HM Treasury

Impact on households:

distributional analysis to accompany Autumn Statement 2013

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Contents

1 Introduction

1.1 The government has published regular distributional analysis of the impact on households of its reforms to tax, tax credits, benefits and public service spending. This document builds on the distributional analysis that was published at Spending Round 2013. It analyses the effects of the government's policies on a cumulative basis, which means that it includes measures from all fiscal events since June Budget 2010, up to and including Autumn Statement 2013. It also includes changes that were announced before June Budget 2010 that have been implemented by the government.

1.2 As at Spending Round 2013, this analysis is being published online as a supplementary document to Autumn Statement 2013.

Measuring distributional impacts

1.3 The government uses a wide range of modelling tools and data to assess the impacts of individual measures. Considering the impact of these measures on a combined basis therefore presents a trade-off between how accurately a single source of analysis can show the cumulative impact of policy changes, and how complete a picture it can provide. This document recognises this trade-off by presenting two levels of analysis:

- broad analysis of changes to public service spending, taxes, tax credits and benefits that directly affect households, on a **quintile** basis
- where a finer level of detail is possible, more precise – though less comprehensive – analysis of changes to taxes, tax credits and benefits that directly affect households, on a **decile** basis

1.4 Chapter 2 presents distributional analysis on the basis of both household income and household expenditure. Grouping households by their income is recognised as the standard approach to distributional analysis, but can be complemented by grouping households according to their expenditure. Analysis on an expenditure basis is useful as some households lower down the income distribution have low incomes only temporarily, for example those containing students, self-employed or unemployed individuals. During periods of temporarily low income such households may maintain their standard of living by funding their expenditure from savings or borrowing, thereby smoothing their lifetime consumption. In the context of distributional analysis, a low-income household's expenditure may therefore be a better indicator of its standard of living.[1]

1.5 To create deciles, households are ordered by their net income, or alternatively their expenditure, and then divided into 10 equally sized groups. The first decile contains the poorest (or lowest spending) tenth of households while the top decile contains the richest (or highest

[1] For example, see *Least well-off in society better identified by low spending than low income*, Institute for Fiscal Studies Press Release, March 2011, which states that "[t]hose with the lowest reported income are not those with the lowest spending or those living in the most severe forms of deprivation."

spending) tenth. Analysis by income quintiles is on the same basis but dividing households into 5 rather than 10 groups.

1.6 In both approaches, a standard process called equivalisation is used to ensure that households of differing sizes are compared on a consistent basis. The effects of changes on these groups are presented in both cash and percentage terms.

1.7 Explanations of the data sources, methodologies and equivalisation process used to produce this analysis can be found in Chapter 3 of this document. Chapter 3 also sets out the average gross income within each decile.

1.8 The analysis focuses on the impact of changes to government tax and spending policy and does not take into account the level of household assets, or changes in the wider economy that have affected household incomes. It is therefore important to put these tax and spending decisions in the context of the wider economy, and to do this Chart 2.A shows how household incomes before benefits and taxes have been impacted by inflation and earnings growth between 2007-08 and 2011-12.

1.9 Although regulatory measures do sometimes affect household incomes, they have no direct effect on the public finances and are therefore out of scope for this analysis. Therefore, the distributional analysis presented here shows the impact of changes in government fiscal policy with a direct impact on households, but not of all government decisions. Presenting only the impact of changes to tax and government spending allows the fairness of changes to tax and spending policy to be assessed independently of changes to regulatory measures and in the wider economy.

Methodological developments

1.10 HM Treasury has continued to update and develop its modelling of distributional impacts to allow a more accurate estimate of the distributional impact of the government's decisions across households. Developments include:

- incorporating the latest round of OBR economic assumptions in the decile and quintile analysis
- improved modelling estimates of the recipients of income-related benefits and tax credits in the decile and quintile analysis, and improved estimates of the recipients of Resource Departmental Expenditure Limits (RDEL) spending in the quintile analysis
- capturing measures in the quintile analysis aimed at reducing tax avoidance where there is a substantive change in tax policy
- presenting the decile analysis for 2014-15, one year forward from that presented at Budget 2013
- presenting the decile analysis on the assumption of incomplete take-up of benefits and tax credits

1.11 Modelling incomplete take-up of benefits and tax credits was introduced into our analysis at Spending Round 2013 and allows us to allocate the effects of changes to benefits policy to only those households that are actually in receipt of benefits. Furthermore, it allows us to capture the effects of policies that have a direct impact on the take-up of, rather than the entitlement to, a benefit, for example Universal Credit.

1.12 Analysis in this document includes, for the first time, those measures aimed at reducing tax avoidance where there is a substantive change in tax policy and a direct impact on households.

Including these tax avoidance measures allows the analysis to present a more complete breakdown of the impact of changes to government policy on households. Further detail on the methodology and criteria used to include these measures is detailed in Chapter 3.

1.13 The data sources and methodology section of this document provides more detailed information on the new methodological developments.

The counterfactual

1.14 To analyse the effect of the government's measures, assumptions have to be made about what would have happened in their absence. These assumptions are known as 'the counterfactual'. In this document, the effects of the government's measures are assessed against a counterfactual assumption that the previous government's policies would have continued into the future without any further fiscal consolidation. This includes the indexation of tax thresholds, tax credits and benefits.

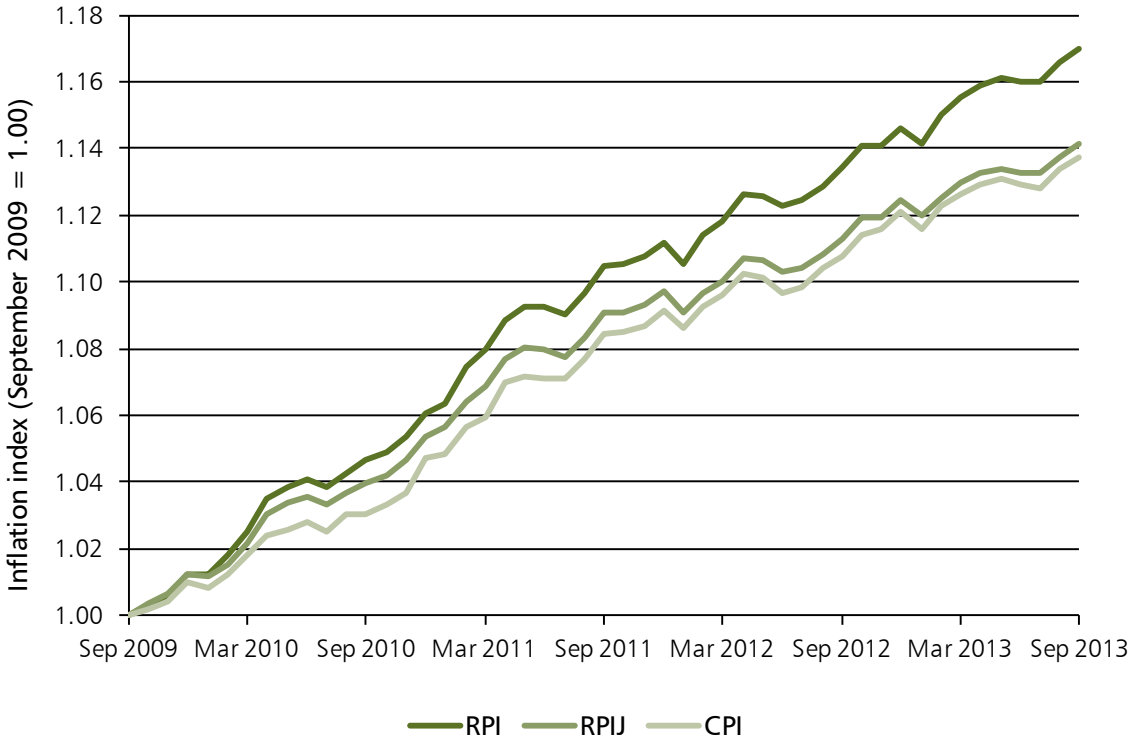
1.15 In line with this approach, analysis presented in this document shows the impacts on households of the government's uprating policy compared to the uprating policy of the previous government. In many cases the previous government's policy was to link benefit rates and tax thresholds to the Retail Prices Index (RPI). However, the National Statistician's announcement in January 2013 stated that a method of calculation used in the RPI would not be chosen were the ONS to construct a new price index, and in most cases the government has chosen to move away from RPI for uprating.[2] In the absence of knowing how the previous government would have responded to this announcement it is assumed the RPI would have continued to be used, which has implications for the modelled household impacts in this analysis.

1.16 Chart 1.A below illustrates the cumulative changes in the RPI, Consumer Prices Index (CPI) and new RPIJ indices between September 2009 and September 2013.[3] RPIJ is an improved variant of the RPI. The chart shows that, at September 2013, the RPI is 2.5% higher than RPIJ and 2.9% higher than the CPI. This means that the impact of the government's changes to benefits uprating policy appear bigger in this analysis than they would had the RPI been calculated in line with the new ONS indices. This issue will be kept under review for future publications.

[2] See *National Statistician announces outcome of consultation on RPI*, Office for National Statistics News Release, 10 January 2013

[3] The September 2009 RPI index was used to uprate many benefit rates and tax thresholds, where these rates would have increased in April 2010. At the June Budget 2010, the government took the decision to increase benefits in line with CPI, rather than RPI, meaning that the CPI index from September 2010 was used to increase benefit rates in April 2011. Therefore, this chart shows cumulative changes in these inflation indices since September 2009, as that was the last data point used by the previous government in uprating policy.

Chart 1.A: Cumulative changes in RPI, CPI, and RPIJ measures of inflation between September 2009 and September 2013



Source: Office for National Statistics

1.17 Government debt would have been higher if the government had not taken action to control the unsustainable deficit that it inherited. The analysis in this document does not show what the consequences for households would have been had the government not taken action to reduce the structural deficit. To meet the costs of higher debt these consequences could have included higher future taxes, lower spending on public services or benefits, or a combination of all three.

2 Impact on households

Wider economy

2.1 As set out above, most of the analysis in this chapter (Charts 2.B to 2.I) focuses on the impact of government tax and spending policy and does not take into account the level of household assets, or changes in the wider economy that have also affected household incomes. It is therefore important to consider these tax and spending decisions within the wider economic context, and to do this Chart 2.A shows how household incomes before benefits and taxes have been impacted by inflation and earnings growth between 2007-08 and 2011-12.[1] Economic data between 2011-12 and 2013-14 is not currently available by decile, but this earlier story of real household incomes provides the backdrop for the government's tax and spending decisions presented in the rest of this document.

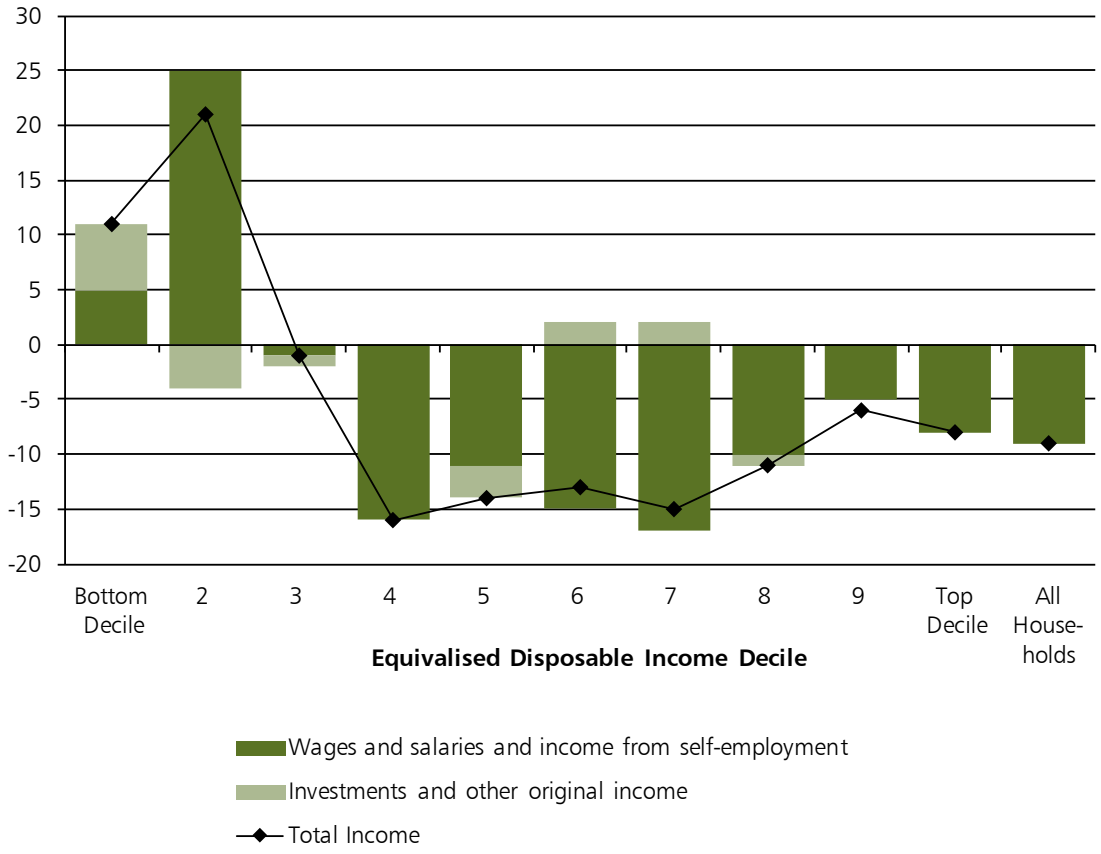
2.2 The data source used to produce Chart 2.A is different from those used elsewhere in this document. For this reason, the population within each decile group will not be identical to the population in the corresponding decile in the other charts in this document.

2.3 Chart 2.A shows that:

- on average, households in the middle of the income distribution saw the largest reductions in real income between 2007-08 and 2011-12
- on average, households in the bottom two deciles saw their incomes protected against the effects of inflation

[1] In line with Office for National Statistics analysis, figures in this chart are adjusted using the implied household deflator for all deciles to adjust to real-terms.

Chart 2.A: Contributions to real-term changes in original income before benefits and taxes, 2007-08 to 2011-12, as a percentage of 2007-08 original income



Source: Office for National Statistics, The Effects of Taxes and Benefits on Household Income (2007-08 to 2011-12)

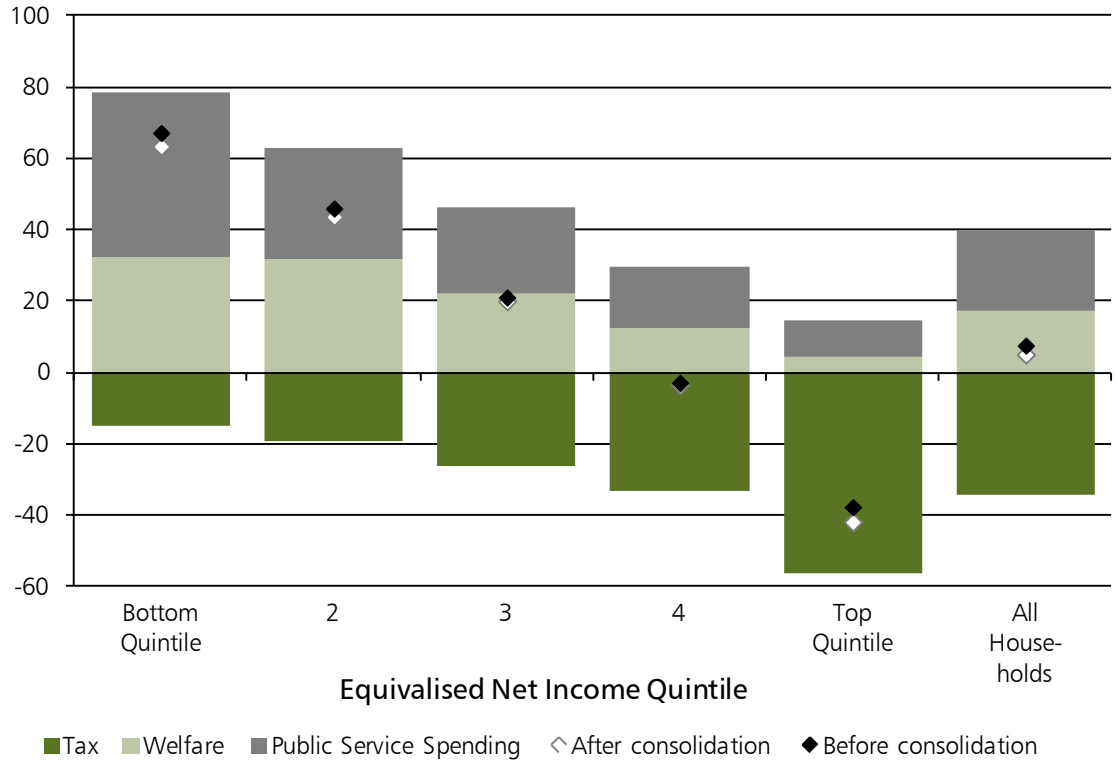
Overall level of taxation and public spending

2.4 Building on analysis that was published for the first time at Autumn Statement 2012, Chart 2.B shows the overall level of receipt of benefits, tax credits, and public service spending, after tax, before and after the government's fiscal consolidation measures. The chart shows how the effects of government intervention and redistribution differ across the income distribution.

2.5 Chart 2.B shows that, taking into account benefits, tax credits and public service spending receipt, after tax:

- on average, the poorest 20% of households receive over five times as much support from public spending as they contribute in tax
- on average, only the richest 20% of households contribute significantly more to the state than they consume in public spending
- before consolidation, the richest 20% contributed around three and a half times as much in tax as they received from public spending – this has now increased to around four times as much
- the profile across the quintiles after consolidation remains similar to the profile before consolidation

Chart 2.B: Overall level of benefits, tax credits and public spending receipt, after tax, of households in 2015-16 as a percentage of 2010-11 net income (including households' benefits in kind from public services), before and after consolidation



Source: HM Treasury estimates based on a range of models and data sources

Distributional impact on households of taxation, welfare and public service spending changes

Impact of modelled tax and benefit changes

2.6 This section presents detailed distributional analysis of those changes to the tax and benefit system that it is possible to model in detail at a household level within HM Treasury's tax and benefit microsimulation model. Analysis is presented on both an income and expenditure basis. The average gross income for each decile is laid out in Chapter 3.

2.7 To model changes in welfare spending, direct taxes and indirect taxes on a consistent basis, and to present analysis on the basis of household expenditure, this analysis uses the Living Costs and Food Survey (LCF) produced by the ONS. The LCF is a cross-sectional survey which takes a snapshot of households' incomes and expenditure at a moment in time.

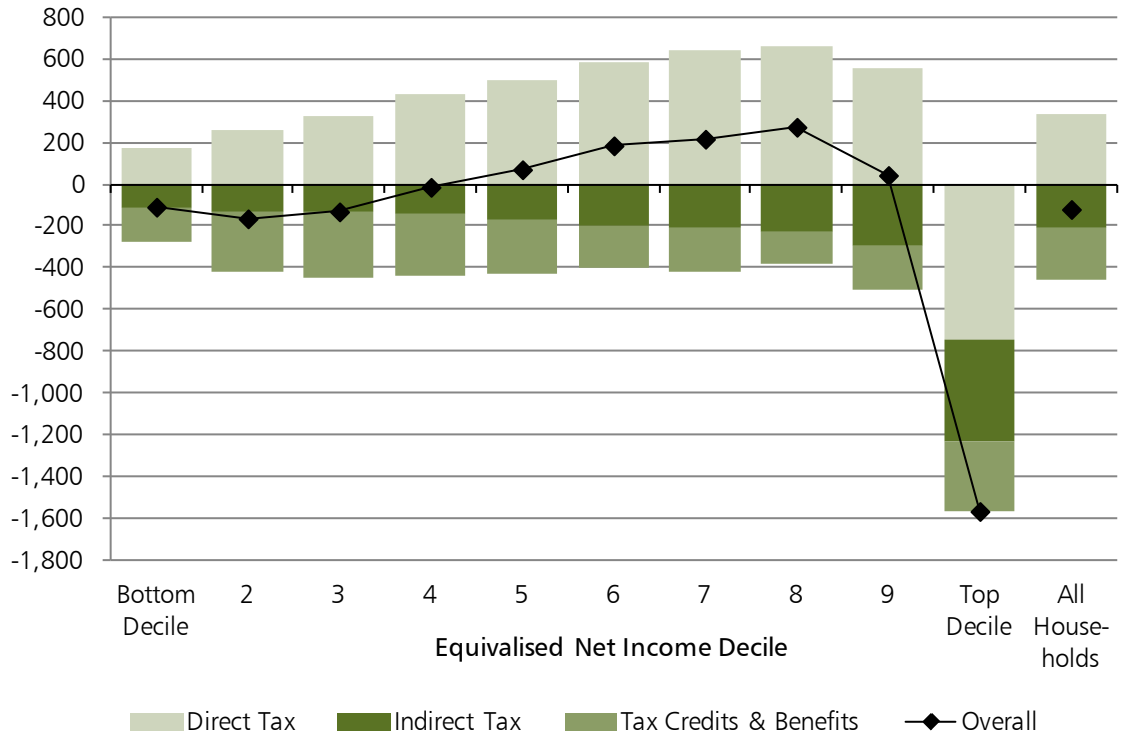
2.8 As mentioned in paragraph 1.10 above, analysis is presented for the year 2014-15, one year forward from that presented at Budget 2013. The distributional impacts shown in Charts 2.C to 2.F are driven mainly by the impacts on households in 2014-15 of policy changes made since 2010, including those announced at Autumn Statement 2013. Measures captured for the first time in the decile charts include the funding to freeze council tax in 2014-15 announced at Spending Round 2013 (SR13) and the fuel duty freeze to September 2015 announced at Autumn Statement 2013. However, these charts are not directly comparable to their equivalents at Budget 2013 due to the methodological developments outlined in paragraph 1.10 above and, as such, comparisons do not show the impacts of Autumn Statement 2013 decisions alone.

Impact analysis by income distribution

2.9 Charts 2.C and 2.D show the impact of modelled tax, tax credit, and benefit changes since June Budget 2010, including measures announced at Autumn Statement 2013, across the income distribution. Chart 2.C shows this in cash terms and Chart 2.D shows this as a percentage of net equivalised household income. The net impact for each decile is shown by the black line, and the bars show how this net impact is composed of changes to direct tax, indirect tax, and tax credit and benefit changes separately.

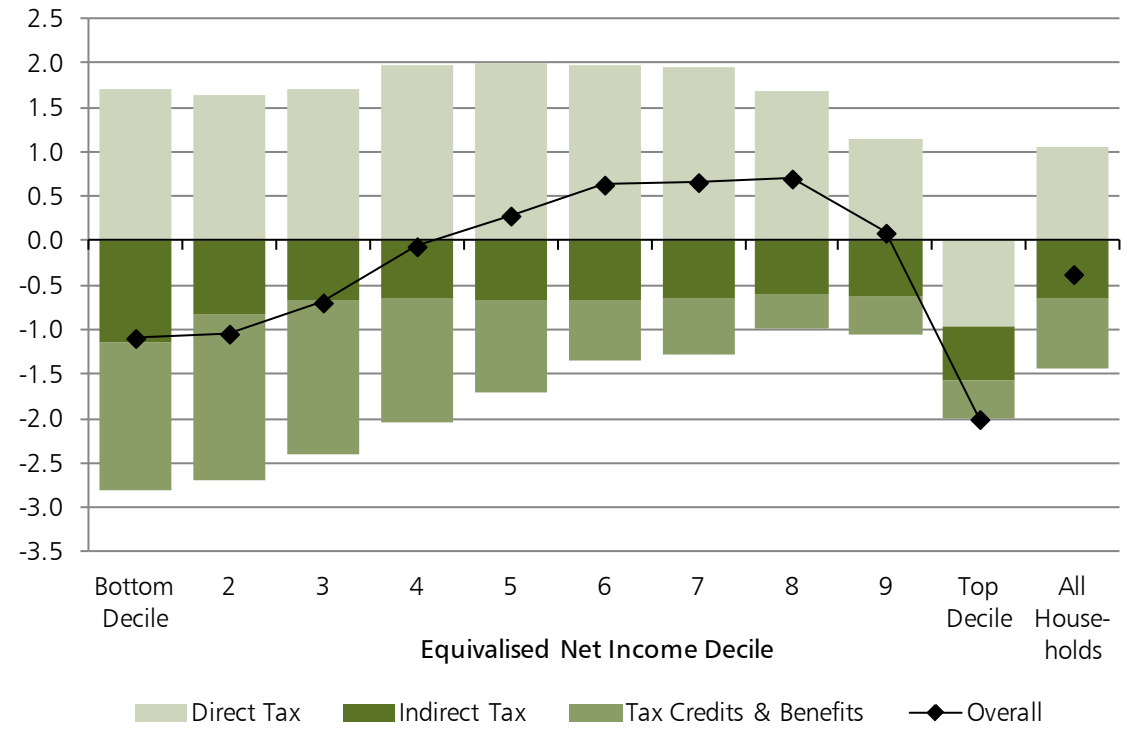
2.10 The charts show that, as at previous fiscal events, households in the top income decile make the greatest contribution towards reducing the deficit, both in cash terms and as a percentage of their income.

Chart 2.C: Cumulative impact of modelled tax, tax credit and benefit changes on households in 2014-15 in cash terms (£ per year), in 2014-15 prices, by income distribution



Source: HM Treasury tax and benefit microsimulation model

Chart 2.D: Cumulative impact of modelled tax, tax credit and benefit changes on households in 2014-15 as a percentage of 2014-15 net income, by income distribution



Source: HM Treasury tax and benefit microsimulation model

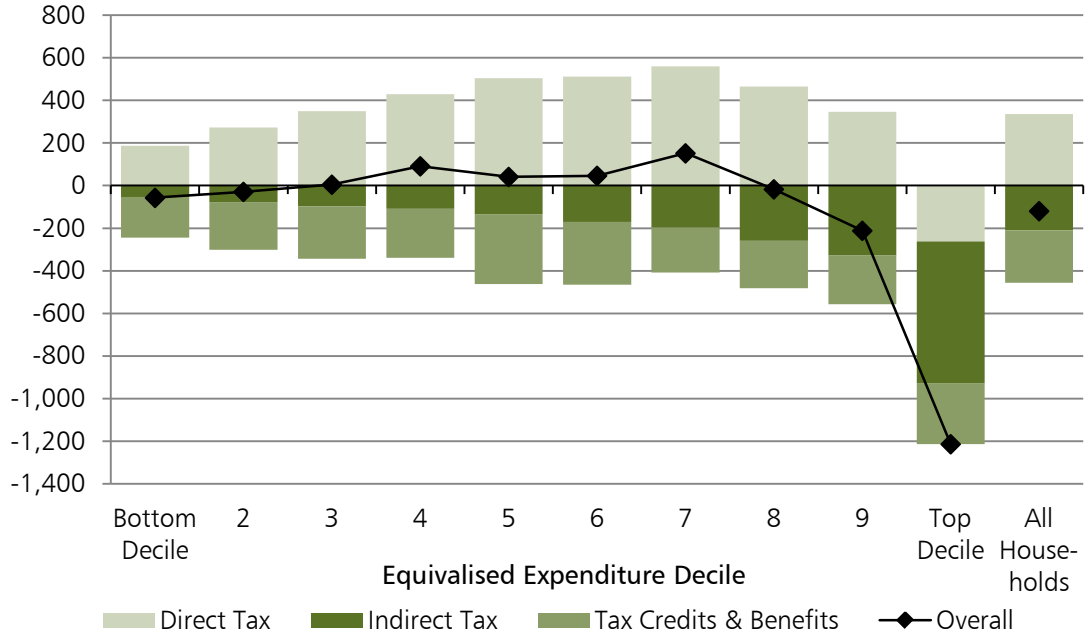
Impact analysis by expenditure distribution

2.11 Charts 2.E and 2.F show the impact of modelled tax, tax credit, and benefit changes since June Budget 2010, including measures announced at Autumn Statement 2013, across the expenditure distribution. The net impact for each decile is shown by the black line and the bars show how this net impact is composed of changes to tax, tax credits and benefits separately.

2.12 As detailed above, grouping households according to their expenditure can be a useful complement to grouping households by their income. Analysis on an expenditure basis is useful as some households lower down the income distribution have low incomes only temporarily, for example those containing students, self-employed or unemployed individuals. During periods of temporarily low income such households may maintain their standard of living by funding their expenditure from savings or borrowing, thereby smoothing their lifetime consumption. For distributional analysis, a low income household's expenditure may therefore be a better indicator of its standard of living.

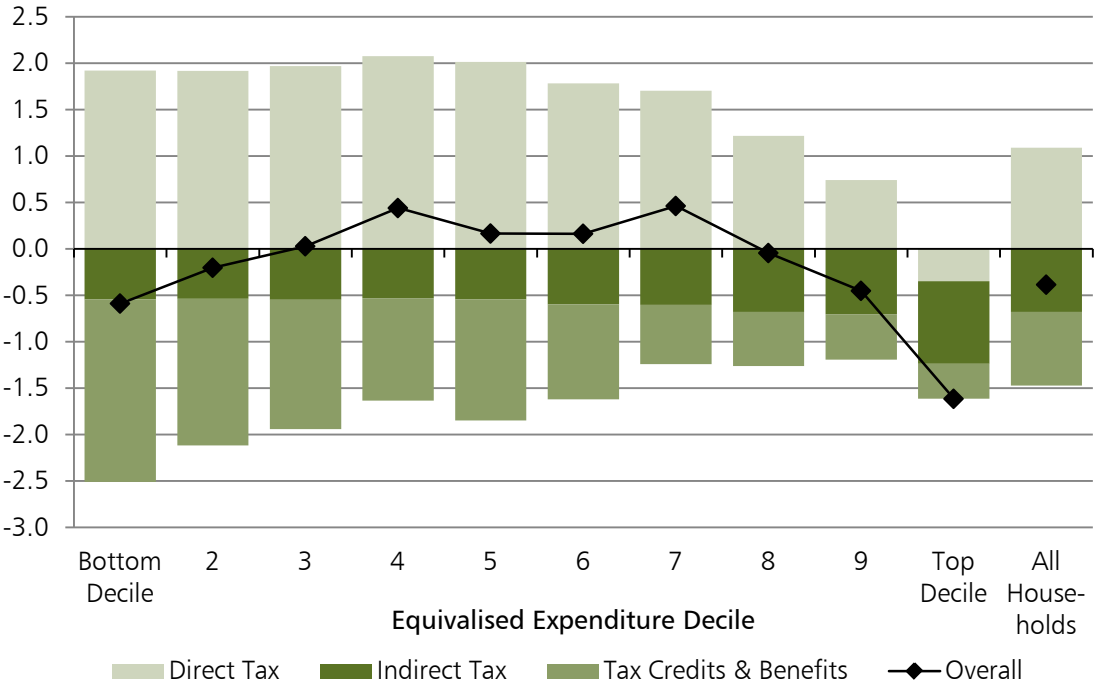
2.13 Chart 2.E shows this in cash terms, and Chart 2.F shows this as a percentage of net equivalised household expenditure. The charts show that, as at previous fiscal events, households in the top expenditure decile make the greatest contribution towards reducing the deficit, both in cash terms and as a percentage of their expenditure. On average, households in the middle of the expenditure distribution have seen little impact as a result of the government's policies.

Chart 2.E: Cumulative impact of modelled tax, tax credit and benefit changes on households in 2014-15 in cash terms (£ per year), in 2014-15 prices, by expenditure distribution



Source: HM Treasury tax and benefit microsimulation model

Chart 2.F: Cumulative impact of modelled tax, tax credit and benefit changes on households in 2014-15 as a percentage of 2014-15 net expenditure, by expenditure distribution



Source: HM Treasury tax and benefit microsimulation model

Universal Credit

2.14 The impacts of Universal Credit are not included in the decile analysis above. Universal Credit will be phased in over a number of years to simplify the means-tested benefit and tax credit system, improve work incentives, and ensure that it always pays to work. It will be available to claimants who are both in and out of work, and will include additional elements to support costs in respect of housing, disability and children.

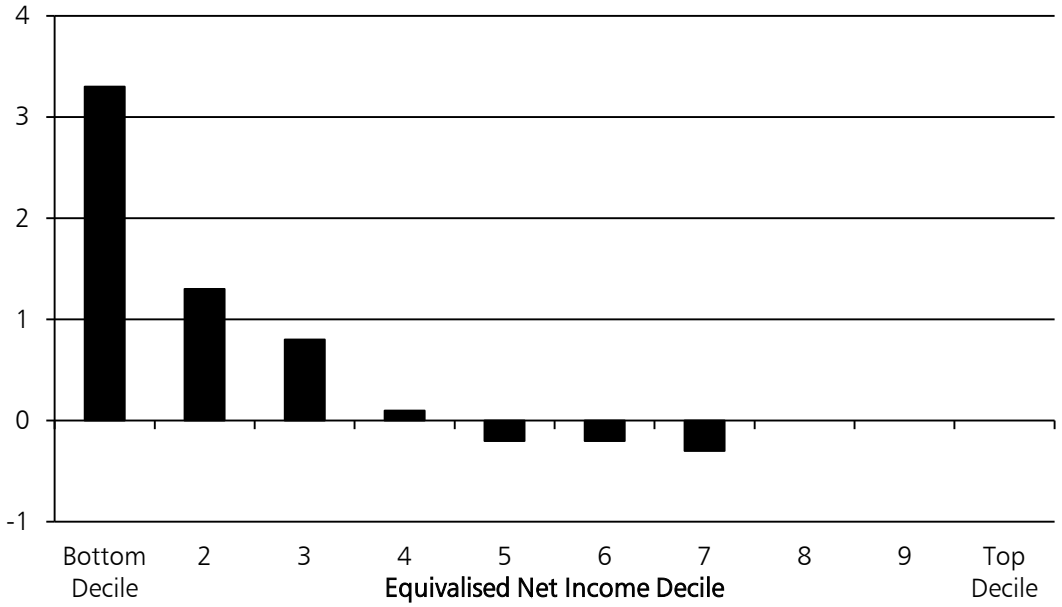
2.15 Universal Credit will be rolled out gradually and therefore it will have only a small impact on households across the UK as a whole in 2014-15. For this reason, coupled with the methodological complexities of modelling the period of transition from the existing system, we do not include any of the impacts of Universal Credit in the detailed decile analysis above. The distributional impacts of the transition from the legacy system to Universal Credit are instead captured in the broader quintile analysis, where it is possible to make carefully considered assumptions about where the impacts of Universal Credit will fall.

2.16 The government's current planning assumption is that the Universal Credit service will be fully available in each part of Great Britain during 2016, having closed down new claims to the legacy benefits it replaced; with the majority of the remaining legacy caseload moving to Universal Credit during 2016 and 2017. However, given the methodological complexities of modelling the benefits system in future years and of modelling the period of transition from the existing system, the impact of a fully rolled out 'steady state' Universal Credit has been modelled in the year 2014-15. This is shown in Chart 2.G.

2.17 Like other analysis in this document, Chart 2.G assumes incomplete take-up of income-related benefits and tax credits. The modelled impact therefore includes the effect of higher take-up of claimants' entitlements expected under Universal Credit, due to its relative simplicity and integrated nature. Details of the modelling approach are laid out in Chapter 3 of this document.

2.18 The chart shows that most Universal Credit gains accrue to low income households. Those with the lowest incomes benefit the most on average while relatively higher income households see, on average, either no change or a reduction in their net income. Transitional protection is in place so there will be no cash losers at the point someone moves onto Universal Credit where their circumstances remain the same.

Chart 2.G: Average impact of Universal Credit in 'steady state' by income distribution (modelled in 2014-15), as a percentage of net income



Source: Department for Work and Pensions Policy Simulation Model. This reflects key entitlement changes and expected increases in take-up, but excludes anticipated reductions in the levels of fraud, error and overpayments. It is calibrated to published DWP and HMRC caseload forecasts

Combined impact on households of taxation, welfare and public service spending changes

2.19 Charts 2.H and 2.I are based on income quintiles and show the combined impact on households of changes to public service spending and tax, tax credits and benefits since June Budget 2010, including measures announced at Autumn Statement 2013. Chart 2.H shows this in cash terms and Chart 2.I shows this as a percentage of net equivalised household income, including benefits in kind from public services (RDEL). The net impact for each quintile is shown by the black line, and the bars show how this net impact is composed of changes to tax, tax credit and benefits, and public service spending separately.

2.20 This analysis is broader than the decile analysis presented above. It includes benefits in kind from public services, such as health and education, and therefore provides the fullest assessment of the effects of all government interventions that have a direct impact on households.

2.21 In order to be as comprehensive as possible, this analysis makes some carefully considered assumptions where there are limited data on the effects of measures. This applies to measures that directly affect households, but where the precise impact on individual households cannot be microsimulated. This approach allows for the broad impact throughout the income distribution to be demonstrated, but does not allow the more precise assessment of the effects of the government's policies that is shown in Charts 2.C to 2.F. Chapter 3 of this document provides further background on the methodology and assumptions used to produce this analysis.

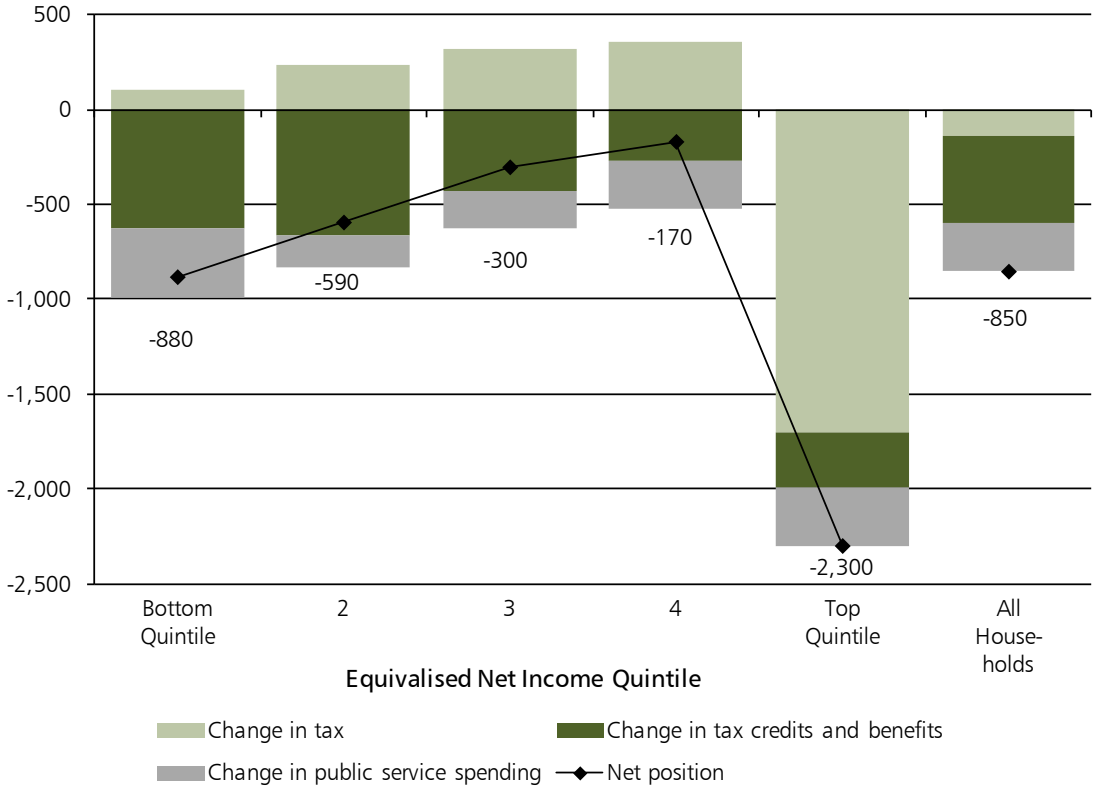
2.22 As at Spending Round 2013, the quintile analysis is presented for the year 2015-16, as the Spending Round set departmental budgets for 2015-16, building on the programme of reforms which this government began in 2010. It is presented in 2010-11 prices because this is the baseline used since HM Treasury first published distributional analysis in 2010.

2.23 Charts 2.B, 2.H and 2.I do not include the impact of the reduction in unprotected RDEL budgets of 1.1% (excluding local government and HMRC) announced at Autumn Statement 2013. As at Autumn Statement 2012, HM Treasury intends to include this measure in the distributional analysis when data on implementation, to the level of detail required, is available.

2.24 Charts 2.H and 2.I show that, as at previous fiscal events, households in the top quintile make the greatest contribution towards reducing the deficit, both in cash terms and as a percentage of their income and benefits in kind from public services. They also make the biggest contribution overall to funding public spending as shown in Chart 2.B. The cash figures in Chart 2.H bring together the cash impact of changes to tax and benefits with the cash equivalent value of the public services that households use.

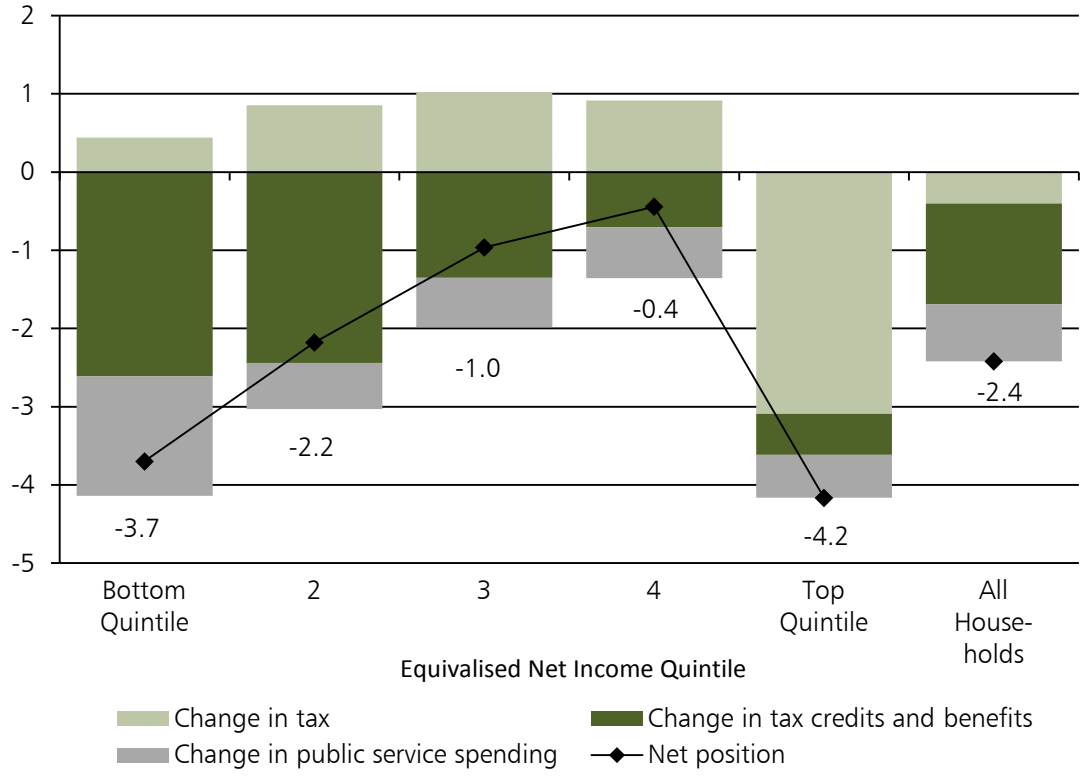
2.25 The distributional impacts shown in the charts are driven mainly by policy changes made since June Budget 2010, including those announced at Autumn Statement 2013. The Autumn Statement measures include, in addition to those in the decile charts above, the transferable tax allowance for married couples; extending free school meals to all infant school pupils in reception, year 1 and year 2; a new Help to Work scheme for the long-term unemployed; funding to reduce each household's energy bill; and removing the cap on higher education student numbers. However, Charts 2.H and 2.I are not directly comparable to their equivalents at Spending Round 2013 due to the methodological developments outlined in paragraph 1.10 above, and as such, comparisons do not show the impacts of Autumn Statement decisions alone. In particular, for the first time the quintile charts include two measures aimed at reducing tax avoidance where there is a substantive change in tax policy. Further detail on the methodology and criteria used to include these measures is detailed in Chapter 3.

Chart 2.H: Cumulative overall impact of public service spending, tax, tax credit, and benefit changes on households in 2015-16 in cash terms (£ per year), in 2010-11 prices, by income distribution



Source: HM Treasury estimates based on a range of models and data sources

Chart 2.I: Cumulative overall impact of public service spending, tax, tax credit and benefit changes on households in 2015-16 as a percentage of 2010-11 net income (including households' benefits in kind from public services), by income distribution



Source: HM Treasury estimates based on a range of models and data sources

2.26 Analysis presented above and in Chart 2.A suggests that the combined impact on households of changes in real incomes and government policy is relatively even across most of the income distribution: that is, the households most affected by government policy are those that have been least affected by wider economic circumstances, as far as historical data is available. Households at the top end of the income distribution have seen relatively flat real income growth, coupled with substantial reductions to their income as a result of government policy, meaning that these households are likely to have seen the largest fall in income overall.

3 Data sources and methodology

3.1 In line with the government's commitment to transparency, the tables below explain in detail the data source and methodology used to produce each of the charts presented in this document. All figures in this document are calculated as economic estimates, including the effects of assumptions and results from economic analyses that have a material impact. They are therefore outside the domain of official statistics.

Table 3.A: Data sources and methodology

Section	Details
Paragraph 1.6 (Equivalisation methodology)	Equivalisation is a process that adjusts a household's net income to take into account the size and composition of the household. This reflects the fact that larger households will require a higher net income to achieve the same economic well-being and standard of living as a household with fewer members. Net incomes are adjusted in comparison to a couple with no children, whose equivalised income is normalised at the same level as their unequivalised income. To calculate the equivalised net income for a household, each person is given a factor based on the position in the household relative to the head of the household and their age. The equivalence factors used in the analysis are the modified OECD factors (as used in the Department for Work and Pension's Households Below Average Income publication). These factors are shown in the table below. Each household is given an overall factor by adding the factors for each person. The net income for the household is then divided by this factor to produce the equivalised net income figure for this household. Equivalisation factors: Cohabiting head of household 0.67 Partner/spouse 0.33 Other second adult 0.33 Third adult 0.33 Subsequent adults 0.33 Child aged under 14 years 0.20 Child aged 14 years and over 0.33 For example, a household with a combined net income of £25,000 containing a couple and two children aged 7 and 15 years old will have an equivalised net income of around £16,340. This is calculated as follows: Factor: 0.67+0.33+0.20+0.33 = 1.53 Equivalised net income: £25,000 / 1.53 = £16,340
Chart 1.A	Source: Office for National Statistics. Data available online at: www.ons.gov.uk
Chart 2.A	Source: Office for National Statistics, The Effects of Taxes and Benefits on Household Income (2007-08 to 2011-12).

Paragraph 1.10 and 1.12 (Tax avoidance methodology and criteria)	These measures reflect a change to the rules of the tax system, and have the effect of bringing additional income into income tax, National Insurance, or capital gains tax. In practice, this means that affected households now pay more personal tax, compared to what they would have paid under previous policy. The impact on households is calculated, and then apportioned into Chart 2.H and 2.I. Measures have been determined to be suitable for inclusion if the anti-avoidance policy has a direct impact on households and is the result of a substantive change in tax policy. Only measures targeted at tax avoidance can be included – measures targeted at illegal tax evasion remain out of scope in the distributional analysis. Included measures do not reflect the allocation of any additional resource to HMRC to decrease tax avoidance within the existing rules of the tax system. In order to estimate the distributional impact of disguised remuneration, the estimated yield from this policy from basic, higher, and additional rate taxpayers is apportioned evenly among each taxpaying group. HMRC's analysis for the additional yield from the partnerships measure indicates that this yield will come almost entirely from additional rate income taxpayers, and therefore this yield has been allocated to this group accordingly. When including anti-avoidance measures, we have also adjusted the income denominator to reflect that our original definition of income is unlikely to include income obtained through tax avoidance. Where the analysis shows a loss to households as the result of a change of an anti-avoidance measure, the income denominators have been increased, to reflect that the original income within this household is higher than the underlying data suggests. This prevents the theoretical situation where a household could be shown as losing more than 100% of their original income. In effect, the income denominators in these charts are calculated as equivalised net income plus income from benefits in kind from public services, plus income through disguised remuneration or partnerships.
Chart 2.C, 2.D, 2.E and 2.F (Decile charts)	Not all measures can be reliably modelled due to data and/or modelling constraints. Tax, tax credit and benefits changes that can be modelled robustly as a household level are derived using HM Treasury's tax and benefit static microsimulation model as described below. Income quintile and decile analysis has been simulated using HM Treasury's tax and benefit static microsimulation model. The model uses data from the Living Costs and Food Survey (LCF) collected between April 2008 and March 2011. The small sample size of the LCF means that to be able to produce robust analysis three years of data has been pooled together. This data is then uprated appropriately to reflect the tax year being modelled. This dataset is used to model each household's net income under a given and alternative tax and benefit system. The difference between the two results produces the change in net income for each household. Households are then allocated into quintiles/deciles and the average (mean) change in net income for all the households in each quintile/decile is calculated. The model assumes no behavioural changes affecting employment, income or spending choices. Incomes are estimated on a before housing cost basis. For expenditure analysis, we use a measure of expenditure which includes a range of housing costs. However, we do not make any deduction in housing expenditure for households receiving housing benefit to reflect the fact that the housing benefit received is intended to cover this housing expenditure.

	The model assumes incomplete take-up of tax credits and benefits. A fuller description of the methodology for modelling incomplete take-up was set out in detail as part of HM Treasury's SR13 analysis in Chapter 3 of *Impact on households: distributional analysis to accompany the Autumn Statement 2013*, available at www.gov.uk. Changes in indirect tax assume that the same quantity of goods and services are purchased and that all of the increase in indirect tax is passed through to consumers. The following measures have been included in the analysis for Charts 2.C, 2.D, 2.E and 2.F, in addition to those modelled at Budget 2013: Council tax: funding for a further council tax freeze in 2014-15 Fuel Duty: cancel 2014 increase Pension credit passthrough
Charts 2.B, 2.H and 2.I (Quintile charts)	The quintile charts include around 90% of changes to tax, tax credits and benefits that will have an impact on households in 2015-16. They include over 60% of RDEL spending in England in 2015-16, as the analysis does not include administrative spending or spending on public goods because these do not benefit specific households directly. Tax, tax credit and benefit changes that can be modelled robustly at a household level are derived using HM Treasury's tax and benefit static microsimulation model, as described above for Charts 2.C to 2.F. Other additional measures are modelled by apportioning to quintiles the Exchequer costs or savings from the measures, based on carefully considered assumptions about where the impacts are likely to fall. For example, for pensions tax relief, it is assumed that the impact of the reform falls only on households in the top quintile. For reforms to Employment Support Allowance and Disability Living Allowance, where changes relate primarily to eligibility, this has been done on the basis of the distribution of benefit claimants. Changes to RDEL spending are derived using HM Treasury's RDEL distributional analysis model. Public service spending distributional analysis was first undertaken at Spending Review 2010. This analysis captures the impact of RDEL spending on households. Broadly, this is public spending by departments on service provision, as opposed to on transfer payments or on capital programmes. A fuller description of the methodology for modelling the distributional impact of public service spending was set out in detail in the Spending Review 2010 document, paragraphs B.8 – B.15, available on www.gov.uk, and in the Spending Review 2010 data sources document, available on the National Archives website, http://webarchive.nationalarchives.gov.uk. The analysis of Resource Departmental Expenditure Limit (RDEL) spending is based on information provided by departments from surveys of public service usage, as at Spending Review 2010. The analysis covers many of the services delivered by The Department of Health, The Department for Education, The Department for Work and Pensions, The Department for Communities and Local Government, The Department for Business, Innovation and Skills, The Department for Transport, Local Government, The Ministry of Justice, The Department for Energy and Climate Change, and The Department for Culture, Media and Sport.

The modelling does not include spending by: The Ministry of Defence, The Home Office, HM Treasury, The Cabinet Office, The Foreign and Commonwealth Office, The Department for International Development, HM Revenue and Customs, The Department for Environment, Food and Rural Affairs, The Law Officers' Department and Independent Bodies. The nature of the services provided by these departments means it is not possible to identify specific end-users, as they benefit the population as a whole.

The analysis of RDEL spending compares spending in 2010-11 and 2015-16, in real terms, adjusted using the GDP deflator.

In addition to those measures modelled at Spending Round 2013, the quintile charts include the following tax and AME measures:

Income Tax: transferable marriage allowance. In line with the OBR policy costings, this policy is modelled under the assumption that not all couples who are eligible to benefit from this policy choose to take up the transferrable tax allowance. Actual take-up rates are aligned with OBR costings.

Fuel Duty: cancel 2014 increase

Pension credit passthrough

The following specific RDEL measures are also included:

RDEL spending on the extension of Free School Meals is modelled using HM Treasury's tax and benefit microsimulation model. The spending is allocated using data on age and attendance of state education in the Living Costs and Food Survey underlying the model.

The Exchequer cost of the Help to Work package is allocated to income quintiles using data from the 2010-11 Family Resources Survey on the net incomes of recipients of income-related Jobseeker's Allowance (JSA). This is used as a proxy for the intended recipients as relevant data on the length of unemployment are not captured in the Family Resources Survey.

RDEL spending on the package announced at Spending Round 2013 to support people into work is apportioned according to the distribution of JSA recipients. This is used as a proxy as better income data for the intended recipients are not currently available.

The Exchequer cost of additional spending on Further Education Higher Apprenticeships is apportioned to households using Department for Business, Innovation and Skills' current best estimates of the net incomes of those taking up intermediate and advanced Apprenticeships, based on data from the 2010-11 Prior Qualifications Survey.

RDEL spending on the electricity bill rebate of £12, which is broadly equivalent to the cost of the Warm Homes Discount, is apportioned evenly across the quintiles. Other energy measures announced at Autumn Statement 2013 are not included – regulatory changes are not within the scope of this analysis and funding for energy efficiency support could not be modelled as income data for intended recipients are not currently available.

The 2015-16 Exchequer cost of reducing the cap on regulated rail fare increases to RPI+0 in 2014 is apportioned to households using

the Department for Transport's current best estimate of the net incomes of those consuming rail services, based on National Travel Survey data for 2011.

Revised RDEL costs of Universal Credit operations are included to reflect the government's current planning assumption.

RDEL spending on additional funding for Band B subjects is apportioned using the Department for Business, Innovation and Skills' current best estimate of the net incomes of those benefiting from the Higher Education teaching grant.

The Exchequer cost of the additional funding for New Enterprise Allowance announced at Spending Round 2013 is apportioned according to the distribution of JSA and Employment and Support Allowance (ESA) recipients. This is used as a proxy as better income data for the intended recipients are not currently available.

RDEL spending on removing the cap on student numbers in Higher Education is apportioned to households according to estimates of the income distribution of those currently consuming Higher Education. This includes indicative analysis of the subsidised loan system as at Spending Round 2013. The distribution of current Higher Education consumption is used as a proxy given data on the household incomes of recipients of the new spend is not yet available to the level of detail required for this analysis.

The quintile charts now include the impact of two tax avoidance measures:

The June 2010 Budget measure to introduce legislation to target arrangements intended to disguise remuneration or avoid restrictions on pensions tax relief.

The Budget 2013 partnerships review to counter the disguising of employment relationships through the use of Limited Liability Partnerships, and the tax-motivated allocations of business profits where partners include both individuals and companies (mixed membership partnerships). This includes the yield from this measure announced at Autumn Statement 2013.

In addition, the following measures have been updated to reflect the OBR's Autumn Statement 2013 forecast:

The revised AME costs of Universal Credit are included to reflect the government's current planning assumption.

Personal Independence Payment (PIP) replaces Disability Living Allowance (DLA) for working-age claimants from 2013-14. PIP started for new claims in April 2013 in a controlled start area and June 2013 nationwide. On 21 October 2013, DWP laid regulations confirming the staged roll out of natural reassessments in Wales, the Midlands and East Anglia, with other areas following in the coming months. The analysis has been adjusted to reflect this.

Chart 2.B is constructed using the same modelling inputs and assumptions as Charts 2.H and 2.I. They include all taxes and transfer payments captured within HM Treasury's tax and benefit microsimulation model as well as the additional measures described above. By construction, the differences between the 'before consolidation' and 'after consolidation' data points in Chart 2.B equate to the percentage changes in Chart 2.I.

	The income denominator for Chart 2.B analysis is household income after taxes and benefits, including public spending benefits in kind. This was chosen for consistency with Charts 2.H and 2.I. The overall level across all households is positive. This is in part because the chart only captures the tax taken from households (not businesses), whereas transfer payments and public services are funded by all taxes (including those paid by businesses).
Paragraph 1.10 (Model developments)	HM Treasury has made improvements to the modelling of the recipients of income-related benefits and tax credits. This includes modelling the disability premia in tax credits, and reallocating entitlement to Income Support, income-related ESA, income-related JSA, and Pension Credit. Modelling of the household benefit cap policy has been refined to account for the localisation of support for Council Tax. Negative incomes before housing costs are reset to zero to standardise with the Department for Work and Pensions Households Below Average Income (HBAI) definition of net income. The methodological improvements made to the distributional analysis of RDEL spending is part of ongoing work to improve the accuracy of this modelling. HM Treasury has been working with the relevant departments to understand the data sources available and how best to capture this spending. Re-estimated distributions are included for spending by the Ministry of Justice (MOJ). These distributions are now based on the household income distribution rather than the personal income distribution, making them more consistent with the rest of the distributional analysis in this chapter. Revised MOJ distributions capture spending on those eligible for civil legal aid and Criminal Injuries Compensation Authority (CICA) payments, including an income and capital means test for civil legal aid. Data are not available to distinguish between those eligible for this spending and those who receive this spending. Administrative data on the characteristics of the recipients of Start-Up Loans are now available, so spending on Start-Up Loans is now allocated to households on the basis of these data from the Start-Up Loans Company Customer Relationship Manager system.
Chart 2.G (Universal Credit)	This analysis considers the impact of Universal Credit by income decile by comparing simulated incomes under Universal Credit with incomes under the current system of benefits and tax credits. The two simulations take into account all policies announced prior to this Autumn Statement that take place before and during the introduction of Universal Credit. The income decile modelling is carried out by combining DWP's Policy Simulation Model, which uses 2010-11 Family Resources Survey data, with official benefit and tax credit forecasts. The income deciles are derived within the simulation of the existing system of benefits and tax credits. For modelling purposes, it is assumed that the localised support due to replace Council Tax Benefit (CTB) will be distributed in a similar pattern to current CTB. The chart is produced by comparing the sum total of net household income in Universal Credit with the current system of benefits and tax credits, expressed as a proportion of total income pre-Universal Credit. The percentage change in income for each income decile shown in Chart 2.G is rounded to the nearest 0.1%. Given the methodological complexity of modelling the benefit system in future years, the impact of a fully rolled out 'steady state' Universal Credit has been modelled in the year 2014-15. As this is 'steady state' analysis,

there is no transitional protection. It is assumed in the steady state modelling of Universal Credit that Personal Independence Payments will be fully introduced. The distributional analysis is consistent with the modelling underpinning the latest Universal Credit cost estimates assumed within Autumn Statement 2013.

Compared to the analysis published at Budget 2013, the impact of Universal Credit on net incomes (as if it were fully implemented in 2014-15) published here shows small changes mainly due to changes to the Universal Credit work allowances and improved understanding of the composition of households that are expected to benefit from the introduction of Universal Credit.

The equivalisation of incomes is consistent with the other distributional analysis presented within this document. The analysis does not consider dynamic effects, such as increased employment through better work incentives or through behavioural responses to the minimum income floor for the self employed.

The chart includes the key entitlement changes and expected additional take-up of Universal Credit. It excludes the effects of reduced fraud, error and overpayments – reductions are expected through the simplification of policy and delivery, and through more accurate and up-to-date earnings information.

Take-up is expected to increase due to the relative simplicity and integrated nature of Universal Credit. More specifically:

- those only partially taking up their entitlement to existing benefits and tax credits are assumed to take up their full Universal Credit entitlement
- some claimants who currently completely fail to take up their entitlement are assumed to take up Universal Credit – the take-up assumptions made for this group of claimants vary by employment status
- among the employed, it is assumed that 20% of those currently not taking up any entitlement will take up Universal Credit
- among the self-employed, it is assumed that 10% of those currently not taking up any entitlement will take up Universal Credit

3.2 Table 3.B below shows the median gross income (earnings plus benefit income) for different household types in each equivalised net income decile.

3.3 The decile boundaries in HM Treasury's analysis are calculated on an equivalised net income basis (after tax and benefits) to capture households' standard of living. However, many people think about their household income, particularly annual salaries, in gross rather than net terms. The table below shows median gross (pre-tax) incomes, which gives a less precise estimation of a household's position on the income distribution than net income, but is easier to understand. Decile boundaries on a net income basis were published as part of the Treasury's Autumn Statement 2012 analysis in Chapter 2 of *Impact on households: distributional analysis to accompany the Autumn Statement 2012*, available at www.gov.uk.

3.4 Table 3.B should therefore be used to approximate where a household will be found in the income distribution. If a household consisting of two adults earns £27,200 per year between them, there is a high likelihood that this household will be found in the fifth income decile.

However, this is not guaranteed, because different gross household incomes can result in different net household incomes, depending on how many earners there are in the household, the size of the household, and which benefits the household qualifies for.

Table 3.B: Median gross income for each decile (£ per year, 2014-15) for different household compositions

Median gross income of households in decile	One adult (£)	One adult and one child (£)	Two adults (£)	Two adults and one child (£)	Two adults and two children (£)
Top decile	60,700	77,600	88,800	113,300	153,000
Ninth decile	40,000	49,300	58,400	74,600	90,100
Eighth decile	31,200	36,300	46,400	59,800	69,800
Seventh decile	24,900	31,000	38,000	49,300	60,000
Sixth decile	21,100	26,300	32,000	42,400	51,000
Fifth decile	17,600	24,900	27,200	35,700	44,300
Fourth decile	15,300	20,800	23,000	30,800	37,000
Third decile	13,200	17,100	19,900	26,100	32,000
Second decile	11,300	14,500	17,100	21,800	26,500
Bottom decile	8,600	10,700	13,200	15,300	19,800

Source: HM Treasury tax and benefit microsimulation model

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This document can be downloaded from www.gov.uk

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