Credit, Child Tax Credit, Income Support, income based Employment and Support Allowance, income based Jobseeker's Allowance, Pension Credit, Housing Benefit and the effect of the benefit cap).¹²

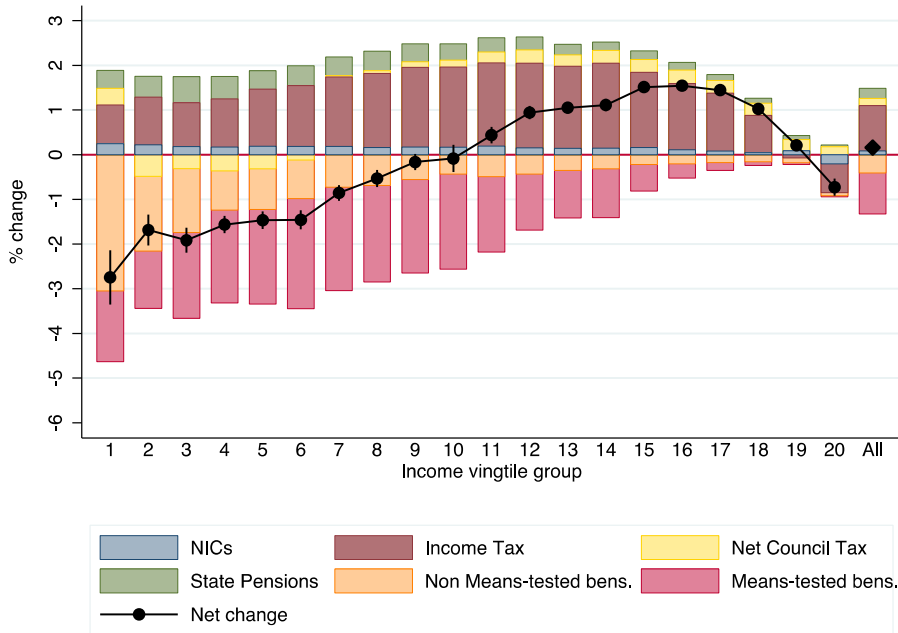
¹⁰ Figure A4.1 in Appendix 4 shows equivalent results, if the base had been increased in line with the growth in the RPI. This would have been faster than either CPI or AEI-indexation and so shows larger losses, particularly at the bottom of the income distribution.

¹¹ We bootstrap the average proportional change in equivalised household disposable income for each vingtile group to estimate its empirical distribution and show the 2.5th and 97.5th centiles.

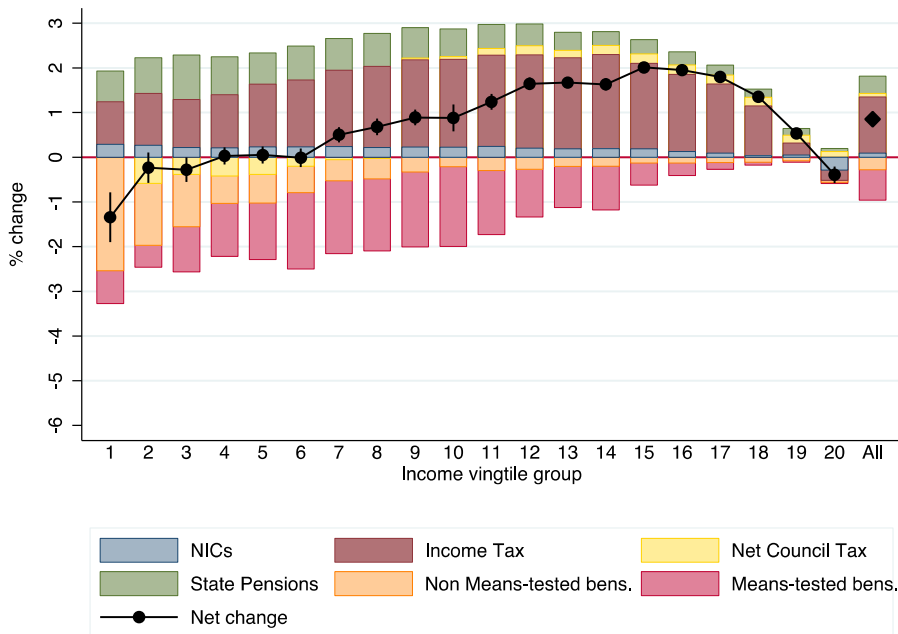
¹² In our treatment, we include the effect of withdrawing Child Benefit from higher-rate taxpayers as an increase in tax rather than a reduction in Child Benefit. State earnings-related pensions, along with private occupational pensions are assumed to be uprated by CPI throughout and hence changes to these income components are factored out of our analysis. In later figures, tax-free childcare is included as part of non means-tested benefits, while Universal Credit is included in means-tested benefits (replacing other means-tested benefits for working age benefit units).

Figure 4.1: Percentage change in household disposable income by income vingtile group due to policy changes 2010 to 2014/15

(a) Compared with May 2010 policies uprated to 2014/15 using CPI



(b) Compared with May 2010 policies uprated to 2014/15 using AEI



Notes: 2010 policies are as in May. Observations are ranked into vingtile groups using household income in 2010 equivalised using the modified OECD equivalence scale. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

Looking first at the results compared to price-indexation, as is most commonly used in this kind of analysis, in the top panel, a first observation is that *overall* the changes were neutral. Means-tested benefits were cut, compared to a price-indexed system, and people paid less net Council Tax (as cuts of what was Council Tax Benefit were more than offset by Council Tax itself falling in value in real terms). But people gained from reduced Income Tax liabilities (with the increased personal allowance) and from state pensions rising faster than CPI-inflation. Remarkably, given that this was a time of austerity, the net effect of the reforms emerges as neutral to the public finances.

But this neutral effect hides a substantial distributional change. Overall, the poorest twentieth lost nearly 3 per cent of their incomes and the next five-twentieths approaching 2 per cent. But, with the exception of the top twentieth, the income groups in the top half of the distribution were net gainers. From the bottom to four-fifths of the way up, the changes were clearly regressive, hitting those lower down hardest as a share of their incomes. This is because benefit reductions were greater for the bottom half than their gains from lower Income Tax.¹³ But rising through the top fifth of the distribution the gains from higher income tax allowances are increasingly offset by other changes, so that those in the penultimate twentieth break-even, and the top twentieth make a small loss on average – although it should be added that within this, those in the top one per cent represented in this survey emerge as narrow *gainers* as a result in the cut of the top marginal rate from 50 to 45 per cent, comparing the 2014/15 system with that in place in May 2010.¹⁴

On this basis, the reforms had the effect of making an income transfer from the poorer half of households (and some of the very richest) to most of the richer half, with no net effect on the public finances.

The bottom panel shows the results if the comparison is made with the May 2010 system uprated in line with the growth of average earnings. This would be consistent with preserving a system that had the same *relative* generosity as at the start, and would thus be neutral towards inequality. In times when real incomes are growing, this kind of base usually shows a less favourable position for the bottom than when a price-linked base is used.¹⁵ But over this period, when real earnings were falling, the comparison is with a *less* generous base system – the one that would have emerged if the real value of benefits and tax allowances had been *cut* in line with real earnings. Against this comparator, households as a whole *gain*, by an average of 0.9 per cent of disposable income. In other ways, the pattern is similar to that in Figure 4.1(a), but with greater differences for those in the bottom half. The bottom three-twentieths are still worse off, however, the bottom group by 1.3 per cent, while others have net gains, apart from the very top group. The largest gains – between 1.2 and 2.0 per cent of

¹³ Note that some of the poorest households are those who do not take up benefits they might be entitled to. As a result, they are unaffected by changes in the values of those benefits. For instance, some of those who might have claimed Council Tax Benefit are unaffected by its reform, but do gain from the freeze in gross Council Tax.

¹⁴ See Appendix Figure 4A.2 for a version of Figure 4.1a giving its results by percentile, bearing in mind that there are much wider confidence intervals for such results, and that the original data source has both incomplete coverage of those with the very highest incomes, and understates the highest incomes. Also, these estimates assume that there was no forestalling on the part of potential top rate taxpayers, either holding income until the tax rate was lowered or declaring income early, before the 50% rate was introduced in the first place in 2010.

¹⁵ See, for instance, Sefton, Hills and Sutherland (2009), figure 2.5, or Adam and Browne (2010), figure 3.3, for the Labour period from 1996-97 to 2008-09.

disposable income on average – are for those in the top half of the distribution, but below the top three twentieths. On this basis the changes are also shown as regressive until the very top, with larger net gains for the top half of the distribution. On this basis, the better-off half of households were gaining both from the overall system being more generous than it would have been with income-indexation, and from a net transfer from the poorest fifth of households.

Figure 4.1 shows that using either comparator, reductions in the value of both means-tested and non means-tested benefits were the main net contributing factor to income losses. Looking at the detail, the overall net effects are the result of reinforcing changes to components of the system:

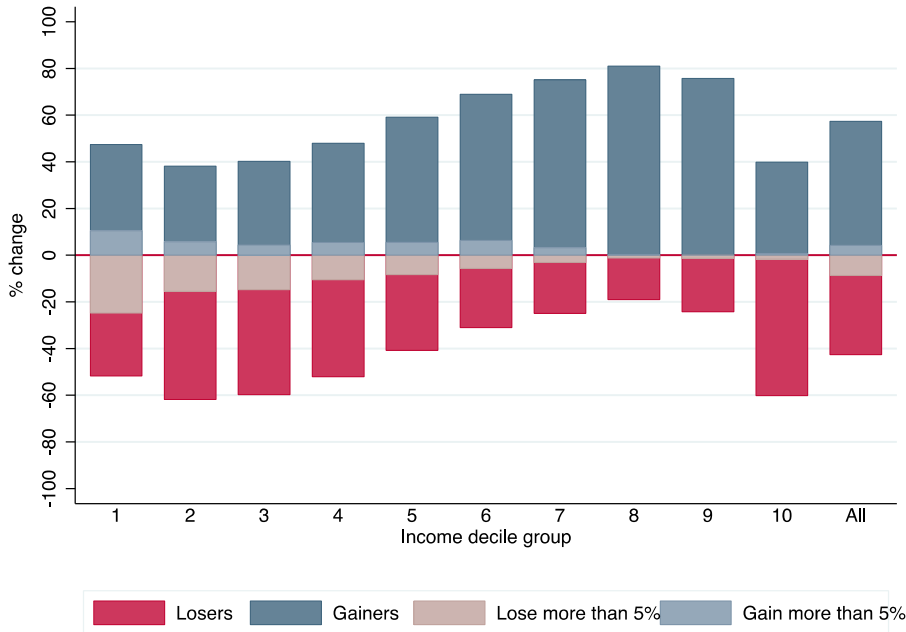
- Changes to means-tested benefits have meant the largest proportionate losses to the bottom half of the distribution, particularly to those just below the middle.
- Changes to non means-tested benefits have been straightforwardly regressive – equivalent to 3 per cent of income (against a price-indexed base) at the bottom, but with very small effects in the top half.
- Changes to Council Tax and associated benefits have meant losses for the bottom third, but gains for the top half of the distribution. Right at the bottom though – including some households that fail to claim means-tested support, and so have not lost through its reform – there are some gains from the freeze in the level of the tax.
- Income tax changes – notably the real increase in personal allowances – have meant gains for all income groups, but have been worth most proportionately for those in the middle of the distribution. It is only the top twentieth that is paying more income tax than it would have done under the old (price-linked) system. Within this group, however, the very top 1 per cent are paying less income tax in this analysis, because of the cut in the highest marginal rate from 50 per cent in May 2010 to 45 per cent in 2014/15.
- National insurance changes (a higher threshold offset by a higher contribution rate) resulted in small gains for all groups apart from the top twentieth, which is paying slightly more.
- The more generous indexation of state pensions meant gains for all income groups, although with the largest proportionate gains to the bottom half of the distribution, and least at the very top.

The regressive overall effect is therefore largely the result of households nearer the bottom losing the most from reduced means-tested and non means-tested benefits, while those in the top half have gained most from lower income tax, with the exception of the very top twentieth, which is paying more in income tax and National Insurance Contributions than it would have done.

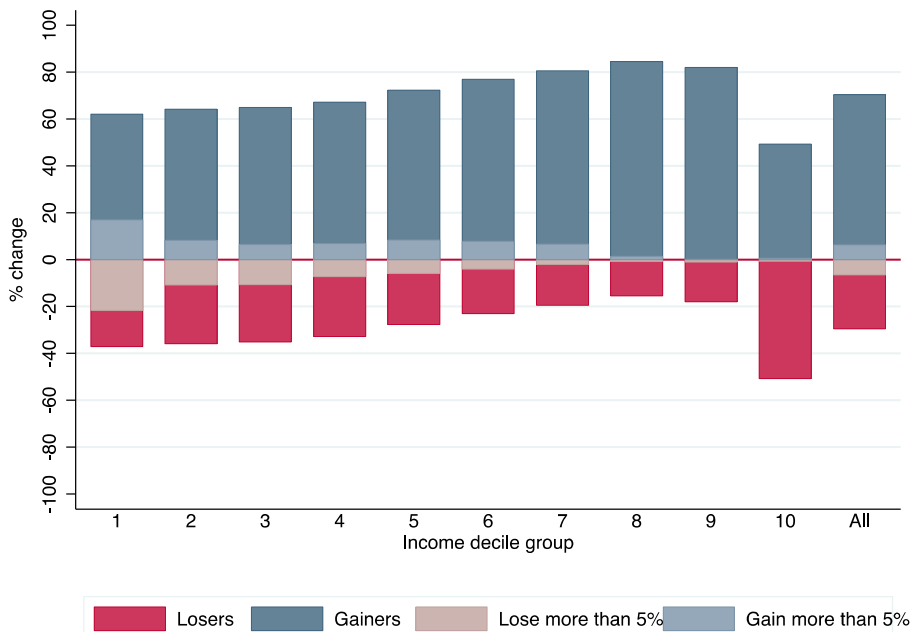
These results show the average position of all of those within each twentieth of the distribution. Within each income group, however, there are gainers and losers, as is shown in Figure 4.2 (by decile group for clarity). Compared with a price-linked base, the top panel shows that overall about 57 per cent gain and 43 per cent lose. However, in the bottom three-tenths and in the top tenth, losers out-number gainers. Looking at larger changes (by more than 5 per cent either way) it is striking that a quarter of those in the bottom tenth lose amounts equivalent to more than 5 per cent of their incomes, although a tenth of them gain by more than 5 per cent. Compared to an earnings-linked base in the bottom panel, overall gainers out-number losers more strongly (by 70 per cent to 30 per cent), but even on this comparison, more than 20 per cent of those in the bottom tenth lose more than 5 per cent of their incomes.

Figure 4.2: Gainers and losers due to policy changes 2010 to 2014/15

(a) Compared with May 2010 policies uprated to 2014/15 using CPI



(b) Compared with May 2010 policies uprated to 2014/15 using AE



Notes: 2010 policies are as in May. Observations are ranked into decile groups using household income in 2010 equivalised using the modified OECD equivalence scale. Source: Authors' calculations using EUROMOD G1.5.

5. Effects of Coalition policy changes 2010/11-2014/15 by household and personal characteristics

As well as being able to break the effects of the changes down by people's position in the income distribution, we examine what they show when households are broken down in other ways.¹⁶ In doing this we concentrate on the results compared with an *earnings*-linked base, that is, equivalent to those in Figure 4.1b (as this is the more neutral assumption in terms of income distribution). The results compared to a price-linked base (see Figure A4.3 in Appendix 4 for results by age) show generally similar differences between groups, although with a somewhat less favourable (or more unfavourable) position for those with a large proportion of income coming from benefits or pensions (such as lone parent families or older pensioners).

First, Figure 5.1 shows distributional effects by the age group of each individual, taking account of all income changes in their household.¹⁷ It is clear that children have been the least favourably treated, together with those in their 30s and early 40s (we showed earlier that, overall, households 'gain' around one per cent of income compared to a base in which the real values of benefits and tax brackets would have been changed in line with average earnings).

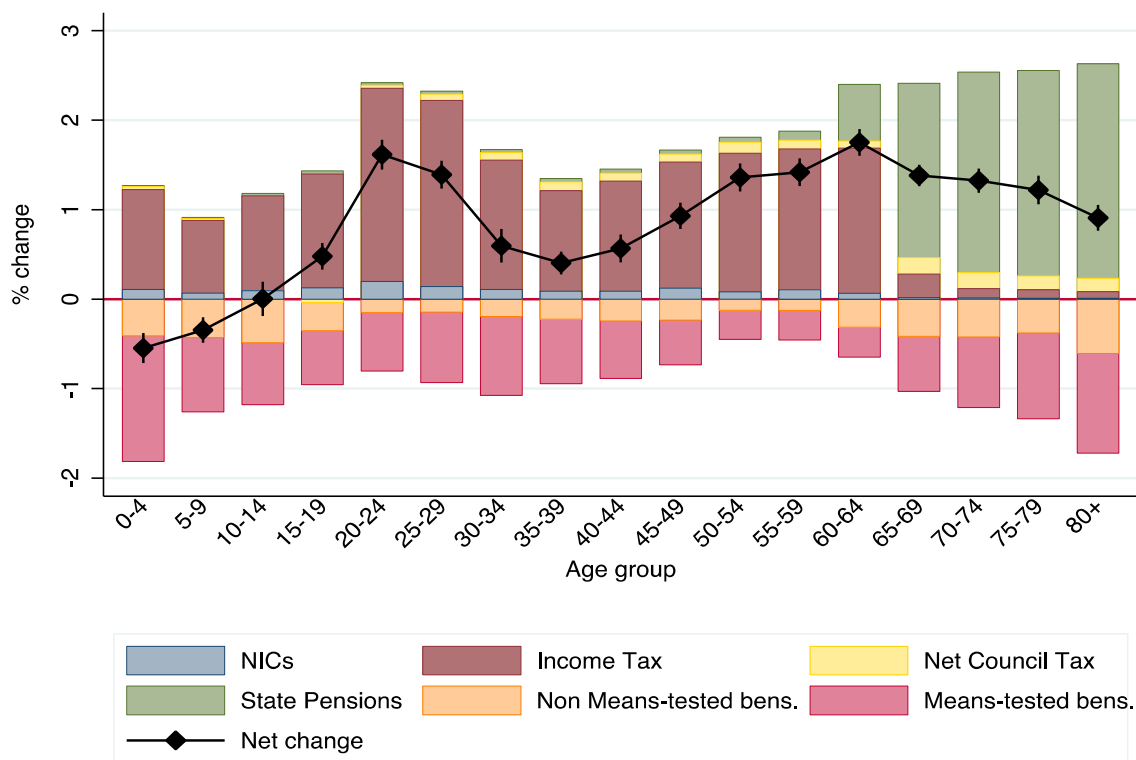
Interestingly – given how badly people in their 20s were doing in the labour market at the start of the recession¹⁸ – the changes to taxes and benefits favoured that age group on average, as they tended to gain from direct tax changes, and not to lose much from benefit cuts. Those in their early sixties were the greatest beneficiaries, gaining from direct tax changes and (for some) from favourable indexation of pensions, and with, for instance, 'empty nesters' without children losing less than others from benefit cuts. Those aged over 65 had gains averaging more than 2 per cent of their incomes from 'triple-locked' state pensions rising much faster than earnings, although this was partly offset by cuts to other benefits, particularly for the oldest pensioners. Direct tax changes had little effect on those over 65.

¹⁶ It would be very interesting to break down the effects by gender, as well as the characteristics discussed here. However, given the underlying assumption that households share their incomes, men and women in couples would be allocated the same change, which might or might not be appropriate, but would dominate the results. Looking at the effects using a range of assumptions on sharing, and focussing on the effects on individual incomes (received in their own right) would be instructive, but is beyond the scope of this exercise.

¹⁷ Note that the analysis assumes that, for instance, in a household consisting of a young adult living at home with his or her parents, each person is affected in the same way by the policy changes (as in, for instance, DWP's *Households Below Average Income* analysis). In reality this sharing may represent what will happen within some households, but not within others.

¹⁸ Hills, Cunliffe, Gambaro and Obolenskaya (2013), section 9.

Figure 5.1: Percentage change in household disposable income by age group due to policy changes 2010 to 2014/15 (2010 policies uprated to 2014/15 using AEI)

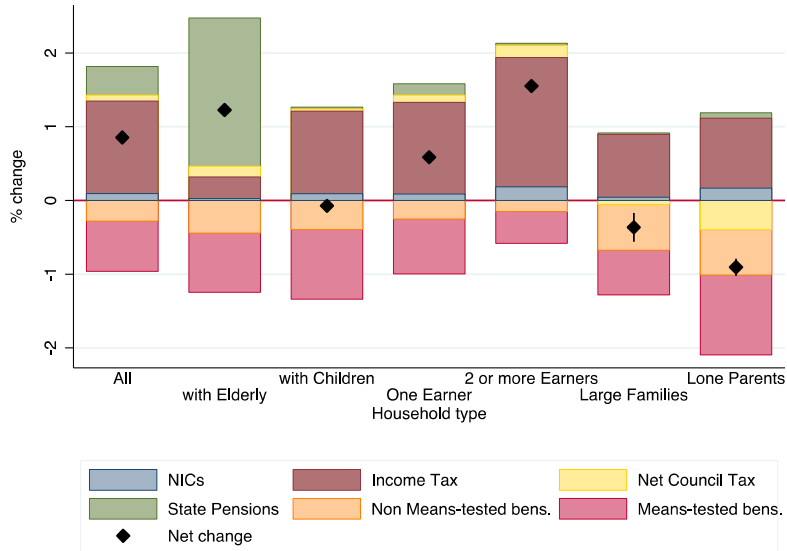


Notes: 2010 policies are as in May. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

Some of these age-related differences are closely linked to the differences between different kinds of household, shown in Figure 5.2. Two-earner households, and those with elderly members were the most favourably treated, as a result of direct tax changes and state pensions, respectively. By contrast, lone parent families did worst, losing much more through cuts in benefits and tax credits and higher (net) Council Tax than they gained through things like higher income tax allowances. Families with children in general, and large families (with three or more children) in particular also did much worse than the average.

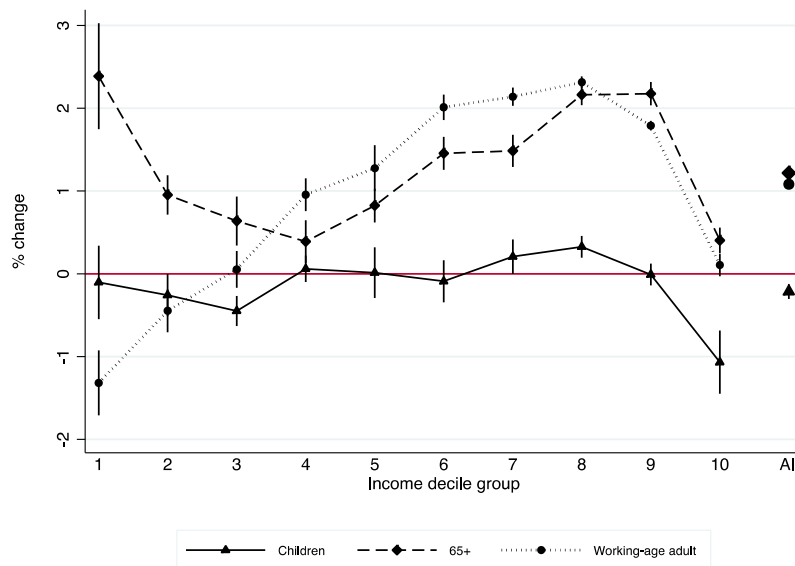
These effects were not, however, uniform across each household type or age group. Figure 5.3 shows net effects on individuals (reflecting their households' incomes) in three different age groups by their position in the overall income distribution. The most favourably treated are working age adults and pensioners with higher (but not the highest) incomes, and low income pensioners. The least favourably treated are low income working age adults and children, together with children in the highest income households (at this level of aggregation). In the latter case this is due to smaller gains (or losses) from income tax changes than lower down the distribution, combined with the withdrawal of Child Benefit from higher-rate taxpayers. Indeed, across most of the middle and top of the distribution, children fare worse than the other two groups. Gains from reductions in income tax and NI contributions are entirely offset on average by cuts (relative to earnings) in Child Benefit and removal of the family element of the Child Tax Credit.

Figure 5.2: Percentage change in household disposable income by household type due to policy changes 2010 to 2014/15 (2010 policies uprated to 2014/15 using AEI)



Notes: 2010 policies are as in May. “Large families” are households with 3 or more children. Note that the categories are not exhaustive – for instance, some lone parents will have large families – and they do not cover all kinds of household. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors’ calculations using EUROMOD G1.5.

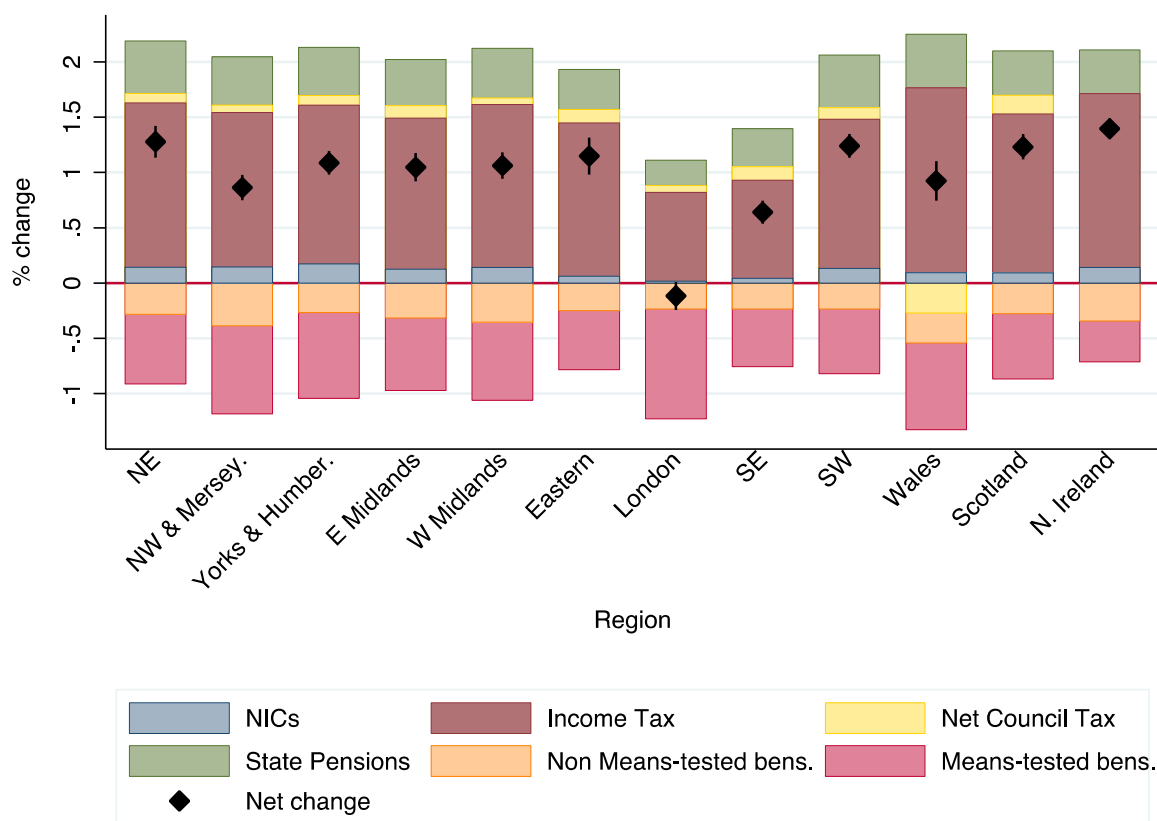
Figure 5.3: Percentage change in household disposable income due to policy changes 2010 to 2014/15 by household income decile group and age group (2010 policies uprated to 2014/15 using AEI)



Notes: 2010 policies are as in May. Observations are ranked into decile groups using household income in 2010 equivalised using the modified OECD equivalence scale. Children are defined as people aged under 16 or under 19 and in full time non advanced education. Working age adults are aged under 65. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors’ calculations using EUROMOD G1.5.

Finally in this section, Figure 5.4 shows the average effects of the changes by region. In general the differences between regions are small, with one striking exception – London. There are two effects here. First, Londoners gain less from direct tax changes on average than other regions. This is not because Londoners at any given income level are worse treated by the income tax changes, but because the polarisation of incomes in the capital means that fewer of them are in the groups that did best from income tax changes. At the same time, both the lowest-income Londoners and those with middle incomes did particularly badly through reforms to means-tested benefits and tax credits. It was in London that changes such as limits to Housing Benefit and overall benefit receipt had their biggest effects.¹⁹

Figure 5.4: Percentage change in household disposable income due to policy changes 2010 to 2014/15 by region of the UK (2010 policies updated to 2014/15 using AEI)



Notes: 2010 policies are as in May. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

¹⁹ The detailed analysis for London by national income decile group is included in Appendix 4 (Figure A4.4). As the confidence intervals indicate, the sample size for London is not large enough for robust conclusions to be drawn about the effects across income decile groups.

6. Comparison with other analysis

Either of the comparisons in Figure 4.1 gives a more clearly regressive picture than, for instance, those published by the Treasury or the Institute for Fiscal Studies (IFS).²⁰ For instance, Figure 6.1a shows Treasury analysis of the cumulative effect of the tax, tax credit and benefit changes that it analyses since the change of government up to 2015, but including 'changes that were announced before June Budget 2010 that have been implemented by the government'²¹ (i.e. including the top rate tax changes introduced from April 2010). This suggests that losses (including from indirect tax changes) were around 1 per cent of income for the bottom two tenths of the income distribution, but there were gains for the sixth to eighth tenths, with the next-to-top tenth breaking even and the top tenth losing most, 2 per cent of its income. It also allows for changes in indirect taxes.

Figure 6.1b shows recent IFS analysis of changes since January 2010 (including announced changes up to April 2015). This also shows a regressive picture between the bottom and seventh tenths of the distribution, and shows the top tenth losing a greater proportion of its income than the other groups.

The Treasury analysis, like ours, allows for incomplete take-up of benefits, but IFS assumes full take-up. The IFS analysis adjusts the top of the income distribution for non-response and income under-reporting by those with the highest incomes using information from the Survey of Personal Incomes, based on tax records. This is not done in the Treasury analysis, or in ours. The IFS analysis, like ours, ranks people by their household income before any policy changes but the Treasury analysis ranks by income *after* the changes. Both the IFS and the Treasury include the effects of indirect tax changes, unlike our analysis in Figure 4.1. They assume a price-linked base, and so are comparable with Figure 4.1a.²²

The big difference in the overall impression of these analyses is not the regressivity between the bottom and the seventh and eighth tenths of the distribution, but the way in which the top tenth is shown to have lost most as a share of its income.

Figure 6.2 begins to unpick why these differences arise, demonstrating how our own results change when analysed in different ways. The top panel is analysed by twentieths and replicates the IFS analytical choices and assumptions, as far as possible. The bottom panel is analysed by tenths and replicates the Treasury methods, with some exceptions.

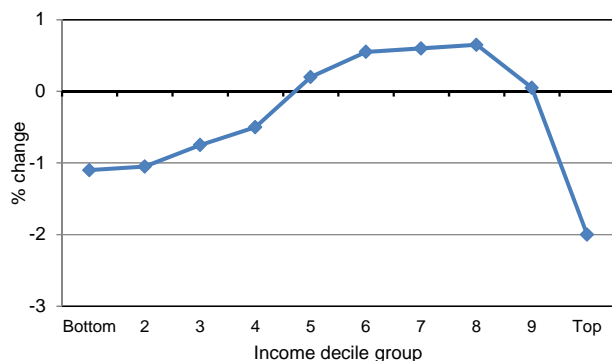
²⁰ For example HM Treasury (2013) and Phillips (2014).

²¹ HM Treasury (2013), para. 1.1.

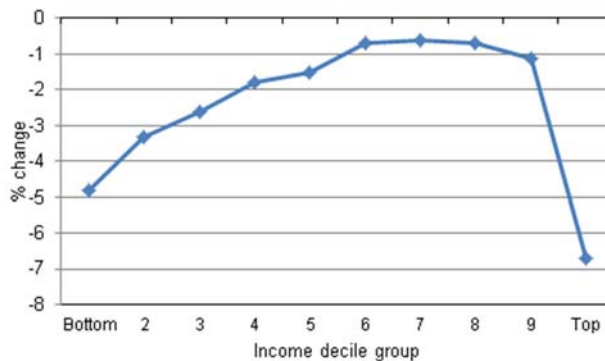
²² The IFS analysis, like ours, uses FRS data, but for a different year. The Treasury analysis uses data from the Living Costs and Food survey. Thus we would not expect our results to be identical, even if all conceptual differences were removed.

Figure 6.1: Percentage change in household disposable income due to policy changes 2010 to 2014/15; estimates from other analyses

(a) HM Treasury (2013) chart 2D



(b) IFS analysis: Phillips (2014) post Budget 2014



Notes and sources: see text

A critical difference is in what the base system is assumed to be – in particular whether the starting point is taken as the January 2010 system (as is done explicitly in the IFS analysis or implicitly in the Treasury analysis by incorporating pre-announced changes).²³ The first line in the top panel shows the net difference by twentieths of the distribution (as in Figure 4.1(a) but now assuming full-take-up), starting from a price-linked *May* 2010 base. The second line in the panel shows what the results look like starting from a *January* 2010 base. This only makes a material difference for the top twentieth, which is now shown to lose more than 3 per cent of income, rather than less than 1 per cent. This is because some of its members lose from the top rate being 45 per cent in 2014/15, compared to January 2010, as opposed to gaining from the 45 per cent rate, compared to the 50 per cent top rate in May 2010. Doing that shows the proportionate losses of the top twentieth as being as great as those at the bottom. A critical issue is therefore who takes the credit (or blame) for top rate tax increases that came into effect in April 2010 (announced by Labour Chancellor Alastair Darling in March 2009).

This effect would be even greater if the survey we are using was adjusted for its under-reporting of the highest incomes, as in the IFS analysis, which is part of the explanation for the greater losses shown right at the top of Figure 6.1 (b): losses for those with the very highest incomes affect the average for the top 10 per cent as a whole considerably.

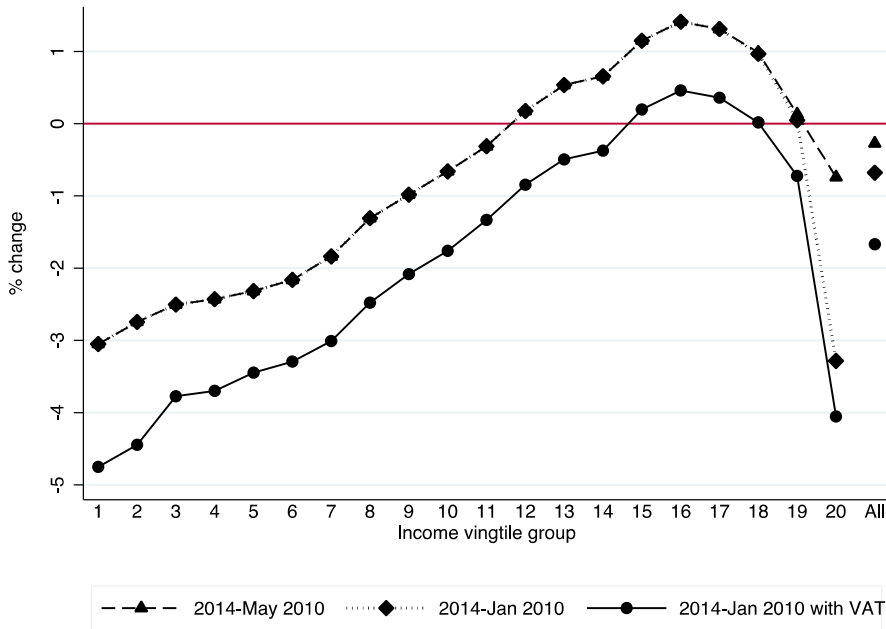
While we cannot allow for the effects of all indirect tax changes, the third line in Figure 6.2a adds in estimates of the effects of the rise in VAT.²⁴ This is revenue-raising overall, and has a regressive effect, increasing the loss for the bottom twentieth to nearly 5 per cent of income, compared to around 4 per cent for the top twentieth.

²³ Earlier IFS analysis distinguishes the changes by when they were announced. See for example Browne (2011).

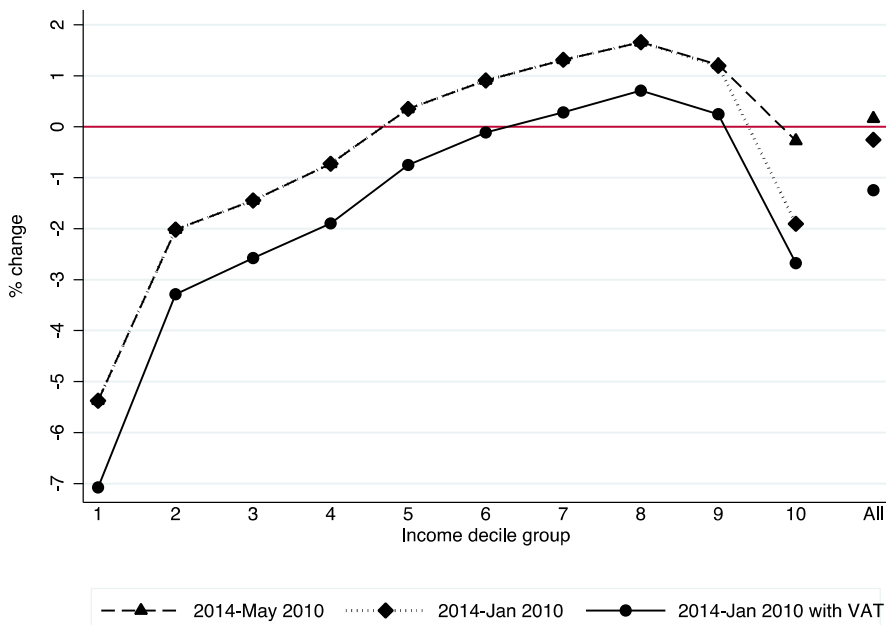
²⁴ See Appendix 2 for a description of how this is done.

Figure 6.2: Percentage change in household disposable income due to policy changes 2010 to 2014/15: varying the analytical choices and assumptions

(a) 2010 policies updated to 2014/15 using CPI; full take-up



(b) 2010 policies updated to 2014/15 using CPI; partial take-up



Notes: 2010 policies are as in January or May (as specified). Observations are ranked into decile or vingtile groups using household income equivalised using the modified OECD equivalence scale. Panel (a) ranks using income with 2010 policies and panel (b) ranks using income with 2014/15 policies. Source: Authors' calculations using EUROMOD G1.5.

The lower panel of Figure 6.2 shows the same set of three results analysed by *tenth* or decile group of the income distribution. This combines what happens to each pair of the finer groups but using our non take-up assumptions, like the Treasury and ranking households by the post policy-change incomes, again like the Treasury. Neither of these analytical choices affects the situation at the top of the distribution to any great extent. Including VAT and starting from January 2010, the loss for the top tenth is around 3 per cent, closer to that for the top than for the second twentieth, because the *average* change is dominated by what happens to the much higher income top group. But this average does not apply to all of the top tenth. Indeed, it does not apply to all of the top twentieth – people have to be within the top one or two per cent to be affected by the top rate tax changes (increases starting from January 2010, or cuts starting from May 2010).

At the bottom of the distribution, assuming complete take-up of means-tested payments (Figure 6.2a) brings our estimate of the loss to between 4 and 5 per cent in the bottom two twentieths, which is comparable to the IFS estimate for the bottom decile group shown in Figure 6.1b. This is roughly double what we find in the right-hand panel of Figure 4.1 where non-take up is accounted for. If means-tested payments are not reaching those entitled to them, then they do not lose when their value is cut. If one is interested in immediate effects on living standards, allowing for partial take-up would seem most appropriate. If the concern is with entitlements, assuming full take-up might be most appropriate.

Ranking observations by household incomes after the policy changes, as in Figure 6.2b, shows the losses at the bottom to be even larger: around 7 per cent. This is due to low income losers from the changes appearing lower down the distribution if it is ranked in this way. However, the Treasury analysis also ranking in this way and allowing for non take-up, shows much smaller losses at the bottom of the distribution than our analysis – around 1 per cent. This may partly be explained by the use of different micro-data or by different treatment of zero and negative incomes in the two models.

Each of these approaches has its advantages and disadvantages, but this comparison shows quite how critical such key decisions can be, for instance in judging whether those with high incomes have been affected as strongly as those with low incomes.

7. What are the effects of policy change in the longer term?

Figure 7.1 shows the main results of extending our analysis into the future, comparing the system that would emerge in 2019/20 with the May 2010 system, if it had been updated in line with average earnings growth (as projected by OBR) and allowing for other already planned policy changes. The results can therefore be compared with the position up to 2014/15 shown in Figure 4.1b above. However, we show the results by decile group, rather than by vingtile. As discussed below, some of the gains due to Universal Credit for some of those with the lowest incomes can be very large in percentage terms and would dominate the picture by vingtile, meaning that we could not show the detail of what was happening to other groups.

First, the overall position is – in these earnings-linked terms – roughly neutral between the two years. In other words, by 2019/20 current indexation policies would reverse the overall net gain of 1 per cent of average household income by 2014/15 (compared to earnings-linking) shown in Figure 4.1b. Households would pay roughly the same income tax under the 2019/20 system as in May 2010, with reductions that we found for the 2010/11 to 2014/15 period being offset by the effects of fiscal drag in the later period. The overall losses in the value of benefits would be increased beyond those found for the 2010/11 to 2014/15 period, despite the introduction of UC.

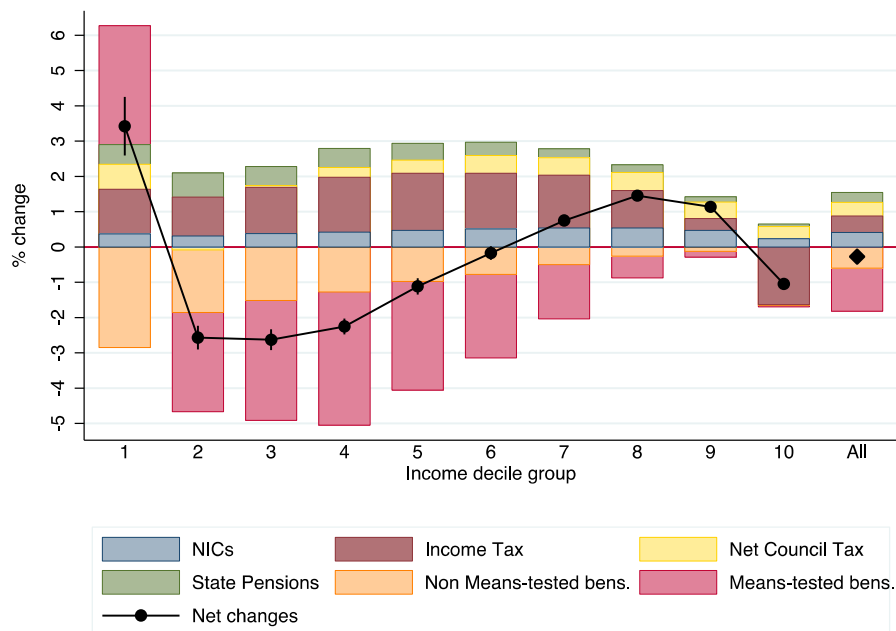
Second, the changes through to 2019/20 maintain the same regressive pattern for the bulk of the population between the second and the eighth decile groups as was seen up to 2014/15. Indeed, the regressivity is strengthened with the second group losing 2.6 per cent of its income overall, compared to 0.1 per cent up to 2014/15, and the eighth group still gaining by more than 1 per cent of its income. The figure also shows that the changes are progressive right at the top, though, with the top tenth losing 1 per cent of its income, mainly as a result of higher income tax (as a result of fiscal drag), rather than breaking even as up to 2014/15.²⁵

But right at the bottom, the picture is very different, with a net gain of more than 3 per cent for the bottom tenth by 2019/20, compared to a loss of more than 0.5 per cent by 2014/15. The difference is entirely due to the effects of introducing UC, which is simulated to lead to very large gains as a percentage of income to some households who do not receive all of the benefits that it replaces. These very large changes are chiefly due to the way we have chosen to reflect non-take-up of benefits: we have assumed that a household currently taking-up *any* of the benefits that UC replaces would then take up UC, and this can result in large percentage gains for those only taking up some of their entitlements under the old system (e.g. Housing Benefit but not Income Support), who as a result have very low incomes. Although this is a modelling assumption, it reflects one of the main arguments put forward for UC consolidating various payments and claims processes into one.²⁶ It is possible, however, that this could go the other way if, for instance, UC is seen as more stigmatised than the benefits previously claimed or the increased conditionality puts off potentially entitled claimants. When – if – UC is introduced, its effects will depend critically on such behavioural differences.

²⁵ The top 5% (not broken down in this figure) loses 2 per cent compared to 0.5 per cent up to 2014/15.

²⁶ In their modelling of the transition the Treasury make a similar assumption and also add the more optimistic assumption that a proportion of people not taking up any of their entitlements under the old system would still claim and receive UC under the new system (HMT, 2013).

Figure 7.1: Percentage change in household disposable income by income decile group due to policy changes 2010 to 2019/20 (2010 policies uprated to 2019/20 using AEI)



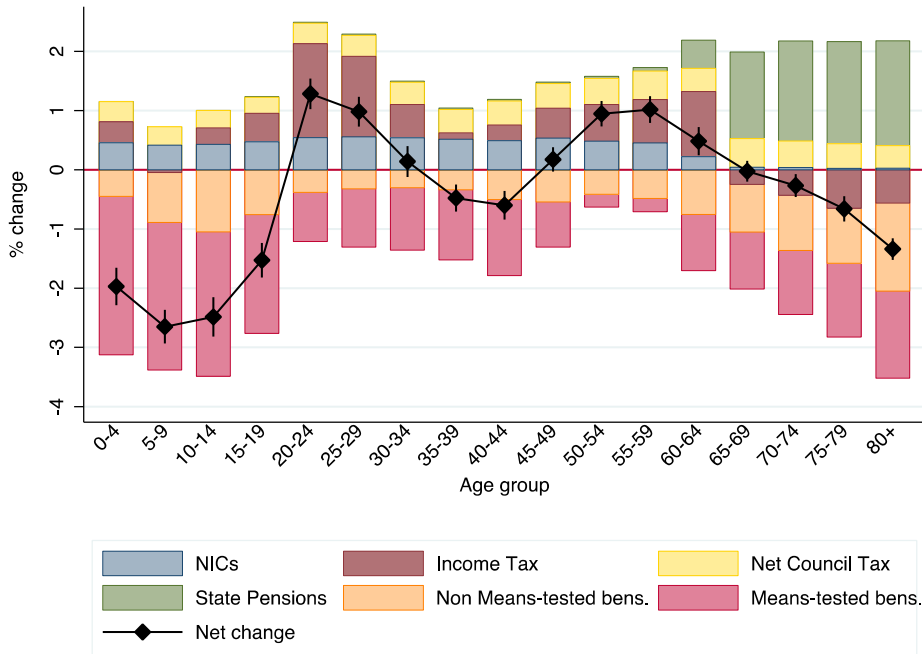
Notes: 2010 policies are as in May. Observations are ranked into decile groups using household income in 2010 equivalised using the modified OECD equivalence scale. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

The differences by age group are also notable, as can be seen by comparing Figure 7.2 with Figure 5.1 above. The losses to children are intensified, and those aged 35-44 and pensioners over 65 emerge as net losers overall. In the latter case, although the triple lock means that they keep the gains in state pensions relative to earnings-indexation that had accrued by 2014-15, lower indexation of other benefits and tax thresholds more than offset this. On the other hand, those in their 20s and 50s retain most of the gains they had made by 2014/15. Overall, the effect of these changes over the ten years would be to reverse partly the way in which age-related income gaps narrowed over the Labour period from 1997 to 2010, particularly because their benefit and pensions policies favoured children and pensioners.²⁷

Finally, Figure 7.3 shows the net position of different household types at the end of the ten years on these assumptions. By comparison with Figure 5.2, lone parents are the most striking losers – with incomes down by around 5 per cent compared to the earnings-linked base by 2019/20, despite the introduction of UC, compared to only 1 per cent by 2014/15. Large families also lose around 4 per cent of income overall, compared to less than 0.5 per cent by 2014/15. At the same time, reflecting the picture shown in Figure 7.2, households with elderly members emerge as net losers, rather than as net gainers, which they were by 2014/15.

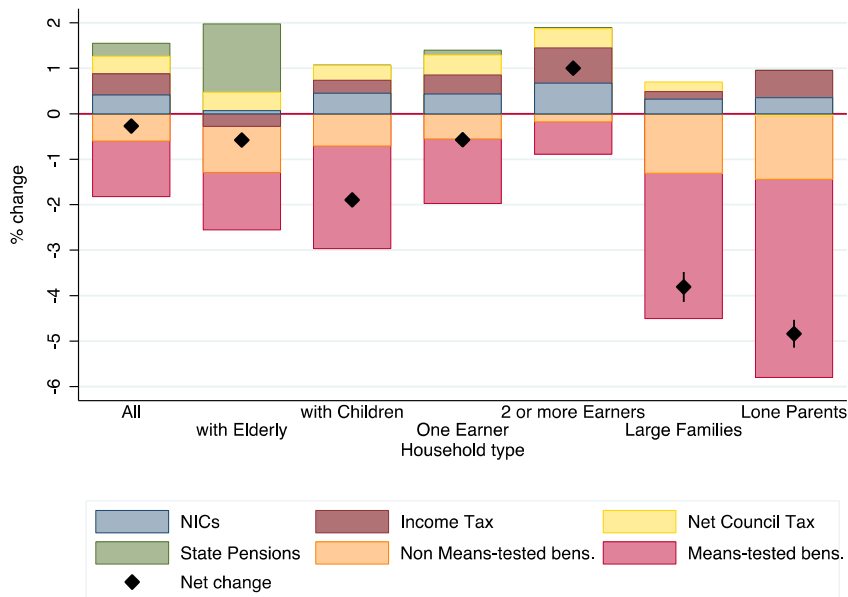
²⁷ See Hills (2014), figures 3.8 and 3.9 and associated discussion for analysis of what happened to incomes by age over the Labour period (not all of it due to tax and benefit changes). See also Browne and Phillips (2010) and Joyce and Sibieta (2013).

Figure 7.2: Percentage change in household disposable income by age group due to policy changes 2010 to 2019/20; 2010 policies uprated to 2019/20 using AEI



Notes: 2010 policies are as in May. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

Figure 7.3: Percentage change in household disposable income by household type due to policy changes 2010 to 2019/20 (2010 policies uprated to 2019/20 using AEI)



Notes: 2010 policies are as in May. "Large families" are households with 3 or more children. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

8. Conclusions

Whether we have all been “in it together”, making equivalent sacrifices through the period of austerity, is a central question in understanding the record of the Coalition government. This paper examines in detail one aspect of this, the distributional impacts of the changes to benefits, tax credits, pensions and direct taxes between the systems in place in May 2010 and in 2014/15. We also look ahead to the longer-term effects of already announced changes and plans, such as the complete introduction of Universal Credit and changes to the ways benefits, pensions and tax brackets are changed (indexed) from year to year, modelling what effects these would have by 2019/20.

As we explain in detail, there are limitations to this analysis. We do not, for instance, look at indirect taxes in our main analysis. Nor do we adjust for the lack of representation of those with the very highest incomes in the survey on which our analysis is based. We therefore will tend to understate some of the gains to the top few per cent of the population from the cut in the top rate of income tax from 50 to 45 per cent (starting from a May 2010 base), and their losses from its increase from 40 per cent (if starting from a January 2010 base).

That said, it is clear that the changes did *not* lead to uniform changes in people’s incomes. Indeed, it is striking that the overall fiscal effect of the changes after May 2010 up to 2014/15 compared to a price-linked base system was neutral overall. In effect, the reductions in benefits and tax credits financed the cuts in taxes. Some groups were clear losers on average – including lone parent families, large families, children, and middle-aged people (at the age when many are parents). Others were gainers, including two-earner couples, and those in their 50s and early 60s. Londoners were, on average, less favourably affected than other parts of the country (as a result both of more of them having very high and very low incomes, and changes and limits on Housing Benefit and other benefits having more effects in the capital).

Looking at the population as a whole, the changes were regressive. Against a price-linked base, the poorest half lost (with the poorest groups losing most as a proportion of their incomes) and the top half gained, with the exception of most of the top 5 per cent but excluding the very top. This was the result of the combination of: changes to benefits and tax credits which made them less generous for the bottom and middle of the income distribution; changes to Council Tax and associated benefits from which those in the bottom half lost but the top half gained; changes to income tax (higher personal allowances) which meant the largest gains for those in the middle, but with some income tax increases for the top 5 per cent; and state pension changes (particularly the ‘triple lock’) which were most valuable as a proportion of incomes for the bottom half.

Because real earnings fell over the period, an earnings-linked base would have been less generous to households, so by comparison with that, households as a whole were better-off than they would have been. Those in the top half gained, but the bottom twentieth lost and the rest of the bottom half was left unaffected on average. Looked at this way, the results were again regressive, apart from the very top.

Other analysis, including that from the Treasury, also shows the tax and benefit changes as being regressive between the bottom of the distribution and middle of the top half (up to the seventh or eighth tenth of the distribution). However, that analysis also suggests that the top tenth has lost

more proportionately than the bottom tenth. The analysis in this paper suggests that there are three important dimensions for decisions to be made in how to make such comparisons that lead to this kind of conclusion.

The first is how large an income group is lumped together at the top when making this kind of comparison. Most of those within the top tenth are not in fact affected by what has happened to income tax for those with incomes above £100,000. But the incomes of those right at the top are so large, that what happens to them dominates the averages shown for the top tenth as a whole. So for instance, against a price-linked base, the next-to-top twentieth of the distribution are not losers on average.

The second is, however, a matter of interpretation – essentially over whether the income tax changes announced in *Labour's* March 2009 Budget, which took effect from the start of April 2010, are counted as part of the system inherited in May 2010 or not. If the 2014/15 system is compared with the system in place in *January* 2010 (when the top rate of tax was 40 per cent) then our analysis also suggests that the top twentieth lost as much from direct tax and benefit changes as the bottom twentieth, around 3 per cent of income in each case. It depends, therefore whether the Coalition is given 'credit' for deciding not to reverse Labour's changes that were already in effect when they took office. If it is, the overall regressivity of the reforms is reversed right at the top. If it is not, while the top twentieth lose slightly, their proportionate loss remains smaller than for all of the income groups in the bottom half of the population.

The third is the very many analytical choices that have to be made when considering the effects across the income distribution; as we illustrate in section 6, these can have a major effect on conclusions. One choice is how to rank households: a set of reforms that benefit low income households will look more progressive if households are ordered by income before the effect of policy changes, than if households are ranked by their post-reform incomes (as these same households will then be positioned higher up the income distribution, and their gains will appear to be a smaller proportion of their incomes). Whether or not all households entitled to benefits are assumed to receive them also has an influence, both because households not taking up benefits will naturally be located near the bottom of the distribution, and because changes to the generosity of payments that people do not receive cannot change household incomes. Allowing for non-take up therefore usually reduces the scale of changes – whether positive or negative – for low income groups, relative to an analysis that assumes complete take-up.

Finally, we look ahead at whether changes that have already been announced or planned, such as fully introducing Universal Credit and changes to indexation agreed by the government,²⁸ if carried through to 2019/20, would change this picture (compared to an earnings-linked base, as being most appropriate for comparisons over the long term). Overall, we find that they would intensify the

²⁸ We therefore do not take into account the proposal by the Chancellor and Prime Minister at the 2014 Conservative Party conference to freeze most benefits and tax credits for two years from 2015, nor their aspiration that the personal income tax allowance should reach £12,500 in nominal terms by 2020 (with the threshold for higher rate tax increased). If these changes they were introduced following the next election, the net effect would be to intensify further the distributional effects we describe, with the bottom half of the income distribution losing from the benefit freeze, while the increases in tax thresholds would be of most benefit to those in the top half.

distributional effects seen by 2014/15. This would include increases in the losses of lone parent and large families, children in general and of most of the bottom half of the income distribution. Notably, looking over the whole period from May 2010 to 2019/20 people aged over 65 in general, and those aged over 80 in particular would lose. This is because they would be losing from much lower indexation rates for other benefits and parts of the tax system which would outweigh their gains from the 'triple lock' on state pensions. With losses both for pensioners and for children, some of the narrowing of age-related income differences achieved by the previous government would be reversed.

There is one potentially striking exception to this, however. While all other income groups in the bottom half would be losers on average over the nine years as a whole, the bottom twentieth would be *gainers* on average as a result of some of them receiving the new Universal Credit who would not currently be receiving all of the benefits and tax credits which it replaces. This effect is driven by the assumptions we make regarding take-up behaviour through the transition to UC: that take up of *any* of the existing means-tested payments will lead to take up of UC. This in turn reflects one of the main motivations for consolidating several claims and payments into one. It remains to be seen whether, in practice, take-up of means-tested payments improves in this way if UC is fully implemented.

Again, this illustrates the need to distinguish between broad conclusions and the subtleties of how particular groups are affected by complex combinations of reforms. *Overall*, the changes have been regressive, with greater proportionate sacrifices from those with lower than those with higher incomes. But within this picture there are important variations, such as the less favourable treatment of some of those at the top, or the more favourable treatment of some of those at the very bottom if Universal Credit is introduced as planned and has the intended effect on take-up.

Appendix 1 Modelled tax-benefit policy changes implemented 2010-2014/15 and 2014/15-2019/20

Reforms		When first implemented
Key pre-Coalition reforms adopted by the Coalition		
Income tax	Reduce income tax personal allowance by £1 in every £2 of excess income over £100,000	2010/11
Income tax	Introduction of a top tax rate for incomes over £150,000 of 50% (top rate previously 40%)	2010/11
Reforms 2010/11-2014/15		
Income tax	Increase personal allowance and associated reduction in basic rate limit ²⁹	2011/12
Income tax	Reduce top tax rate from 50% to 45% (50% introduced from 2010)	2013/14
Income tax	Age related personal allowance restricted to existing recipients and frozen permanently at 2012/13 levels	2013/14
Income tax	Higher-rate tax threshold increased by 1% ³⁰	2014/15
NI contributions	Increase employee and self-employed NIC lower thresholds	2011/12
NI contributions	Increase in employee and self-employed NIC rates by 1 percentage point	2011/12
NI contributions	Reduction in contracted out rebates	2012/13
Pensioners	Basic State Pension indexed by highest of earnings, prices (CPI) and 2.5% (known as "triple lock")	2011/12
Pensioners	Increase PC Guarantee Credit by same cash amount as Basic State Pension (ongoing)	2011/12
Pensioners	PC Savings Credit maximum payments frozen for 4 years (and a cash reduction in 2012/13)	2011/12
Pensioners	Winter Fuel Payment reduced from £250 to £200 (from £400 to £300 for those age 80+)	2011/12
Working age/Pensioners	Reduce hours of work required for WTC from 30 to 16 for people aged 60+ and those on Carer's Allowance	2011/12
Working age	Cash freeze in basic and 30 hours elements of WTC for 3 years	2011/12
Working age	Cash freeze in couple and lone parent element of WTC	2012/13
Working age	Increase child element of CTC by £180 above inflation	2011/12
Working age	Baby element of CTC abolished	2011/12
Working age	Increase withdrawal rate of tax credits from 39% to 41%	2011/12

²⁹ So that higher-rate taxpayers do not benefit more than basic rate taxpayers.

³⁰ i.e. basic rate limit reduced since personal allowance increased

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Reforms		When first implemented
Working age	Family element of CTC tapered at 41% from the lower threshold instead of 6.67% from a high threshold	2011/12
Working age	Increase weekly hours requirements for WTC from 16 to 24 for couples with children	2011/12
Working age	Reduce proportion of eligible childcare costs covered by tax credits from 80% to 70%	2011/12
Working age	Freeze Child Benefit in cash terms for 3 years	2011/12
Working age	Increase Child Benefit by 1% only in 2014/15	2014/15
Working age	Taper Child Benefit away from families with anyone with taxable income in excess of £50,000; extinguished for those with £60,000 or more.	2012/13 (Jan 13)
Working age	Increase most working-age benefits by 1% only instead of CPI in 2013/14, 2014/15	2013/14
Working age	Introduce benefit cap (maximum payment of working age benefits, except for disabled and WTC recipients)	2013/14
Disability	Replace DLA with PIP, reassessing health conditions in the process, reducing the numbers entitled	2013/14
Housing support	Change LHA: remove £15 per week addition (and limit max claim to the smaller of the LHA rate and actual rent)	2011/12
Housing support	Set LHA maximum rent to 30th percentile instead of 50th percentile of local rent	2011/12
Housing support	Cap total rent claimable for a given family composition under LHA and abolish rates above the 4-bedrooms rate	2011/12
Housing support	Cut LHA for single adults aged 25-34 without children	2011/12 (Jan 12)
Housing support	Increase LHA rates by 1% only in 2014/15	2014/15
Housing support	Increase HB deduction for resident non-dependants in April 2011 and uprate them with CPI in later years	2011/12
Housing support	Cut HB for people under-occupying socially rented accommodation	2013/14
Council tax and benefit	Council tax freeze for 2 years (3 in Scotland)	2011/12
Council tax and benefit	Replace CTB with local support (assumed to reduce payments by 10.6%)	2013/14
Default indexation	Uprate most benefits by CPI rather than RPI/Rossi (permanently)	2011/12

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Reforms		When first implemented
Default indexation	Index some direct tax thresholds in line with CPI inflation instead of RPI (permanently)	2012/13
Default indexation	Increase LHA rates in line with CPI rather than movement in actual rents (permanently)	2013/14
VAT	Increase in main VAT rate from 17.5% to 20%	2010/11 (Jan 11)
Additional reforms 2014/15-2019/20		
Income tax	Introduce transferable personal allowance for married couples without a higher rate taxpayer	2015/16
Income tax	Personal allowance to reach £10,500 in 2015/16 (£320 above indexation)	2015/16
Income tax	Savings tax: abolish 10% rate and extend the 0% band to £5,000.	2015/16
Income tax	Higher-rate tax threshold to increase by 1% in 2015/16 (a reduction in real terms) ³¹	2015/16
Working age	Introduce UC to replace WTC, CTC, IS, income-related JSA, income-related ESA and HB	Phased up to 2017/18
Working age	Change childcare support within UC from 70% to 85% of eligible costs	2017/18
Working age	Introduction of tax-free childcare for 2-earner families paying formal childcare costs	2015/16 (Oct 15)
Working age	Increase most working-age benefits by 1% only in 2015/16	2015/16
Working age	Increase Child Benefit by 1% only in 2015/16	2015/16
Housing support	Increase LHA rates by 1% only in 2015/16	2015/16

CPI – Consumer Prices Index; CTB – Council Tax Benefit; CTC – Child Tax Credit; DLA – Disabled Living Allowance; ESA – Employment and Support Allowance; HB – Housing Benefit; IS – Income Support; JSA – Job Seeker’s Allowance; LHA – Local Housing Allowance; NIC – National Insurance contribution; PC – Pension Credit; PIP – Personal Independence Payment; UC – Universal Credit; VAT – Value Added Tax; WTC – Working Tax Credit.

³¹ i.e. basic rate limit reduced since personal allowance increased.

Appendix 2 Modelling details and assumptions

Updating to 2014/15

Our simulations are based on FRS data collected between April 2009 and March 2010. Income variables are updated to 2014/15 levels using source-specific indexes as described in Table A2.1. Relevant expenditures, such as housing costs, childcare costs and maintenance payments are also updated as shown.

Table 2.1 Adjusting 2009/10 FRS levels of income and expenditure to 2014/15.

Income source	Updating factor	Factor Source
Employment income, self-employment income	Average weekly earnings index	ONS financial year (March-April) annual average K54U; extrapolated from Jan 2014 using UK OBR earnings forecast Table 3.5 ³²
Non-simulated benefits (disability, carer's and maternity benefits) and Basic State Retirement pension	Change in main rate of benefit	
Earnings-related pension income (state, occupational and personal)	CPI	
Mortgage interest payment	Change in the mortgage interest rate (annual average)	Bank of England IUMTLMV ³³ ; extrapolated assuming moves with trend (2 years)
Rent paid or received	Rent element of CPI	ONS ³⁴ ; extrapolated to 2014 using same method as for earnings
Childcare expenditure	As employment income	
Maintenance paid or received	As employment income	
Other private transfers	As employment income	
Council tax	Change in average band D Council Tax by country	

Generally, no other adjustments are made to the composition of market income or to the characteristics of the population in terms of labour market participation or demographic change. However there are some important changes in the period 2009/10 to 2014/15 that we account for approximately through adjustments to the data, and which are held constant across the policy scenarios that are simulated. In all cases they are not "Coalition" policy changes, but rather changes that were initiated by previous governments and continued by the Coalition. They include:³⁵

³² <http://cdn.budgetresponsibility.independent.gov.uk/December-2013-Economic-and-fiscal-outlook23423423.pdf>

³³ <http://www.bankofengland.co.uk/boeapps/iadb/index.asp?first=yes&SectionRequired=I&HideNums=-1&ExtraInfo=true&Travel=NlxIRxSUx>

³⁴ <http://www.ons.gov.uk/ons/rel/cpi/consumer-price-indices/october-2013/consumer-price-inflation-reference-tables.xls>

³⁵ For more information on the details of these adjustments see section 3 of De Agostini and Sutherland (2014).

- In the period 2008 to 2014 **Incapacity benefit** (IB) was gradually replaced by **Employment and Support Allowance** (ESA). This involved more stringent tests of capacity to work, time limits on receipt of the non means-tested benefit and the establishment of a means-tested element. The remaining cases in the 2009/10 FRS receiving IB have been adjusted so that they receive the 2014/15 ESA to which they would be entitled. In our simulations of policy change only indexation of the contributory element of ESA is captured. Changes to the income-related component are simulated in the same way as Income Support.
- **Female state pension age** (announced in 1995) is in the process of gradually rising from 60 (in 2009/10) to 65 (in 2018/19) and both male and female state pension ages are then set to rise to 66 by 2020. Since in 2014/15 the state pension age for women became 62, we adjust the data so that women aged 60 and 61 no longer receive state pensions and are assumed to be in work, unoccupied or on working age benefits in the same patterns as shown by women aged 59 in the data. A state pension age of 62 for women and 65 for men is assumed throughout our analysis.
- In 2011 the maximum rent covered by **Local Housing Allowance** (Housing Benefit for private tenants) were reduced from the median of local rents to the 30th percentile. In our analysis we assume the latter limit (applying in 2011) throughout, but indexed according to prevailing policy (See Appendix 1 and 3).

Under-representation of high incomes

Also we do not make adjustments to allow for the fact that survey data commonly under-represent households with very high incomes and/or under-reports those high incomes.³⁶ This means that the size of the effect of tax changes on top income quantiles will typically be under-estimated. This should be borne in mind when comparing with analysis that does make top income adjustments (section 6).

Policy changes

The following policy changes are not included in our analysis because the information in the FRS data is not sufficient: (i) abolition of the 50+ element of WTC for those returning to work; (ii) changes in welfare-to-work and lone parent obligation regimes, or benefit sanctions regimes; (iii) changed treatment of within-year changes in circumstances in WTC; (iv) restricting Sure-Start Maternity Grant to first babies; (v) introduction of UC extra conditionality. In addition, while we include the estimated effect of the 2.5 percentage point standard rate VAT increase in our analysis in section 6 we base this on a separate study (see below) and neither VAT nor other indirect taxes are included in EUROMOD. In the period 2010/11-2014/15 there were also changes to Insurance Premium Tax and excise duties on alcohol, tobacco and fuel that are not included.

³⁶ See appendix 2 of De Agostini and Sutherland (2014).

A further set of changes can only be modelled approximately. These include:

- The conditions of receipt of **Disability Living Allowance** – DLA (to be replaced by the Personal Independence Payment) were tightened in 2013/14 such that it was expected, at the time of the announcement in the June 2010 Budget, that 20 per cent of recipients would lose their entitlement. We approximate this by randomly setting the DLA personal care component to zero for 20 per cent of individuals receiving (in the 2009/10 FRS data) the lowest or middle rate allowance. Otherwise, our simulations only capture the effects of indexation.
- In 2013/14 **Council Tax Benefit** (CTB) was abolished and responsibility for supporting low income households with their Council Tax was devolved to local authorities. In this analysis we follow Adam and Browne (2013) and assume that local authorities chose to apply a scheme similar to the old CTB, but cutting by 10.4% the maximum amount of support that non-pensioners can claim when liable for Council Tax. This is based on the average reduction made by local authorities in England in 2013–14, in response to the cut in funding from central government. Council Tax Support (CTS) is assumed to remain as CTB would have done for pensioner households.
- The effect of the increase in the standard rate of **VAT** by decile group of household disposable income is approximated by using information from ONS "The Effects of taxes and benefits on household income 2011/12" using the Living Costs and Food Survey (LCF), appendix table 14.³⁷ This provides information on VAT as a proportion of disposable household income. The addition due to the increase from 15 per cent to 17.5 per cent is simply calculated as a proportion. It should be noted that this assumes that (a) there is no change in pre-tax consumption expenditure nor in pre-tax relative prices (usual static incidence assumption), (b) the effect of ignoring reduced rates of VAT that were not changed (mostly 5% on domestic fuel) is minor, (c) Deciles and the measure of household disposable income are the same in LCF as in the EUROMOD (FRS) output. This will not be precisely the case because two different surveys with slightly different income concepts are being used.

In modelling the introduction of Universal Credit (UC) some further assumptions have been made, including:

- The treatment of limits on the amount of **housing cost support** for owner occupiers with mortgages who are not in paid work and the treatment of waiting time for this support are assumed to mirror what is done in the corresponding element of Income Support (IS). (In each case the limits and waiting times are not modelled.) This avoids spurious gains or losses due only to different treatments, even if the treatments themselves are both too generous, which will to some extent affect where the household is situated in the income distribution.
- The definition of **non-dependants** in Housing Benefit for pensioners and in Council Tax support (which is assumed to follow the same structure as Council Tax benefit) assumes that assessed income includes income from UC (as was the case for CTC and WTC but not IS).
- **Council Tax support** is assumed to be automatically passported to those on UC who would have been eligible for IS (or income-related JSA or ESA) under the pre-reform system.

³⁷ http://www.ons.gov.uk/ons/dcp171780_317858.pdf

Non take-up of means-tested payments

In simulating entitlement to means-tested tax credits and benefits we make some adjustment for non take-up of these payments based on statistics provided by DWP (2010) for Income Support, Pension Credit and Housing Benefit and HMRC (2010) for the tax credits. Making such adjustments involves selecting randomly within client groups and benefits such that a proportion of those entitled, based on the official statistics, do not receive their entitlement. Clearly this is a rather approximate process and such adjustments are not always made in UK microsimulation analysis of policy changes. However, we believe that it is important to represent those not taking-up their entitlements in the income distribution and in the analysis of policy changes. In adjusting for non take-up of Universal Credit, which cannot yet be measured, we seek to minimise the effect on the results of any spurious changes in take-up assumptions, while recognising that there will be some positive effect on the amounts taken up due to a single application procedure. If any of the pre-reform elements (CTC, WTC, Income Support, Housing Benefit etc.) to which a particular benefit unit might be entitled are assumed to be taken up then it is assumed that UC would be taken up under the new regime. This is similar to the assumption used in Treasury modelling (HMT, 2013) although they additionally make the more optimistic assumption that some of those not taking up any of their entitlements to the old benefits and tax credits will nevertheless claim UC (20% of the employed in this group and 10% of the self-employed). In our analysis, if a family becomes newly-entitled to means-tested support through UC then probabilities are applied as for IS under the old system. The resulting average take-up rate of UC (calculated as the number of benefit units modelled to be receiving divided by the number simulated to be entitled) is approximately 70 per cent.

Appendix 3 Default Indexation Assumptions

Tax-benefit element	Default indexation for the fiscal year starting April 2011 ³⁸	Changes up to April 2015	Assumptions from April 2016 onwards	Rounding conventions
Income tax personal allowance ³⁹	RPI	From April 2015: CPI	CPI	Rounded up to nearest £10 pa
Income tax Basic Rate limit	RPI	From April 2014: CPI	CPI	Rounded up to nearest £100 pa
Income tax starting rate limit for savings income	RPI	From April 2014: CPI	CPI	Rounded up to nearest £10 pa
Income tax threshold for additional (top) rate	Fixed in cash terms		Fixed in cash terms	
Income tax income limit for tapered withdrawal of personal allowances	Fixed in cash terms		Fixed in cash terms	
Income tax threshold for Child Benefit clawback	n/a	From April 2013: Fixed in cash terms	Fixed in cash terms	
NICs lower earnings limit	Minimum of 2.5% or RPI	From April 2014: CPI	CPI	Rounded down to the nearest £1 pw
NICs Primary Threshold/Lower Profits Limit	RPI	From April 2014: CPI	CPI	Rounded down to the nearest £1pw/£5pa
NICs Upper Earnings Limit/Upper profits Limit	RPI	Aligned with the income tax Higher Rate Threshold ⁴⁰	Aligned with the income tax Higher Rate Threshold	
NICs small Earnings Exception	RPI	From April 2014: CPI	CPI	Rounded up to the nearest £10 pa
NICs Class 2 rate	RPI	From April 2014: CPI	CPI	Rounded to the nearest 5p pw
Disability, Carer's and Maternity benefits	RPI	From April 2013: CPI	CPI	
Income-tested benefits	Rossi	From April 2013: CPI	CPI	

³⁸ In practice many elements of tax credits and benefits were indexed by less than the default amount in 2011 and the period up to 2015/16. See Appendix 1

³⁹ From 2015/16, when it is introduced, the transferable marriage tax allowance will be updated in proportion to the personal allowance.

⁴⁰ This is equal to the Personal Allowance + Basic rate Limit.

WP10 Were we really all in it together? The distributional effects of the UK Coalition government's tax-benefit policy changes

Tax-benefit element	Default indexation for the fiscal year starting April 2011 ³⁸	Changes up to April 2015	Assumptions from April 2016 onwards	Rounding conventions
Basic State Pension	RPI	Highest of earnings, CPI or 2.5%	Highest of earnings, CPI or 2.5%	
Pension Credit Guarantee Credit	Earnings		Earnings	
Pension Credit Maximum Savings Credit	RPI	From April 2013: CPI	CPI	
Child Benefit	RPI	From April 2013: CPI	CPI	Rounded to the nearest 5p pw
Child Tax Credit and Working Tax Credit most elements	RPI	From April 2013: CPI	CPI	Rounded to the nearest £5 pa
Child Tax Credit family element	Fixed in cash terms		Fixed in cash terms	
Working Tax Credit maximum eligible childcare costs	Fixed in cash terms		Fixed in cash terms	
Most earnings and other disregards in benefit assessments; capital limits in income related benefits; minimum payments of benefits and tax credits	Fixed in cash terms		Fixed in cash terms	
Non-dependent deductions from Housing Benefit	CPI		CPI	
Winter Fuel Allowance	Fixed in cash terms		Fixed in cash terms	
Local Housing Allowance local reference rent caps by size of accommodation	Fixed in cash terms		Fixed in cash terms	
Benefit cap	n/a	Introduced April 2013: CPI		
Tax-free childcare support	n/a	n/a	Fixed in cash terms	
Council Tax			OBR assumptions	

Notes: RPI – Retail Prices Index calculated as the annual change up to the previous September; Rossi – RPI without the elements for housing costs, calculated as the annual change up to the previous September; CPI – Consumer Prices Index calculated as the annual change up to the previous September;

For projections to 2015/16 and beyond, OBR assumptions about the evolution of CPI, earnings and Council Tax (by country) are used. Sources:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/295067/PU1638_policy_costings_bud_2014_with_correction_slip.pdf Ref: ISBN 978-1-909790-83-4, PU1638 Budget 2014 policy costings Annex A

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221895/budget2013_policy_costings.pdf

Budget 2013 policy costings Annex A

http://webarchive.nationalarchives.gov.uk/20130129110402/http://www.hm-treasury.gov.uk/d/junebudget_costings.pdf

Budget 2010 (June) policy costings Annex A (first time this was published)

http://webarchive.nationalarchives.gov.uk/20100407010852/http://www.hm-treasury.gov.uk/d/budget2010_annexa.pdf Budget 2010 (April) Annex A2

Appendix 4: Additional figures

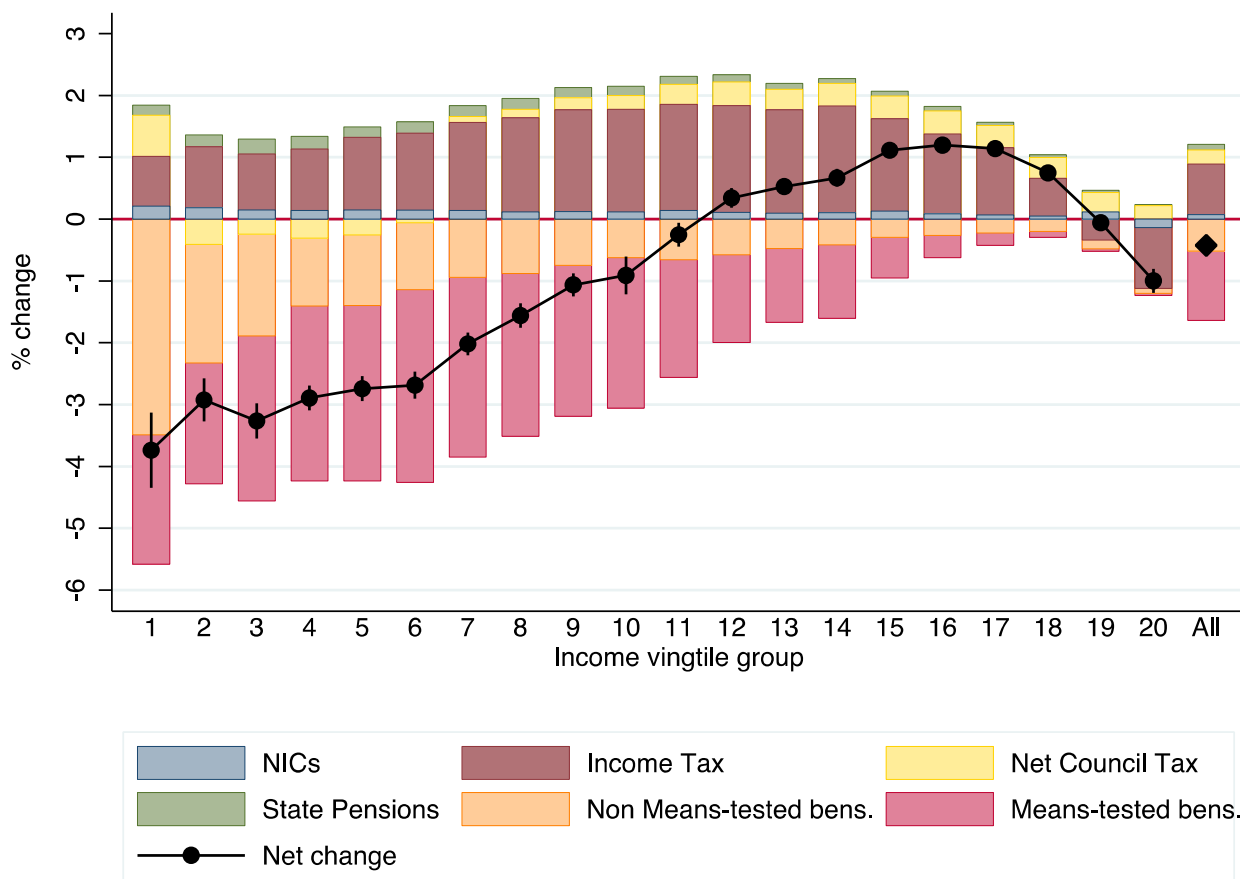
This appendix provides some additional figures. Figure A4.1 is equivalent to Figure 4.1 in the main text but uses RPI instead of CPI or AEI to uprate 2010 policies to 2014/15 levels.

Figure A4.2 is equivalent to Figure 4.1a in the main text but classifies people by percentiles of their equivalised household income rather than vingtiles.

Figure A4.3 is equivalent to Figure 5.1 in the main text but uses CPI instead of AEI to uprate 2010 policies to 2014/15 levels.

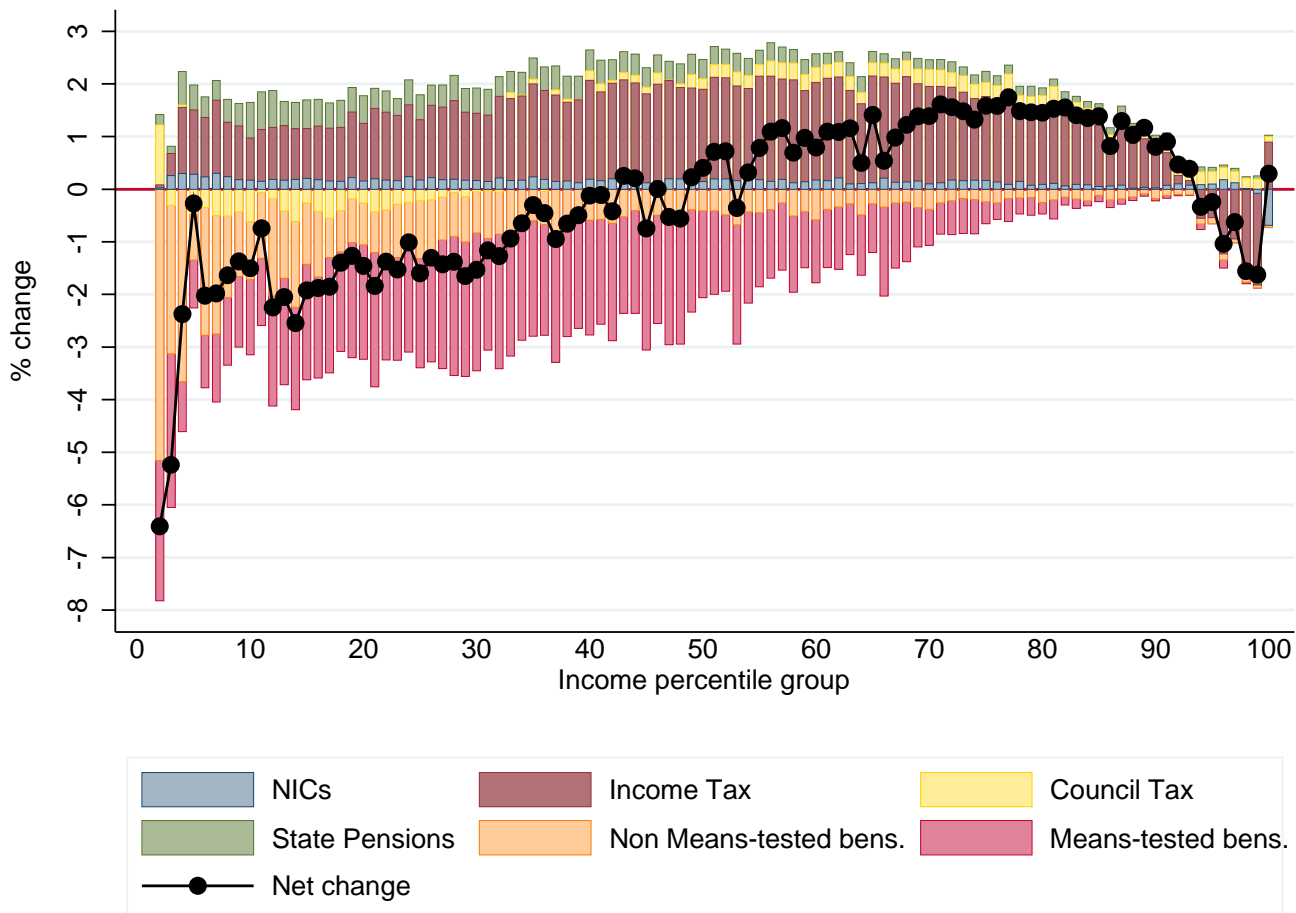
Figure A4.4 shows the effect of policy changes across the income distribution in London. Note that the confidence intervals are generally wide and robust conclusions cannot be drawn from this figure about distributional effects in London.

Figure A4.1: Percentage change in household disposable income by income vingtile group due to policy changes 2010 to 2014/15, 2010 policies uprated to 2014/15 using RPI



Notes: 2010 policies are as in May. Observations are ranked into vingtile groups using household income in 2010 equivalised using the modified OECD equivalence scale. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

Figure A4.2: Percentage change in household disposable income by income percentile group due to policy changes 2010 to 2014/15 (2010 policies uprated to 2014/15 using CPI)



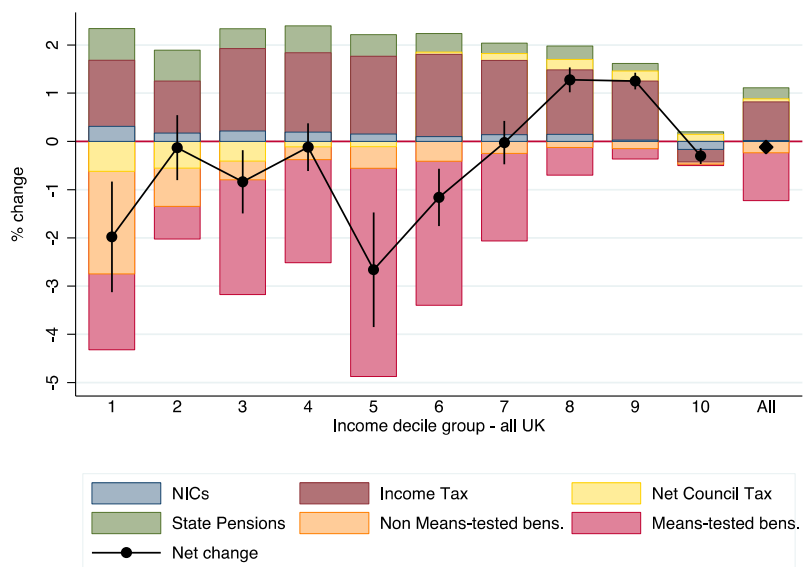
Notes: 2010 policies are as in May. Observations are ranked into percentile groups using household income in 2010 equivalised using the modified OECD equivalence scale. The bottom percentile is not shown because of the very large percentage changes (in both directions) in particular components, given the very small reported incomes for this group. Note that the volatility by percentile group is in part due to small sample sizes and comparisons across groups are unlikely to be statistically significant. Source: Authors' calculations using EUROMOD G1.5.

Figure A4.3: Percentage change in household disposable income by age group due to policy changes 2010 to 2014/15; 2010 policies uprated to 2014/15 using CPI



Notes: 2010 policies are as in May. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

Figure A4.4: Percentage change in household disposable income by income decile group in London due to policy changes 2010 to 2014/15; 2010 policies uprated to 2014/15 using AEI



Notes: 2010 policies are as in May. Observations in London are classified into UK decile groups using household income in 2010 equivalised using the modified OECD equivalence scale. The net change is shown with a 95% confidence interval, calculated using bootstrap. Source: Authors' calculations using EUROMOD G1.5.

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