The distributional effect of tax and benefit reforms to be introduced between June 2010 and April 2014: a revised assessment

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Executive Summary

- The Chancellor claimed in his Budget speech that the June 2010 Budget was a ‘progressive Budget’. Initial analysis of this claim showed that this was not true if measures announced in the Budget were analysed in isolation, or if their effects were considered over the longer term. Furthermore, HM Treasury analysis (as well as our own, in our post-Budget briefing) of the distributional effect of Budget measures did not include the effects of some benefit changes whose effects were difficult to allocate precisely to households. These measures represent £4.1 billion of the £11 billion of welfare cuts announced in the emergency Budget.

- In this paper we attempt to allocate the effects of these changes to housing benefit, Disability Living Allowance and tax credits to households. We do this by making assumptions about the impact of changes to Disability Living Allowance and tax credits, and by using analysis published since the Budget by the Government on the impact of the changes to housing benefit. Inevitably, though, these estimates will be less precise than those obtained directly from our tax and benefit microsimulation model. Our analysis shows that the overall effect of the new reforms announced in the June 2010 Budget is regressive, whereas the tax and benefit reforms announced by the previous Government for introduction between June 2010 and April 2014 are progressive.

- Low-income households of working age lose the most from the June 2010 Budget reforms because of the cuts to welfare spending. Those who lose the least are households of working age without children in the upper half of the income distribution. This is because they do not lose out from cuts in welfare spending and are the biggest beneficiaries from the increase in the income tax personal allowance.

- The biggest change to welfare policy in the June 2010 Budget in fiscal terms was the decision to link benefits with the Consumer Price Index (CPI) rather than the Retail Prices Index (RPI) or Rossi index from April 2011. This is very likely to mean less generous benefits in the years ahead. The savings from linking to a lower index will compound over time. The change is predicted to save the Government £1.2 billion in 2011–12 rising to £5.8 billion in 2014–15.
The Government argued that the CPI is a better measure of inflation than the indices to which benefits are currently linked because the way it is calculated allows for the fact that consumers are able to protect themselves from price changes by substituting towards relatively cheaper goods, and because the goods and services it covers better reflect the “inflation experience” of households receiving benefits. We find the first of these arguments to be sound, but the second to be more questionable – only 23% of benefit claimants are unaffected by increases in mortgage interest payments and council tax, which are the main items that are excluded from the CPI but included in the RPI.

1. Introduction

The June 2010 Emergency Budget set out a number of tax and benefit changes that will be introduced by 2014–15. For the first time, the Budget documentation contained distributional analysis of the changes by household income, which showed that the measures to be introduced between June 2010 and April 2012 were progressive relative to household income, and in his Budget speech the Chancellor used this as evidence that it was a ‘progressive Budget’. In our post-budget briefing, we cast doubt on this claim, demonstrating that many of the progressive tax rises that will be introduced over the next two years were announced by the previous Government, and that the Budget measures scheduled to come in between 2012 and 2014 are generally regressive. Moreover, the distributional analysis in the Budget documentation did not include the effects of some cuts to housing benefit, Disability Living Allowance and tax credits that are likely to affect the poorer half of the income distribution more than the richer half. In Sections 2 and 3, we attempt to model the full impact of tax and benefit changes in the

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3 See Budget speech, 22nd June 2010, http://www.hm-treasury.gov.uk/junebudget_speech.htm. The Chancellor also claimed that the Budget would not increase child poverty in 2012–13, although we believe this assessment also excludes the effect of some cuts to housing benefit, Disability Living Allowance and tax credits. We intend to assess this claim after the spending review.

Budget, including these additional benefit cuts, on different income and expenditure groups. In Section 4, we show their impact on different sorts of households.

The reason that both we in our post-Budget analysis and HM Treasury did not take certain reforms into account is that the data underlying the tax and benefit microsimulation models we and HM Treasury use to perform this distributional analysis is insufficient to precisely identify those household that will be affected. In this paper we make the best use of the data that is available, together with some recently-published analysis of housing benefit cuts by the Department for Work and Pensions,\(^5\) to attempt to estimate which households will be affected by the benefit cuts; inevitably, though, these estimates will be less precise than those obtained directly from our tax and benefit microsimulation model. We discuss the methodology for assigning losses to particular households in Appendix B.

The biggest change to benefit policy in terms of the long-run saving to the government in the June 2010 Budget was the decision to uprate benefits in line with the Consumer Price Index (CPI) rather than the Retail Prices Index (RPI) or Rossi index which have been used in the past.\(^6\) Section 5 describes the differences between these various measures of the price level and evaluates the Government’s claims that the CPI gives a more appropriate measure of inflation for benefit claimants, and Section 6 concludes.

### 2. The distributional effect of direct tax and benefit reforms to be enacted between 2010 and 2014

In this section, we examine the effect of direct tax and benefit changes to be introduced over the next four years, including the effects of the reforms to Housing Benefit, Disability Living Allowance and tax credits whose effects cannot be precisely modelled. Note we do not include the effect of indirect tax changes in this section.

Figure 2.1 shows the distributional impact of direct tax and benefit changes due to be implemented between June 2010 and April 2012, split into the effect of measures announced by the previous Government in the March 2010 Budget or before, and those announced by the current Government in the June 2010 Budget. The key pre-announced measures are:

- An increase in all employees’ and employers’ National Insurance rates of 1% from April 2011,
- An increase in the threshold at which employees start to pay National Insurance of £23 per week from April 2011,
- Real reductions in the point at which the higher rate of income tax starts to be paid in both April 2011 and April 2012,

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\(^6\) Note that the distributional effects of this policy were included in the analysis in the Budget documentation, and our analysis in our post-Budget briefing.
• Restricting tax relief on pension contributions for those with incomes above £130,000,
• The expiry of a number of one-off giveaways for the financial year 2010–11, in particular a temporary real increase in some benefits and the income tax personal allowance.
• From April 2011, private sector tenants claiming Local Housing Allowance (LHA) would no longer be able to receive more in LHA than they have to pay in rent. (Previously claimants could keep up to £15 of the amount by which their LHA payment exceeded their rent).

The main direct tax and benefit changes announced in the June 2010 Budget, most of which will be introduced in April 2011, and which are included in the analysis below, are:

• A £1,000 cash increase in the income tax personal allowance for those aged under 65,
• A £21 increase in the threshold at which employers start paying National Insurance Contributions,
• Using the CPI rather than the RPI or Rossi to uprate all benefits (see section 5 for more details),
• Increases in the child element of the Child Tax Credit in both April 2011 and April 2012,
• Withdrawing the family element of the Child Tax Credit from higher-income families,
• Increasing the rate at which tax credits are withdrawn from 39% to 41%,
• Removing the baby element of the Child Tax Credit,
• Freezing Child Benefit rates for three years,
• LHA rates will be set at the 30th percentile of local rents rather than the 50th percentile. This effectively means that LHA claimants will only be able to choose from the cheapest 30% of properties in their local area of the appropriate size for their family rather than the cheapest 50%.
• Irrespective of local rents, there will be caps on the total amount of rent that can be claimed under LHA and rents will be capped at the 4-bedroom rate. This will prevent claimants obtaining large amounts of LHA to live in high-rent areas.
• Changes to the way in which in-year changes are made to tax credit awards so that increases in income of more than £10,000 (rather than £20,000) will reduce tax credit payments and falls in income of up to £2,500 will not increase tax credit payments. Also, claimants will have to inform HMRC about changes in their circumstances more quickly.

Figure 2.1 includes the effect of all of these changes, including those which were previously excluded in both our and HM Treasury’s analysis. This is based in part on a document released by the Department for Work and Pensions which shows some distributional analysis of housing benefit cuts. Appendix A contains analysis which

excludes the measures omitted by us in our initial assessment and by HM Treasury in the Budget document; a comparison between the two therefore reveals the impact of those omitted measures.

Figure 2.1: The effect of direct tax and benefit reforms to be introduced between June 2010 and April 2012 by household income decile group

The pre-announced direct tax and benefit changes to be in place by April 2012 are a progressive overall tax rise that will particularly affect the richest tenth of households. This is principally due to increases in National Insurance rates and the restriction of tax relief on pension contributions for high-income individuals. By contrast, the direct tax and benefit reforms announced in the June 2010 Budget are clearly regressive. This is because other benefit cuts are sufficient on average to offset the gains from the increase in the child element of the Child Tax Credit for poorer households. By contrast, the top half of the income distribution gains on average as a result of increases to the income tax personal allowance and the employer NI threshold. Overall, the direct tax and benefit changes are slightly regressive within the bottom nine decile groups, although it is the top decile group that loses out the most in both cash and percentage terms.

Tax and benefit reforms were also announced both by the previous Government and in the June 2010 Budget that will not come into effect until 2013 or 2014, and the losses to benefit and tax credit recipients from moving to CPI rather than RPI or Rossi uprating will increase over time. The particular reforms that were announced in the June 2010 Budget that will not come into effect until April 2013 or later are:

- A further real reduction in the point at which the higher 40% rate of income tax is paid in April 2013,
- Reforms to the medical test for Disability Living Allowance that are assumed to reduce the number of claimants by 20%,
• Reductions in housing benefit for those of working age living in social housing that is under-occupied,
• Increasing local reference rents (the maximum rents that private sector tenants can claim) in line with CPI rather than actual rents from April 2013 and
• Reducing housing benefit by 10% for those who have been claiming Job Seekers’ Allowance for more than a year.
• A further change to the way in which in-year changes to tax credit awards so that increases in income of more than £5,000 will reduce tax credit payments from April 2013.

Figure 2.2 shows the effect of all direct tax and benefit changes to be introduced between June 2010 and April 2014. An analysis that excludes those benefit changes previously omitted from our analysis can again be found in Appendix A.

**Figure 2.2: The effect of direct tax and benefit reforms to be introduced between June 2010 and April 2014 by household income decile group**

![Graph showing the effect of direct tax and benefit reforms on household income decile groups]

**Notes:** As for Figure 2.1.  
**Sources:** As for Figure 2.1.

Changes announced in the June 2010 Budget to be introduced between 2012 and 2014 are also regressive. Indeed, the overall package of direct tax and benefit reforms now looks clearly regressive within the first nine decile groups of the income distribution: they each lose a similar amount in cash terms, on average, but this comprises a larger fraction of those with low incomes than those with higher incomes. However, it is still the richest tenth of households that lose the most in both cash and percentage terms.

### 3. The overall distributional effect of the tax and benefit changes to be enacted between 2010 and 2014

In this section, we add on the effects of indirect taxes (principally, the increase in the standard VAT rate announced in the June 2010 Budget and the fuel, tobacco and alcohol
duty escalators announced by the previous Government). As IFS researchers have argued previously, examining indirect tax payments at a snapshot in time and comparing this with net income gives a misleading picture of their progressivity because incomes are volatile and spending can be smoothed by borrowing and saving. This means that many people with low incomes at a point in time are not those we would normally consider as being poor; consider for example those who are temporarily unemployed, studying, taking a break from the labour market to raise children, are retired with hefty savings, and so on. We might want to consider the effect of tax and benefit changes as a percentage of annual expenditure and/or rank households by expenditure rather than income, as this might be a better guide to lifetime living standards.

Figure 3.1 shows the effect of all tax and benefit changes to be implemented between June 2010 and April 2012 on households ranked by income, expressed both as a percentage of income and expenditure. We split the cash losses into those resulting from pre-announced by the previous Government and those announced in the June 2010 Budget and show the total loss as a percentage of net income and as a percentage of expenditure.

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8 One effect of increasing indirect taxes is to temporarily increase inflation and hence the cash value of most benefits (since these are generally uprated in line with inflation, see section 5). We ignore this effect, and any other effects that higher inflation has on households’ incomes (through for example, increasing index-linked annuity payments).


Figure 3.1: The effect of all tax and benefit reforms to be introduced between June 2010 and April 2012 by household income decile group

Notes: Income decile groups are derived by dividing all households into 10 equal-sized groups according to income adjusted for household size using the McClements equivalence scale. Decile group 1 contains the poorest tenth of the population, decile group 2 the second poorest, and so on up to decile group 10, which contains the richest tenth. Assumes increases in employer NICs are passed on to employees in the form of lower wages.

Sources: Authors' calculations using TAXBEN run on the 2007–08 Family Resources Survey and 2007 Expenditure and Food Survey.

Considering all tax and benefit reforms, the overall package of reforms is regressive within the poorest nine decile groups, although the richest tenth of households lose the most in both cash and percentage terms. This is because of the reforms announced in the June 2010 Budget: most of the losses for the bottom half of the income distribution are coming from measures announced in the June 2010 Budget, whereas most of the losses for the upper half result from pre-announced measures. However, this is at least in part because many households in the bottom decile group spend more than their income and hence the amount they lose from increasing VAT is high as a percentage of their income. Losses as a percentage of expenditure are very similar for each of the bottom nine decile groups.

Figure 3.2 shows the same analysis by expenditure decile group.
Figure 3.2: The effect of all tax and benefit reforms to be introduced between June 2010 and April 2012 by household expenditure decile group

Notes: Expenditure decile groups are derived by dividing all households into 10 equal-sized groups according to expenditure adjusted for household size using the McClements equivalence scale. Decile group 1 contains the lowest-spending tenth of the population, decile group 2 the second lowest-spending, and so on up to decile group 10, which contains the highest-spending tenth. Assumes increases in employer NICs are passed on to employees in the form of lower wages.

Sources: Authors’ calculations using TAXBEN run on the 2007 Expenditure and Food Survey.

A different picture emerges when we consider the effect of reforms by household expenditure decile group. When losses are expressed as a percentage of net income, the overall package of tax and benefit reforms appears progressive. However, when losses are expressed as a percentage of expenditure, an inverted U shape emerges, with both the highest-spending and lowest-spending households losing the most. Also, we can again see that the measures announced in the June 2010 Budget are less progressive than the reforms pre-announced by the previous Government – the June 2010 Budget measures represent a larger share of the total loss for lower-spending households.

Figure 3.3 shows the distributional effect of all tax and benefit reforms to be introduced between June 2010 and April 2014 by income decile group.
Figure 3.3: The effect of all tax and benefit reforms to be introduced between June 2010 and April 2014 by household income decile group

The overall distributional effect of reforms by income decile group is clearly regressive within the bottom nine decile groups of the income distribution when losses are expressed as a percentage of net income, and the bottom decile group loses a larger proportion of their net income than the top decile group. This pattern is less clear cut when losses are considered as a percentage of expenditure. There is a U shaped pattern of losses in this case within the bottom nine decile groups, although it is the richest tenth that loses the most when losses are expressed relative to expenditure. The measures announced in the June 2010 Budget are regressive as they hit the poorest more than the seventh, eighth and ninth decile groups in cash, let alone percentage, terms.

Figure 3.4 shows the same analysis by expenditure decile group.
When losses for each expenditure decile group are expressed as a proportion of net income, the overall package of reforms is slightly progressive, although the June 2010 Budget measures are regressive, since they represent a very similar cash loss for each of the seven lowest-spending decile groups. The overall package is regressive when losses are expressed as a proportion of expenditure.

### 4. The distributional effect of tax and benefit reforms to be introduced between 2010 and 2014 by household type

Figure 4.1 shows the distributional effect of all tax and benefit reforms to be implemented between June 2010 and April 2014 by household type.
Figure 4.1: The effect of all tax and benefit reforms to be introduced between June 2010 and April 2014 by household type

Notes: Assumes increases in employer NICs are passed on to employees in the form of lower wages.
Sources: Authors’ calculations using TAXBEN run on the 2007–08 Family Resources Survey and 2007 Expenditure and Food Survey.

Low income groups and pensioners bore the least pain from the tax and benefit reforms announced by the previous Government, whereas richer groups such as single earner couples and single individuals in work were hit hardest as a proportion of income. The reforms announced in the June 2010 Budget disproportionately affect those groups that are most reliant on benefits, namely the single unemployed, lone parents and zero-earner couples. By contrast, households with little or no benefit entitlement and those with multiple workers are unaffected by the welfare cuts announced in the June 2010 Budget but benefit disproportionately from the increase in the income tax personal allowance.

Many of the differences we see here are in fact caused by different households’ positions in the income distribution. In figures 4.2–4.4 below we show the distributional effect of pre-announced changes, Budget measures and all changes for families with children, pensioners and others within each income decile group. (A more detailed analysis by family type and income quintile can be found in Appendix C).
Figure 4.2: The effect of pre-announced tax and benefit reforms to be introduced between June 2010 and April 2014 by income decile group and household type

Notes: Income decile groups are derived by dividing all households into 10 equal-sized groups according to income adjusted for household size using the McClements equivalence scale. Decile group 1 contains the poorest tenth of the population, decile group 2 the second poorest, and so on up to decile group 10, which contains the richest tenth. Assumes increases in employer NICs are passed on to employees in the form of lower wages.

Sources: Authors’ calculations using TAXBEN run on the 2007–08 Family Resources Survey and 2007 Expenditure and Food Survey.

Figure 4.3: The effect of tax and benefit reforms announced in the June 2010 Budget to be introduced by April 2014 by income decile group and household type

Notes: As for Figure 4.2.

Sources: As for Figure 4.2.
For the pre-announced reforms, the main difference is by income decile group – there is little difference between family types within each decile group. The only exception to this is that in richer decile groups, pensioners do not lose as much as households of working age. This is because pensioners do not have to pay National Insurance Contributions, and because pensioners are relatively unaffected by the restriction of tax relief on pension contributions for those with incomes above £150,000.

The measures announced in the June 2010 Budget are regressive within families with children and those of working age without children, but affect all pensioners relatively equally. This is because benefits for pensioners were spared from the cuts made to other areas of welfare expenditure which hit the poor of working age, and because richer pensioners do not benefit from the increase in the personal allowance for those aged under 65. Those who are least affected by the Budget measures are those of working age without children in the upper half of the income distribution. This is because they are not eligible for benefits in the first place so cannot lose out as a result of cuts to welfare spending, and because they are the biggest beneficiaries from the increase in the personal allowance.

Overall, as we saw earlier, the package is slightly regressive within the poorest nine-tenths of the income distribution, but the richest tenth lose the most. This effect is driven by those of working age – the effect of reforms among pensioners is broadly the same across the income decile groups. Those who are least affected by the tax and benefit reforms are those of working age without children in the upper-middle of the income distribution. Families with children lose out the most within each tenth of the income distribution as they are the group that is worst affected by the benefit cuts announced in the June 2010 Budget.
5. Linking benefits to the Consumer Prices Index

In the Government’s Emergency Budget in June, the Chancellor George Osborne announced that from April 2011, benefits and tax credits, with the exception of the Pension Credit and Basic State Pension, would be uprated using the Consumer Prices Index (CPI) measure of inflation rather than using the Retail Prices Index (RPI) or Rossi index - the two measures that are currently used. The role of the RPI in the Basic State Pension’s “triple lock” – i.e. the rule that it should increase with the highest of earnings, the RPI, and 2.5% - will also be supplanted by the CPI.

In this section of the briefing note, we will describe the differences between these various measures of inflation, and evaluate the Government’s claim that the CPI provides a more appropriate measure of inflation for benefit recipients.

5.1. Differences between indices

The three measures of inflation – RPI, Rossi and CPI – are constructed in a similar way. They all compare the cost of buying a representative ‘basket’ of goods and services bought by an ‘average’ household to the cost a year earlier. The basket is adjusted each year to take account of changes in purchasing patterns, with items added and removed and the weights assigned to different areas of consumption changed. However, they do differ in a variety of ways.

The RPI is the longest standing measure of inflation and is currently used to uprate the majority of state benefits and pensions. The Rossi index (named after the Minister for Social Security in the early 1980s, Hugh Rossi) is calculated in the same way as the RPI, but it excludes certain housing costs – mortgage interest payments, rent and council tax – from its coverage. Rossi is used to uprate most means tested benefits, as it is thought to be a better reflection of increases in the cost of living for households who receive them. This is because they are unlikely to own their own home, and thus are unaffected by mortgage interest rates, and are more likely to have increases in their rent and council tax costs covered by Housing Benefit and Council Tax Benefit.

The CPI, the measure of inflation that the Bank of England targets when it sets interest rates, differs from these two measures in a variety of ways.

Firstly, the CPI covers different goods. Relative to the RPI it excludes mortgage interest payments, council tax, buildings insurance, house purchase costs, TV licences, Road Fund licences and trades union subscriptions. Unlike the Rossi, rent is included in the

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CPI. The CPI also includes some things not covered by the RPI, including stock broker fees, university accommodation fees, and overseas student fees.

Secondly, the CPI draws on different data to the RPI. The calculation of the RPI relies heavily on micro-data from the ONS's Living Costs and Food Survey (LCFS) of households, whereas the CPI uses the UK national accounts. Because of this, the RPI and CPI cover different populations. The RPI only covers those surveyed and so excludes the highest earners, foreign visitors to the UK, non-profit institutions serving households (e.g. nursing homes) and pensioner households\(^\text{13}\), whereas the CPI includes all of these.

Finally, there is a difference in the formula used to calculate the CPI and RPI inflation rates. Both are calculated in several stages. In the first stage, a sample of prices for a particular item (e.g. for different brands of white sliced bread) is gathered from all over the country. An average of these prices is taken across different ‘strata’, defined by region and the type of shop (independent or chain retailer). This gives what is known as an ‘elementary aggregate’ price; a weighted average of these elementary aggregates is taken to give an overall national average price index for that item. These different item indices are then aggregated further into ‘sections’ (e.g. ‘bread’) made up of a number of related items. Sections are aggregated into ‘groups’ like food. Finally, an overall price index is calculated from the different group indices.\(^\text{14}\)

The difference between the CPI and the RPI (and Rossi) comes in how the elementary aggregate average prices for the items are derived. In the RPI, a simple arithmetic average of all the prices sampled for each item is taken. In the CPI, by contrast, a geometric average is used. In both cases, at higher aggregation levels prices are calculated as simple weighted arithmetic averages.

This difference, known as the ‘formula effect’, means that even if the CPI and RPI covered the same goods and the same population, the CPI would give a lower level of inflation than the RPI. The RPI inflation measure arguably overstates the true increase in the cost of living, since the way it is calculated does not allow for the fact that consumers can mitigate the impact of price changes on their welfare by substituting away from goods which have become relatively more expensive towards cheaper goods. The different method of the CPI does take this into account, although in a very particular way, which makes certain assumptions about consumer behaviour\(^\text{15}\).

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\(^\text{13}\) A measure of the RPI for low income pensioner households is produced separately on a quarterly basis. See section 7.7 of http://www.statistics.gov.uk/downloads/theme_economy/focus-on-cpi-july-2010.pdf tables 7.4


\(^\text{15}\) For more technical details of the way the CPI is calculated and how this compensates for what economists call “substitution bias” see Appendix D.
5.2. Rationale for the change

Because of both the formula effect and the fact that the items excluded from it tend to rise in price more quickly than average prices, the CPI tends to give a lower rate of inflation than either Rossi or the RPI (see figure 5.1 below). This means the decision to link benefits to the CPI is likely to save the government money. These savings will cumulate over time, meaning that while in any given year the differences between different measures of inflation may be small, over many years the difference in the value of benefit payments will be substantial. The June 2010 Budget forecast that this measure will save £1.2 billion in 2011/12, rising to £5.8 billion by 2014/15, relative to maintaining the current system.

Figure 5.1 CPI, RPI and Rossi Year-on-Year Changes 1991-2009

Aside from its fiscal impact, the Government argued that the CPI offered a more appropriate “measure of benefit and pension recipients’ inflation experiences than RPI”. The Government gave two reasons for this:

1) The difference in the way the CPI was calculated makes it a better measure of inflation;

2) The CPI’s coverage better reflects the spending of those receiving benefits.

The first argument relates to the ‘formula effect’ described above, which allows consumers to protect themselves against changes in prices by substituting towards

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17 The Government also pointed out that this change would “ensure consistency with the measure of inflation used by the Bank of England”.

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relatively cheaper goods. This is a sound rationale for the switch. Indeed there is good reason for the government to use this methodology (if not necessarily the coverage of the CPI) for all indexation rules used by the government, including the uprating of tax thresholds. The ONS believes that this difference in the way the CPI is calculated is the most important factor in explaining the difference between the CPI and the RPI.

The validity of the second argument is an empirical question. We can test the extent to which the coverage of the CPI is more appropriate than the RPI for benefit recipients by looking at the proportion who are “insulated” from changes in costs that are excluded from the CPI. There are a number of such items, but we only consider mortgage interest payments (MIPs) and Council Tax payments (CT), which are likely to be the most important.

For those only receiving means-tested benefits, the relevant comparison is between the CPI and Rossi. Since mortgage interest and council tax are also excluded from Rossi, the question here boils down to whether or not it is appropriate to include rental costs in the index used to calculate their benefits.

To examine these issues we take data from the 2008 Living Costs and Food Survey (the latest year for which we have data). We look at households in Great Britain only, owing to differences in the system of local taxation in Northern Ireland. We divide benefits into whether they are typically uprated using Rossi or the RPI (see table 5.1 below).

Table 5.1: Classification of Benefits by Indexation Rule

<table>
<thead>
<tr>
<th>Rossi</th>
<th>RPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobseekers’ Allowance</td>
<td>Child Tax Credit</td>
</tr>
<tr>
<td>Income Support</td>
<td>Working Tax Credit</td>
</tr>
<tr>
<td>Housing Benefit</td>
<td>Statutory Sick Pay</td>
</tr>
<tr>
<td>Incapacity Benefit</td>
<td>Child Benefit</td>
</tr>
<tr>
<td>Employment and Support Allowance</td>
<td>Guardian’s Allowance</td>
</tr>
<tr>
<td>Severe Disablement Allowance</td>
<td>Statutory Maternity Pay</td>
</tr>
<tr>
<td></td>
<td>Maternity Allowance</td>
</tr>
<tr>
<td></td>
<td>Income-related Pensions</td>
</tr>
</tbody>
</table>

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18 Something the Government has said it will look into, see HM Treasury, *June Budget 2010*, June 2010.

We take those “insulated” from mortgage interest payment to be those who either rent or own their homes outright. Benefit recipients are assumed to be insulated from Council Tax if they receive at least one means-tested benefit – which means they are likely to be eligible for Council Tax benefit – or if they have a net Council Tax bill of zero. Those who either own their homes or receive Housing Benefit are assumed to be unaffected by rent increases; the latter because, in many cases, any increases in rent will be matched, in whole or in large part, by increases in benefit payments.

The results of this exercise are shown in table 5.2 below. The table separates the proportion of recipients “insulated” from various costs out of those who receive only benefits linked to the RPI, those who receive only Rossi-linked benefits, and out of all benefit recipients.

Only 23% of benefit recipients are fully insulated from changes in the costs of the main items excluded from the CPI. Furthermore, we estimate that spending on these items plus dwelling insurance, a third item the CPI excludes, accounts for 11% of recipients’ total expenditure on average (compared to a population average of 13%).

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20 The assumption that all those on means-tested benefits are insulated from Council Tax increases is not necessarily completely accurate, and may lead to us underestimate the degree to which households are affected by these costs.
Table 5.2 Proportions of Benefit Recipients Insulated from Mortgage Interest Payments, Council Tax and Rental Costs

<table>
<thead>
<tr>
<th>Proportion</th>
<th>( RPI)-linked benefits only</th>
<th>Rossi-linked benefits only</th>
<th>All benefit recipients</th>
<th>No benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulated from MIPs and CT</td>
<td>8.8% (3,043)</td>
<td>85.3% (172)</td>
<td>23.1% (3,682)</td>
<td>4% (1,587)</td>
</tr>
<tr>
<td>Insulated from Rent increases</td>
<td>15.8% (3,043)</td>
<td>56.3% (172)</td>
<td>24.5% (3,682)</td>
<td>7.1% (1,587)</td>
</tr>
</tbody>
</table>

Note: Sample sizes in brackets.
Source: Author’s own calculations using LCFS data.

By indexing means-tested benefits to Rossi, the government already takes into account the fact that, for some recipients, housing costs are relatively unimportant. The fact that many of those who only receive Rossi-linked benefit are unaffected by changes in these costs is therefore not surprising, nor a justification to switch to the CPI. Many (56%) Rossi-linked benefit recipients are also insulated from changes in rental costs. These are likely to be childless low-income households, since they are not receiving child benefit which is RPI-linked. When we look at all household receiving Rossi benefits (whether or not they receive an RPI-linked benefit as well), the proportion who are insulated from rent increases rises to 62%. For those receiving Rossi-benefits, therefore, the coverage of the Rossi measure which also excludes rent looks more appropriate than the coverage of the CPI.

For those who do not receive any Rossi linked benefits, the coverage of the CPI appears particularly inappropriate: only 9% of those who just receive only RPI-linked benefits are insulated from changes in mortgage interest and council tax.

These figures undermine the claim that the coverage of the CPI is more suitable for benefit recipients than the RPI and Rossi.

One possible counterargument is that we should be most concerned that the index to which benefits are linked reflects the inflation experience of the poorest benefit recipients, for whom benefits make up a large share of total income. If the items the CPI excluded were less important for these household than it was for benefit recipients as a whole, then this might assuage some of our concerns about the coverage of the index. In other words, we might be worried less if those who were not insulated from changes in MIPs and Council Tax tended to be richer households receiving universal benefits such as Child Benefit.

Figure 5.2 below suggests that this is indeed the case. Poorer households who receive benefits are more likely to be insulated from changes in the costs of these items. However the proportion of poorer households who are not insulated is still high: around
one in three benefit recipients in the bottom income decile are not fully insulated from mortgage interest and council tax costs. In the second poorest decile, more than half (54%) are not insulated.

**Figure 5.2: Proportion of Benefit Recipients Insulated from Changes in MIPs and CT by income decile group**

Note: Income decile groups are derived by dividing all households into 10 equal-sized groups according to income adjusted for household size using the McClements equivalence scale. Decile group 1 contains the poorest tenth of the population, decile group 2 the second poorest, and so on up to decile group 10, which contains the richest tenth. The proportions of those insulated in higher income decile groups of those receiving RPI only benefits in particular should be treated with caution owing to small sample sizes in these groups.

Source: Author’s calculations from 2008 Living Cost and Food Survey.

Here we are comparing the coverage of the CPI relative to the RPI for all households. Under the present system, however, many poorer households who are unaffected by changes in MIPs and Council Tax will be receiving benefits linked to the Rossi index in any case. Once we strip out these recipients and look at those only receiving RPI-linked benefits, the proportions of poorer households, almost half (49%) of those in the bottom decile are not insulated and almost two thirds (65%) of those in the second decile are not insulated.

Overall, these figures suggest that the coverage of the CPI is no more appropriate for poorer benefit recipients than the indices to which benefits are currently linked. However, the argument that the way the CPI is calculated makes it a better measure of price inflation is sound, even if the coverage argument for the change is more questionable.

6. Conclusion

It is clear that the measures introduced in the June 2010 Budget are regressive overall. Once we consider all reforms to be introduced by April 2014, the cash losses are smallest for the seventh, eighth and ninth income decile groups, and are very similar for all of the bottom seven expenditure decile groups. The progressive nature of the pre-
announced measures is not sufficient to offset this, so the overall package of tax and benefit reforms is also slightly regressive, at least within the bottom nine income decile groups. The biggest losers from the June 2010 Budget are low income households of working age, while better off working-age households without children lose the least. Low-income pensioners are less affected than other poor groups from the welfare cuts in the Budget, but richer pensioners lose more than richer households of working age from the Budget as they do not benefit from the increased personal allowance.

The biggest change to benefit policy in the June 2010 Budget in terms of the long-run saving to the government was the decision to link benefits with the Consumer Price Index (CPI) rather than the Retail Prices Index (RPI) or Rossi index from April 2011. This is very likely to mean less generous benefits in the years ahead. The Government argued that the CPI is a better measure of inflation than the indices to which benefits are currently linked because the way it is calculated allows for the fact consumers are able to protect themselves from price changes by substituting towards relatively cheaper good, and because the goods and services it covers better reflect the "inflation experience" of households receiving benefits. We find the first of these arguments to be sound whereas the second is more questionable.
Appendix A: Distributional analysis excluding tax and benefit changes that are difficult to precisely allocate to households

Figure A.1 performs the same analysis in Figure 2.1 excluding the effects of cuts to housing benefit, DLA and tax credits that are difficult to assign to particular households.

Figure A.1: The effect of direct tax and benefit reforms to be introduced between June 2010 and April 2012 by household income decile group, excluding some benefit changes

Legend:
- Pre-announced
- June 2010 Budget
- Total
- Total in cash terms (right axis)

Notes: Income decile groups are derived by dividing all households into 10 equal-sized groups according to income adjusted for household size using the McClements equivalence scale. Decile group 1 contains the poorest tenth of the population, decile group 2 the second poorest, and so on up to decile group 10, which contains the richest tenth. Assumes increases in employer NICs are passed on to employees in the form of lower wages. Sources: Authors' calculations using TAXBEN run on the 2007-08 Family Resources Survey.

Comparing the figure above with figure 2.1, we can see that the measures initially excluded from the analysis disproportionately affect low-income households. The bottom four decile groups of the income distribution lose out as a result of the June 2010 Budget reforms on average rather than gaining once these additional measures are taken into account.

Figure A.2 performs the same analysis for reforms to be introduced between June 2010 and April 2014, again excluding those benefit changes that are difficult to precisely assign to particular households.
We can see that the direct tax and benefit reforms announced in the June 2010 Budget appear regressive even without attempting to model the effects of those benefit changes that are difficult to precisely allocate to particular households. The overall loss from direct tax and benefit changes excluding those that are difficult to allocate to particular households is approximately the same as a percentage of income for each of the bottom nine decile groups.
Appendix B: Methodology for assigning losses from changes to housing benefit, disability living allowance and tax credits to particular households

In this appendix, we document the methodology for assigning losses from each change to housing benefit, DLA and tax credits to particular households that cannot be precisely allocated using the IFS tax and benefit microsimulation model, TAXBEN.

Not allowing LHA payments to exceed actual rent

The Department for Work and Pensions document shows that around half of households claiming LHA lose an average of £11 a week as a result of this policy, and that those with larger properties are more likely to lose. We randomly assign the average loss within each room band to the appropriate number of households in each band.

Capping local reference rents at the 4-bedroom rate

The DWP document shows that 69% of those renting 5 bedroom properties lose from this policy, and these households lose an average of £75 a week, equivalent to 29% of their weekly rent. We reduce housing benefit payments by 29% of rent for this group, and then scale the losses so to match the total amount saved (around £21 million a year).

Imposing maximum weekly caps on rents

We reduce housing benefit awards by the amount by which rents exceed these caps (£250 for a 1-bedroom property, £290 for a 2-bedroom property, £340 for a 3-bedroom property and £400 for a 4-bedroom property) and then scale the losses for each household so that the total saving (around £60 million a year) is correct.

Setting local reference rents at the 30th percentile of local rents

The DWP document shows that the proportion of households that lose from this policy reduces household size but the average loss increases. We randomly assign the average loss for each room band to ensure that the number of losers in each room band is correct.

Reducing housing benefit for those of working age under-occupying social housing

We identify those in social housing who are of working age and under-occupying their current property and calculate the total housing benefit they receive. We reduce these households’ housing benefit awards by the same percentage so that the total saving from the policy (£490 million in 2014–15) is correct.

Reducing housing benefit awards by 10% for those who have been on JSA for 12 months or more

We identify individuals in the data who are calculated as being eligible for JSA and who say that they have been claiming for at least 12 months, and reduce their HB awards by 10%.

Indexing local reference rents with the CPI rather than local rents

Losers from this policy will be those who live in areas where rents increase faster than the CPI after 2013. Since there is no way of identifying these households, we simply reduce all housing benefit awards by the same percentage amount so that the total amount saved from the policy is correct (around £390 million in 2014–15).

Disability Living Allowance

The Budget policy costings document says that the effect of this reform will be to remove DLA from around 20% of claimants. We randomly remove entitlement to DLA from the appropriate number of claimants in order to match the long run saving from this policy (around £1.4 billion).

Tax credit reforms

There is no way to identify those who will be affected by changes to the way in-year awards are calculated so we simply reduce all tax credit awards by the same percentage amount so that the total amount saved from the policy is correct (around £1 billion).
Appendix C: A more detailed look at the effect of reforms by income decile group and household type

Tables C.1–C.3 show the effect of all reforms, and the split between pre-announced and Budget measures, to be introduced between June 2010 and April 2014 by income quintile and family type as a percentage of net income.

Table C.1: The effect of all tax and benefit reforms to be introduced between June 2010 and April 2014 by income quintile and household type

<table>
<thead>
<tr>
<th>Household type</th>
<th>Poorest</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Richest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single, not working</td>
<td>-7.2%</td>
<td>-6.5%</td>
<td>-8.1%</td>
<td>-6.7%</td>
<td>-2.2%</td>
</tr>
<tr>
<td>Single, working</td>
<td>-4.7%</td>
<td>-1.4%</td>
<td>-0.8%</td>
<td>-1.1%</td>
<td>-2.8%</td>
</tr>
<tr>
<td>Lone parent, not working</td>
<td>-6.3%</td>
<td>-7.2%</td>
<td>-7.6%</td>
<td>-6.6%</td>
<td>N/A</td>
</tr>
<tr>
<td>Lone parent, working</td>
<td>-3.8%</td>
<td>-3.8%</td>
<td>-3.6%</td>
<td>-4.1%</td>
<td>-4.4%</td>
</tr>
<tr>
<td>0-earner couple without children</td>
<td>-5.4%</td>
<td>-6.9%</td>
<td>-5.9%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>0-earner couple with children</td>
<td>-8.6%</td>
<td>-8.6%</td>
<td>-10.1%</td>
<td>-5.9%</td>
<td>-1.4%</td>
</tr>
<tr>
<td>1-earner couple without children</td>
<td>-4.5%</td>
<td>-2.8%</td>
<td>-2.3%</td>
<td>-2.5%</td>
<td>-3.4%</td>
</tr>
<tr>
<td>1-earner couple with children</td>
<td>-4.5%</td>
<td>-4.7%</td>
<td>-5.4%</td>
<td>-4.7%</td>
<td>-3.8%</td>
</tr>
<tr>
<td>2-earner couple without children</td>
<td>-2.9%</td>
<td>-0.5%</td>
<td>-0.1%</td>
<td>-0.6%</td>
<td>-2.2%</td>
</tr>
<tr>
<td>2-earner couple with children</td>
<td>-3.7%</td>
<td>-3.2%</td>
<td>-3.3%</td>
<td>-3.0%</td>
<td>-3.5%</td>
</tr>
<tr>
<td>Single Pensioner</td>
<td>-2.4%</td>
<td>-2.2%</td>
<td>-2.9%</td>
<td>-3.4%</td>
<td>-3.6%</td>
</tr>
<tr>
<td>Couple Pensioner</td>
<td>-2.4%</td>
<td>-2.7%</td>
<td>-3.0%</td>
<td>-2.4%</td>
<td>-2.9%</td>
</tr>
<tr>
<td>Multi-family household, no children</td>
<td>-2.9%</td>
<td>-2.3%</td>
<td>-1.5%</td>
<td>-1.3%</td>
<td>-2.5%</td>
</tr>
<tr>
<td>Multi-family household, children</td>
<td>-4.2%</td>
<td>-2.9%</td>
<td>-2.7%</td>
<td>-2.4%</td>
<td>-3.0%</td>
</tr>
</tbody>
</table>

Notes: Income quintile groups are derived by dividing all households into 5 equal-sized groups according to income adjusted for household size using the McClements equivalence scale. Quintile group 1 contains the poorest fifth of the population, quintile group 2 the second poorest, and so on up to quintile group 5, which contains the richest fifth. Assumes increases in employer NICs are passed on to employees in the form of lower wages. Losses expressed as a percentage of net income. The sample size non-working lone parents and 0-earner couples with children in higher income quintiles is too small for results to be shown for these groups.

Sources: Authors’ calculations using TAXBEN.
Table C.2: The effect of pre-announced tax and benefit reforms to be introduced between June 2010 and April 2014 by income quintile and household type

<table>
<thead>
<tr>
<th>Household type</th>
<th>Income quintile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poorest</td>
</tr>
<tr>
<td>Single, not working</td>
<td>-0.89%</td>
</tr>
<tr>
<td>Single, working</td>
<td>-0.17%</td>
</tr>
<tr>
<td>Lone parent, not working</td>
<td>-0.23%</td>
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<tr>
<td>Lone parent, working</td>
<td>-0.44%</td>
</tr>
<tr>
<td>0-earner couple without children</td>
<td>-0.95%</td>
</tr>
<tr>
<td>0-earner couple with children</td>
<td>-0.39%</td>
</tr>
<tr>
<td>1-earner couple without children</td>
<td>0.20%</td>
</tr>
<tr>
<td>1-earner couple with children</td>
<td>-0.51%</td>
</tr>
<tr>
<td>2-earner couple without children</td>
<td>-0.28%</td>
</tr>
<tr>
<td>2-earner couple with children</td>
<td>-0.57%</td>
</tr>
<tr>
<td>Single Pensioner</td>
<td>-1.05%</td>
</tr>
<tr>
<td>Couple Pensioner</td>
<td>-0.66%</td>
</tr>
<tr>
<td>Multi-family household, no children</td>
<td>-0.52%</td>
</tr>
<tr>
<td>Multi-family household, children</td>
<td>-0.54%</td>
</tr>
</tbody>
</table>

Notes: As for Table C.1.
Sources: As for Table C.1.
Table C.3: The effect of tax and benefit reforms announced in the June 2010 Budget to be introduced by April 2014 by income quintile and household type

<table>
<thead>
<tr>
<th>Household type</th>
<th>Poorest</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Richest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single, not working</td>
<td>-6.27%</td>
<td>-5.34%</td>
<td>-7.08%</td>
<td>-5.62%</td>
<td>-1.74%</td>
</tr>
<tr>
<td>Single, working</td>
<td>-4.52%</td>
<td>-0.82%</td>
<td>0.16%</td>
<td>0.13%</td>
<td>-0.86%</td>
</tr>
<tr>
<td>Lone parent, not working</td>
<td>-6.06%</td>
<td>-6.94%</td>
<td>-6.84%</td>
<td>-6.09%</td>
<td>N/A</td>
</tr>
<tr>
<td>Lone parent, working</td>
<td>-3.37%</td>
<td>-3.24%</td>
<td>-2.85%</td>
<td>-2.91%</td>
<td>-2.57%</td>
</tr>
<tr>
<td>0-earner couple without children</td>
<td>-4.45%</td>
<td>-5.98%</td>
<td>-4.92%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>0-earner couple with children</td>
<td>-8.18%</td>
<td>-7.98%</td>
<td>-9.52%</td>
<td>-5.38%</td>
<td>-0.77%</td>
</tr>
<tr>
<td>1-earner couple without children</td>
<td>-4.74%</td>
<td>-1.77%</td>
<td>-1.29%</td>
<td>-1.19%</td>
<td>-1.58%</td>
</tr>
<tr>
<td>1-earner couple with children</td>
<td>-4.00%</td>
<td>-3.87%</td>
<td>-4.04%</td>
<td>-2.70%</td>
<td>-1.41%</td>
</tr>
<tr>
<td>2-earner couple without children</td>
<td>-2.66%</td>
<td>0.04%</td>
<td>0.60%</td>
<td>0.41%</td>
<td>-0.48%</td>
</tr>
<tr>
<td>2-earner couple with children</td>
<td>-3.13%</td>
<td>-2.57%</td>
<td>-2.21%</td>
<td>-1.55%</td>
<td>-1.13%</td>
</tr>
<tr>
<td>Single Pensioner</td>
<td>-1.32%</td>
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<td>-2.01%</td>
<td>-2.57%</td>
<td>-1.17%</td>
</tr>
<tr>
<td>Couple Pensioner</td>
<td>-1.78%</td>
<td>-2.07%</td>
<td>-2.40%</td>
<td>-1.92%</td>
<td>-1.63%</td>
</tr>
<tr>
<td>Multi-family household, no children</td>
<td>-2.38%</td>
<td>-1.56%</td>
<td>-0.79%</td>
<td>-0.27%</td>
<td>-0.59%</td>
</tr>
<tr>
<td>Multi-family household, children</td>
<td>-3.66%</td>
<td>-2.24%</td>
<td>-1.81%</td>
<td>-1.15%</td>
<td>-1.12%</td>
</tr>
</tbody>
</table>

Notes: As for Table C.1.
Sources: As for Table C.1.
Appendix D: Calculation of Indices and ‘Substitution Bias’

In this appendix, we will look at the reasons for the difference in the way the Consumer Prices Index is calculated.

At each level of aggregation in the Retail Prices Index, average prices are calculated by taking the weighted arithmetic mean (AM) of the prices of different categories of goods.

The difference in the Consumer Prices Index, is that at the lowest level of aggregation, the weighted geometric mean (GM) of prices is taken. At subsequent stages in the calculation of the index, the weighted AM is used, as in the RPI.

A simple example will illustrate the effect of this on the measured rate of inflation. Imagine two indices of two goods, 1 and 2, one calculated with a weighted AM and one with a weighted GM. Suppose we want to compare how prices have changed between period $t=1$ and period $t=2$.

Let the prices of these goods in period $t$ be $p_{1t}$ and $p_{2t}$ and the weights for these goods be $\theta_{1t}$ and $\theta_{2t}$. The weights we will be using are the share of expenditure on those goods in the earlier period, $t=1$, and $\theta_{1t}+\theta_{2t}=1$. We normalise all the prices in period one $p_{11}$ and $p_{21}$ to 1.

In this case, the AM measure of inflation is simply

$$AM = \theta_{11}(p_{12}) + \theta_{21}(p_{22})$$

whereas the GM measure of inflation is

$$GM = \sqrt[2]{(p_{12})^{\theta_{11}} \times (p_{22})^{\theta_{21}}}$$

These two indices are not equivalent. In fact, the GM measure of inflation will always be less than or equal to the AM measure of inflation.

Ideally, the index should measure changes in the ‘cost of living’: that is, how much more consumers need to spend in period 2 than they do in period 1 to attain the same level of welfare in both periods. The AM and GM indices achieve this only under very certain assumptions about consumer preferences and behaviour.

The AM index, which is the way the RPI is calculated, assumes that consumers do not adjust the ratio of the quantity of goods they buy if relative prices change. It is assumed that they could only achieve the same level of welfare in period 2 as in period 1 by purchasing at least as much of each good as before.

This is clearly unrealistic. In the face of relative price changes, most consumers would be willing to substitute some goods for others, particularly for quite closely related items. If so, the impact of changing prices on consumer welfare will not be quite as stark as
implied by the AM index. Economists call this overestimation of the ‘true’ rate of inflation ‘substitution bias’ 22.

With a GM index, the measured rate of inflation does reflect the fact that the consumer may substitute some goods for others. This is the reason it will be lower than the AM index given the same price changes. However, consumers are assumed to respond in a very particular way: demand for a good is assumed to fall in the same proportion as the increase in price, leaving total expenditure on the good, and thus the share of the budget allocated to it, unchanged (the optimal ratio of quantities purchased which consumers are assumed not to change in the AM index, do change however).

This implies a very large response to price changes on the part of consumers. Since the geometric mean is only applied at the lowest level of aggregation this may be appropriate, since the goods used at this stage are likely to be very close substitutes for one another (e.g. different brands of the ice cream).

Because GM indices address substitution bias, albeit in an imperfect way, they are widely believed to give a better measure of the ‘true’ rate of inflation.

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