B Distributional Impact Analysis

B.1 The Government is committed to ensuring that decisions taken across the public sector are as transparent, accountable and fair as possible. This Annex is intended to help interested parties understand the distributional impact on households of tax, welfare and spending proposals. This is the first time the Government has undertaken such analysis for spending on public services. A new methodology has been developed to understand the impact of spending decisions on households. This has been combined with existing and long standing analysis of the impacts of taxes, benefits and tax credits on households. New ground is also being covered by forecasting and combining impacts across the entire four year period of the Spending Review.

Understanding distributional analysis

B.2 A distributional analysis of how spending is allocated across income groups can offer important policy insights to help inform policy decisions. However, this kind of static analysis can paint an incomplete picture of the actual outcomes of spending allocations on people's lives.

B.3 The Spending Review's allocations continue to focus support on those who need it most. However, they shift the focus of that support away from welfare payments to the services that deliver opportunities for social mobility in the longer term. As such a distributional analysis of how spending is allocated across income groups at a point in time only paints a partial picture of the decisions taken. It helps policy makers understand who is in receipt of services but does not explain how money is being spent or the long term impacts of those services. In addition, this analysis values public services by their input cost; it does not reflect the value people place on services, or how effective those services are at delivering outcomes. These and other limitations are discussed later in the Annex.

B.4 Despite this, the Government believes it is still helpful to publish this analysis in order to continue to move the debate and methodology forward and be transparent about the decisions made in this Spending Review.

B.5 This Annex is divided into 3 sections:

- changes to departmental and public services spending;
- changes to tax, tax credits and benefits; and
- combined tax and spending changes.

Changes to departmental and public services spending

B.6 This section sets out the impact on households of the departmental spending plans announced in this Spending Review.

B.7 The Government has not previously undertaken analysis on public service expenditure, because the lack of a clear market for publicly provided goods makes it difficult to estimate the value of services to households. There is some academic precedent for this type of analysis. The Office for National Statistics (ONS) publish an allocation of some public services to households in *The Effect of Taxes and Benefits on Household Income*.[1] This covers around 50 per cent of public expenditure broken down into high level categories. The ONS work and other papers which have sought to allocate public expenditure[2] have typically decided not to allocate total expenditure because of both data and theoretical limitations. This Annex builds on this work and is an attempt to promote this debate and explore some of these issues.

Methodology

B.8 The impacts shown in this section are based on information provided by departments from surveys of public service usage. This has been completed only for public services which are differentially used by households. Given that departments are yet to fully allocate their budgets to specific areas for the next four years, estimates have been used to break down expenditure into high-level blocks (e.g. schools, higher education). Where final decisions have been made, these have been included. Where estimates have been made, these should not be taken as implying decisions about final allocations.

B.9 The analysis therefore covers around two thirds of resource DEL expenditure excluding the Devolved Administrations, consisting of many of the services delivered by[3]:

- 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;
- The Department of Energy and Climate Change;
- Local Government[4];
- The Ministry of Justice; and,
- The Department for Culture, Media and Sport.

These areas have been selected as they represent services that people consume directly, so will best correspond to the experience people have of government spending. This analysis does not include expenditure by the Devolved Administrations.

[1] *The effects of taxes and benefits on household income*, 2008-09, Office for National Statistics, June 2010.
[2] For example, Sefton, T. (2002). *Recent changes in the distribution of the social wage*. CASE Paper 62, London School of Economics; Evandrou M., J. Falkingham, J. Hills and J. Le Grand (1993), *Welfare benefits in kind and income distribution*, Fiscal Studies, 14; Demery L, 2003: *Analyzing the incidence of Public Spending; The Impact of Economic Policies on Poverty and Income Distribution* Bourguignon F, Pereira da Silva, Luiz A.
[3] Further details can be found in Spending Review 2010: Distributional Impact Analysis – Data Sources.
[4] Local Government covers an analysis of some of the services delivered through local Government including social care and cultural services. Other grants given to local government are captured in the home department. More details can be found in the accompanying data sources document (Spending Review 2010: Distributional Impact Analysis – Data Sources).

B.10 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 end-users as they benefit the population as a whole. For this reason central government administration costs have also been excluded. While it is not possible to model these areas, an average column has been added to the Chart B.2 which shows the average expenditure per household on these services. This overall approach is consistent with previous work in this area.[5]

B.11 Capital DEL makes up 13 per cent of total 2010-11 DEL. It is not possible to assess the beneficiaries of capital projects within this analysis because they have geographically specific and multi-generational benefits. Capital investment has therefore not been included, in line with other academic work[6]. Overall, the analysis captures just over two thirds of resource departmental spending and just under two thirds of the decreases in resource expenditure over the Spending Review period, excluding the devolved administrations.

B.12 The analysis presents the distribution of spending plans announced at the Spending Review across different household income groups. To do this, households are ordered by their income and then divided into five equally sized groups called quintiles. As households with more adults and children require higher levels of household income and expenditure to achieve the same standard of living, an internationally standard adjustment called equivalisation is used to ensure households are compared on an equal basis. The equivalisation process is consistent with HM Treasury's analysis on tax and benefit decisions[7].

B.13 Consumption data for public services is weak in many areas. Therefore, where possible, the analysis has been kept high level to limit the number of assumptions that have been made. This has been done by limiting the analysis to quintiles, rather than the standard deciles (10 equally sized groups). Modelling has also been limited to relatively aggregated areas of government expenditure.

B.14 The benefit accrued to the household is valued at the cost of providing the service weighted across households according to their usage. This is similar to the approach taken by the ONS. Attempts have been made to provide a more detailed and extended coverage of services. This allows the consideration of the initial benefits received by families (2010-11 expenditure), the proposed new plans introduced by the Spending Review and the new distribution of expenditure[8].

B.15 Whilst this input cost modelling improves the objectivity of the analysis, there are a number of caveats to this methodology. It:

- does not reflect the value people place on the services they consume nor how effective those services are at delivering desired outcomes (for example, low value programmes that are being stopped are measured at the same rate as high value programmes that are being kept);
- does not capture the significant efficiency and reform opportunities identified in this Spending Review, which allow services to be delivered with the same or better outcomes for less money (for example, cutting waste is measured the same as a reduction in services);

[5] *The effects of taxes and benefits on household income*, 2008-09, Office for National Statistics, June 2010. Sefton, T. (2002). *Recent changes in the distribution of the social wage*. CASE Paper 62, London School of Economics Evandrou M., J. Falkingham, J. Hills and J. Le Grand (1993), *Welfare benefits in kind and income distribution*, Fiscal Studies, 14
[6] Demery L, 2003: *Analyzing the incidence of Public Spending, The Impact of Economic Policies on Poverty and Income Distribution* Bourguignon F, Pereira da Silva, Luiz A . The exception to this is warm front provided by DECC; this scores as capital, as the public service is delivered by third party providers.
[7] Further details can be found in Spending Review 2010: Distributional Impact Analysis – Data Sources.
[8] Further details can be found in Spending Review 2010: Distributional Impact Analysis – Data Sources.

- only provides a static view of the monetary value households receive from benefits and does not capture incentives on individuals, for example, to return to work or retrain to receive a future higher income.

Results

B.16 The modelling shows that all households benefit substantially from expenditure on public services. The mapping of the baseline consumption of public services (benefits in kind), shown in Chart B.1, demonstrates that the consumption of services is skewed towards lower income households. Quintile one households on average benefit from around £221 per week, which amounts to over £10,000 of expenditure per year. Households in quintile five receive less than half of this, around £105 per week.

B.17 This is explained by the following:

- demographic factors: lower income groups contain a higher proportion of children and pensioners, who are the most intensive users of welfare services;
- other factors affecting need, such as long standing illness, which is reported more in lower income groups;
- the targeting and means testing of certain services, such as social housing, social care and free school meals; and
- differential use of private alternatives, including private schools and health care.

Chart B.1 Household consumption of benefits in kind by net equivalised income quintile (£ per week 2010-11)

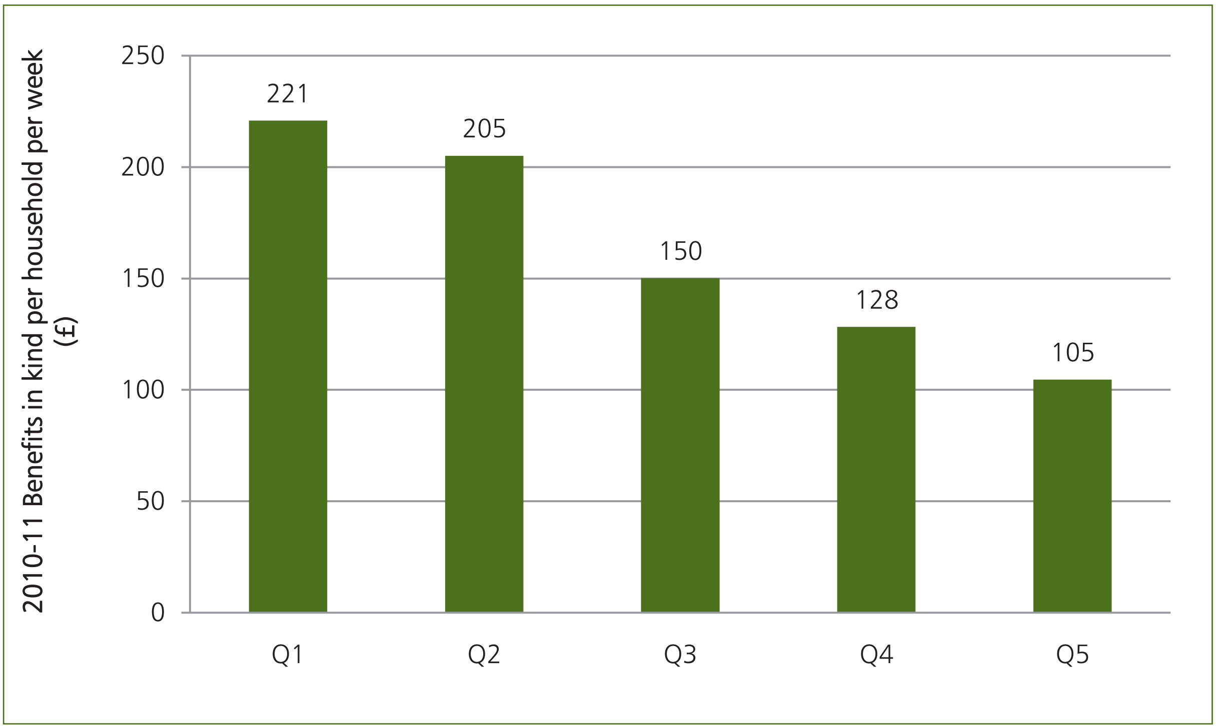


Table B.1: Weighted average annual net equivalised household income and benefits in kind by quintile

	Q1	Q2	Q3	Q4	Q5
Weighted average income	£13,800	£19,100	£24,200	£31,700	£48,700
Weighted average 2010-11 benefits in kind	£11,500	£10,700	£7,800	£6,700	£5,400

B.18 Table B.1 shows the weighted average net equivalised household incomes for the income quintiles and the weighted average annual benefits in kind households receive. Chart B.2 illustrates the mapping of benefits in kind across quintiles in 2010-11 and in 2014-15, the last year of the Spending Review period. Table B.2 shows the absolute change in benefits in kind that households will experience per week while Chart B.3 illustrates this change as a percentage of the initial value of benefits in kind consumed.

Chart B.2 Household consumption of benefits in kind by net equivalised income quintile in 2010-11 and 2014-15 (£ per week 2010-11 prices)

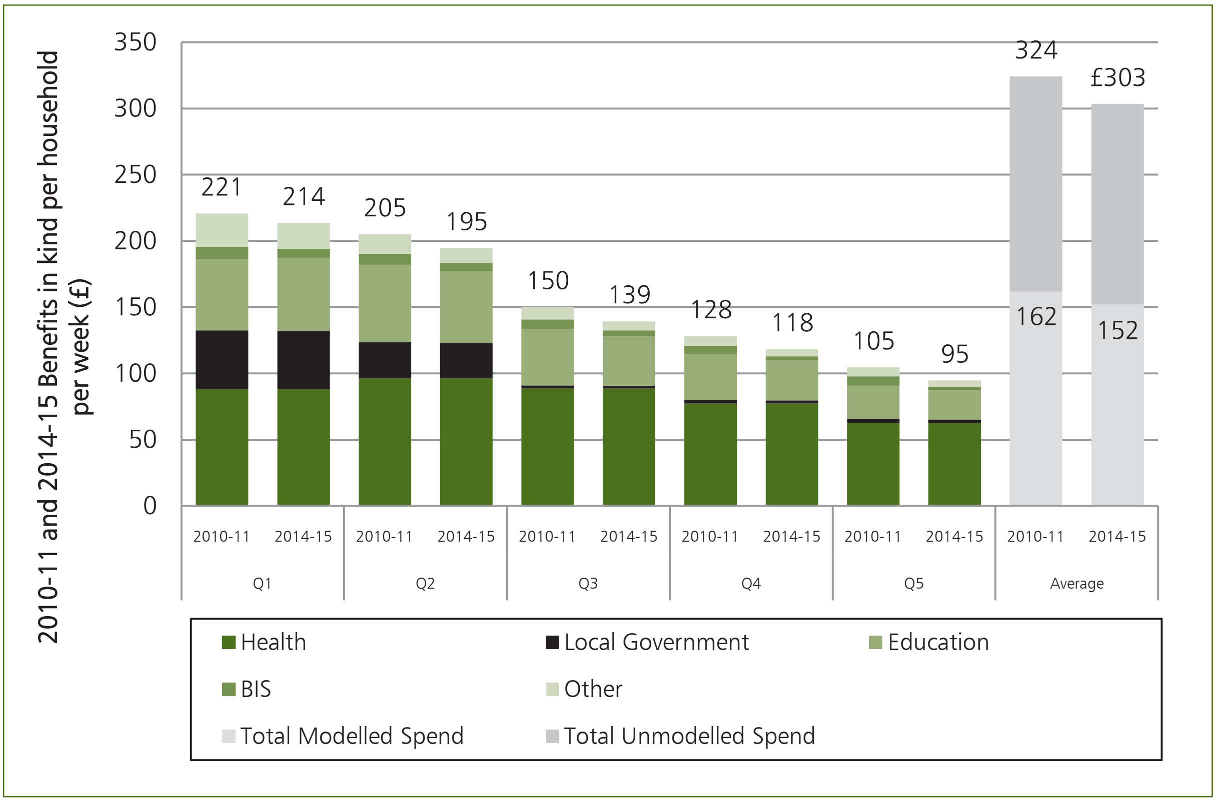


Table B.2: Table of absolute weekly changes in household benefits in kind by net equivalised income quintile

	Q1	Q2	Q3	Q4	Q5
Absolute weekly change in benefits in kind	£7	£10	£11	£10	£10

B.19 These results are partly driven by policy changes described in this Spending Review including:

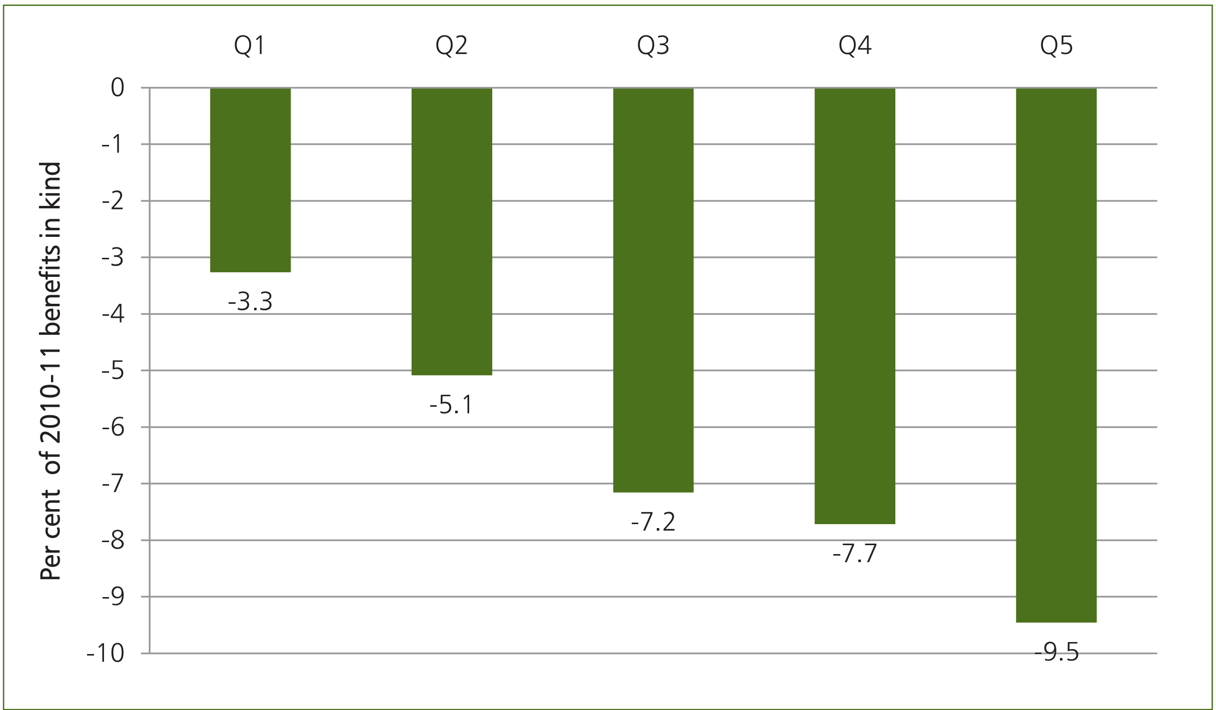
- A £2.5 billion pupil premium, on top of maintaining per pupil funding in cash terms, will provide additional support for disadvantaged pupils;
- 15 hours a week of early years education and care will be extended to disadvantaged 2 year olds from 2012-13, in addition to the continued universal entitlement to 15 hours for all 3 and 4 year olds implemented by the Coalition Government;
- reform to Higher Education and Further Education funding;
- an additional £2 billion by 2014-15 to support social care; and
- real terms increases in overall NHS funding in each year of the Spending Review.

B.20 Table B.2 shows the absolute change in benefits in kind that households will receive per week. These results show that quintile one will experience the lowest change across all income quintiles. This result is driven by the combination of the redistributive effect of the pupil premium and the protection of key services for low income households such as early years provision and social care spending.

B.21 As discussed in the methodology section, it is not appropriate to model all public expenditure across households, specifically those areas that are aligned to public goods, e.g. environmental protection and central government administration. However, all households benefit from this expenditure. The last, 'average', column of Chart B.2 therefore shows average expenditure per household for modelled and unmodelled expenditure which illustrates the total change in resource spending households will receive.

B.22 In order to understand the relative impacts of the spending plans, it is useful to consider these changes as a proportion of the initial benefits in kind consumed by households. Chart B.3 illustrates this result. Quintile one has the lowest proportional change and quintile five has the highest.

Chart B.3 Changes in benefits in kind as a percentage of 2010-11 household consumption of benefits in kind.



Methodological limitations and further work

B.23 These results represent new analysis for the Government. The methodology will continue to be refined and updated as work progresses and to try to overcome a number of methodological difficulties. These are discussed below.

Efficiency and reform

B.24 The Spending Review sets out an ambitious programme to identify efficiencies and reforms in delivering public services. This gives the potential to deliver the same, or better, outcomes and services to users at a lower cost. With the current methodology, any efficiency saving made would score as a reduced service to users, even where these have no clear impact on service quality. For example, energy savings from turning the lights off at night would be represented as a loss to households.

Producer impacts

B.25 This analysis attributes all of the effects of the Spending Review to consumers rather than producers. This means, for example, that a short term freeze on teachers' pay would show as a loss to families with children. An alternative would be to model short term pay freezes as impacting on teachers rather than their students. This would change the distribution of the impact.

Incidence

B.26 This type of analysis also does not fully capture the incidence of reductions in expenditure on public services.[9] For some public expenditure, the direct benefits are split between the individual service consumer and others. An example might be the benefits received by employers from adult skills programmes. If funding is reduced, some of the costs would therefore fall to employers, rather than households, but this analysis would show households experiencing the full loss.

[9] Marical F., Mira d'Ercole M., Vaalavuo M. and Verbist G. (2006) *Publicly-provided Services and the Distribution of Resources*, OECD Social, Employment and Migration Working Paper No. 45, OECD, Paris.

B.27 The analysis also does not capture the insurance benefits that public services provide to households. For example, free healthcare provided by the NHS benefits all households even if they do not fall ill because of the money saved in paying for private healthcare insurance. The benefits of health spending are therefore spread more widely than an analysis of those directly using the NHS implies. This, in turn, would change the distributional consequences of changes in health expenditure.

Lifecycle effects

B.28 Finally, the analysis presents a static view of benefits received by households at a point in time.[10] This limits its usefulness. In particular:

- Households' position in the income distribution could be expected to change over time. For example, parents of young children themselves tend to be younger, and as such have often not reached their full earnings potential. This skews them disproportionately into lower income quintiles, from which they could be expected to rise as they get older.
- Variations in distribution could be expected to be smoothed over peoples' lifetimes. This is because the services people consume are partly a product of their age, so consumption patterns vary for an individual over time. For example, older people are shown not to benefit from education spending now, yet have as children benefited from such spending.
- Policy decisions need to take account of long term benefits to households. For example, a significant body of evidence suggests that early years funding can give high returns in tackling child poverty. This model only shows the annual monetary value to households rather than future returns.
- The economic and multi-generational benefits of capital expenditure cannot be fully captured by analysis that looks at distributional impacts at just two points in time, four years apart. For example, building a new road today will deliver economic and social benefits to people for decades to come.

Changes to taxes, tax credits and benefits

B.29 This section sets out the impact on individuals of the benefit and tax credit changes announced in this Spending Review, along with the cumulative impact of these changes and Budget measures. This includes tax, tax credit and benefit changes (such as changes to National Insurance Contributions) that were announced in the March 2010 Budget or earlier, where the Coalition Government will be introducing the relevant legislation.[11]In comparison with the previous section's distributional analysis of public services, with this form of government expenditure it is possible to more accurately identify beneficiaries and quantify their monetary gains and losses as a result of policy changes. Significant analytical challenges remain, as will be detailed, and as a result the analysis here is necessarily simplified. Nonetheless, it serves as a useful guide to changes to the impact of tax, tax credit and benefit payments received at different income levels.

Methodology

B.30 At the June Budget, the Government took the unprecedented step of publishing distributional analysis of tax, tax credit and benefit changes. The Government stated that for future fiscal events it would consider how best to present the impact of changes consistent with the aim of transparency. Since then the Institute for Fiscal Studies has published new analysis of the impact of tax, tax credit and benefit changes, and the Government has received feedback from a number of external organisations on its analysis.

[10] Preston, I., & O'Dea, C. (2010). *The Distributional Impact of Public Spending in the UK*. 2020 Public Services Trust.
[11] A full list of measures it has been possible to include in the analysis is provided in Spending Review 2010: Distributional Impact Analysis – Data Sources.

B.31 At the June Budget, the Government took the decision to present analysis for 2012-13. Publishing analyses of tax, tax credit and benefit changes far into the future may not be representative of the impact of Government policy. This is because the Government will take a view on tax and welfare policy based on the emerging fiscal position in future fiscal events.

B.32 For example, the Coalition Government has expressed its aim to increase the personal allowance to £10,000, which will benefit some households towards the bottom of the income distribution. It is also not possible to model the expected distributional impacts of the Universal Credit. This policy is at an early stage of development and key policy parameters are yet to be finalised. These will determine the expected payments to households and therefore the expected distributional impacts.

B.33 In addition, economic assumptions on which analysis of this kind is based inevitably become more uncertain the further ahead the model goes. Behavioural and macroeconomic effects, which are not captured by the model, are also likely to become more significant over time. The analysis in this section therefore only shows impacts in 2012-13, although the final section, which brings together the combined impact on individuals of Spending Review decisions does present analysis for 2014-15, although at a less disaggregated quintile level.

B.34 The HM Treasury modelling approach follows a well-established methodology, similar to that used by external commentators, which includes all measures where there is sufficiently robust data available to attribute changes in tax, tax credits or benefits to individuals. It does not include measures where there is insufficient information to robustly assess the impact of changes in this way.

Results

B.35 The impacts shown in this section are simulated using HM Treasury's tax and benefit model and assume 100 per cent take up of tax credits and income-related benefits. The policies that can be modelled account for around two-thirds of tax, tax credit and benefit changes coming into effect in 2012-13.

B.36 The following charts present the impact across the income distribution of Budget measures (including measures that were announced in the March 2010 Budget or earlier on which the Coalition Government will be introducing legislation) along with Spending Review announcements. To do this, households are ordered by their income and then divided into 10 equally sized groups called deciles. As households with more adults and children require higher levels of household income and expenditure to achieve the same standard of living, an internationally standard adjustment called equivalisation is used to ensure households are compared on an equal basis.

B.37 An alternative way of presenting this analysis would be by expenditure decile. This is because some households may be using savings or borrowing to finance their current expenditure. In particular, when considering the distributional impact of changes in expenditure taxes, such as the increase in VAT announced at the June Budget, the Office for National Statistics and others have suggested that expenditure deciles may provide a more relevant distributional split of households.[12]Analysis carried out at the Budget showed that the changes in VAT and duties were progressive on this basis. As the income decile analysis in this Annex includes the impact of expenditure taxes, it may therefore overstate the impact on less well off households of tax, tax credit and benefit changes in 2012-13.

[12] *The effects of taxes and benefits on household income, 2008-09*, Office for National Statistics, June 2010

Chart B.4 Impact of Spending Review and Budget measures (including pre-announcements) in cash terms (£ per year) by income distribution (2012-13).

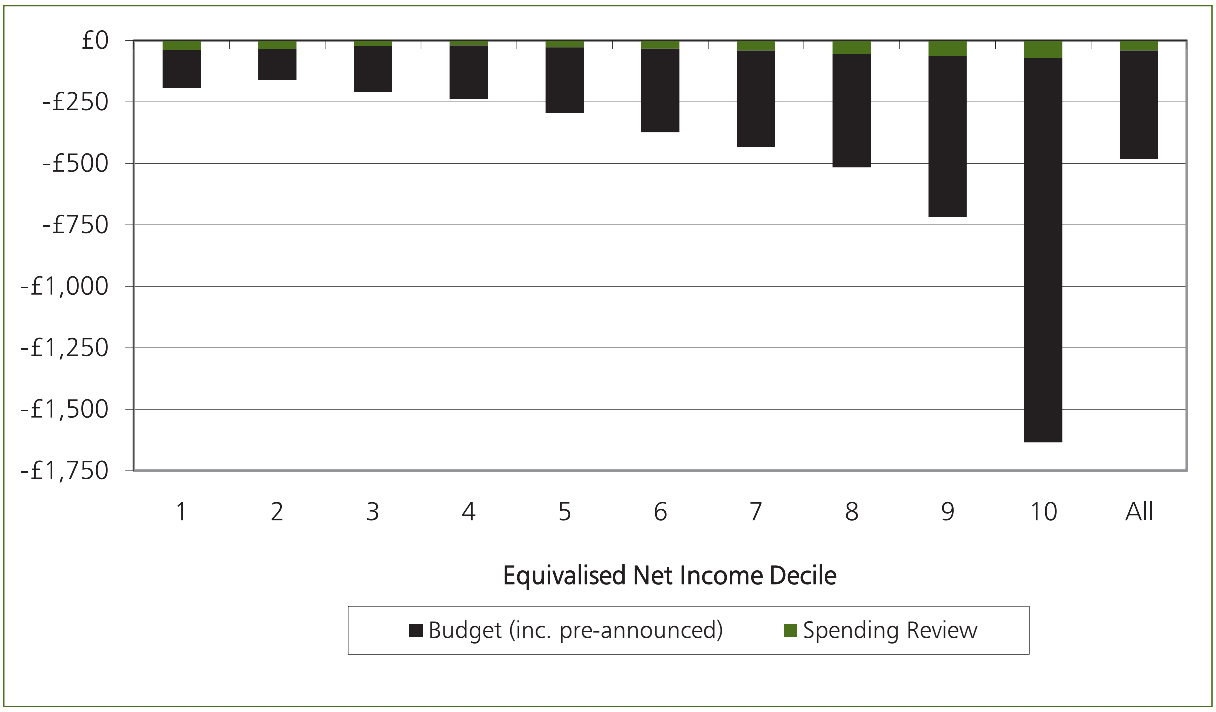
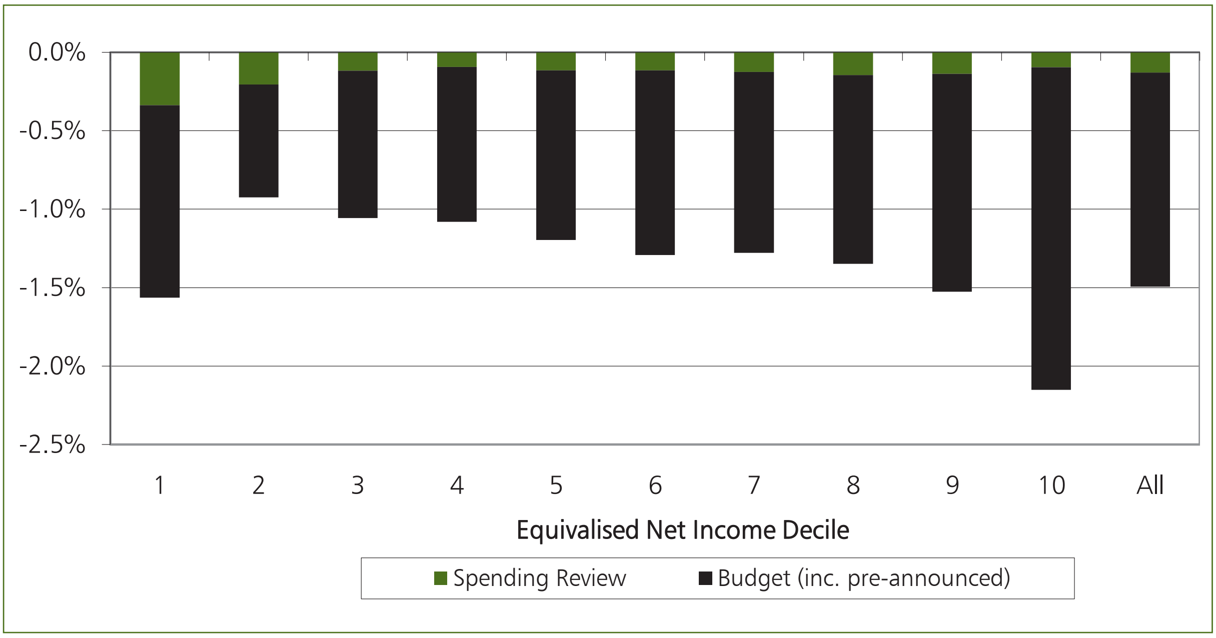


Chart B.5 Impact of Spending Review and Budget measures (including pre-announcements) as a per cent of net income by income distribution (2012-13).



B.38 It should be noted that the bottom decile contains many households with temporarily low incomes, for whom income based analysis, as opposed to expenditure based analysis, may not give an accurate picture of living conditions. In this decile, around 40 per cent of households contain an adult that is self employed or a student. While some of these households will have permanently low incomes, many will not. In contrast, in the second decile, only around 20 per cent of households contain an adult in one of these groups.

Impact on Child Poverty

B.39 The Spending Review and the June Budget have both taken action to protect low-income families from the impact of changes to reduce welfare spending. This was achieved by freezing rates of Child Benefit and withdrawing Child Benefit from those paying higher rate Income Tax to partly fund above indexation increases to the Child Tax Credit. These steps have ensured that there is no measurable impact on child poverty from all modelled Budget and Spending Review changes to 2012-13.[13]

Combined tax and spending changes

B.40 This final section brings together the distributional analysis for both the change in departmental expenditure affecting public services and that affecting changes to taxes, tax credits and benefits.

Methodology

B.41 There are a number of technical issues with presenting a combined picture. The problems with quality of data mean that it is only possible to estimate departmental and public services spending in income quintiles compared to deciles for taxes and benefits. The different modelling approaches taken for departmental spending and benefits and tax credits mean that summing the effects may not be entirely robust in all cases.

B.42 In order to demonstrate the combined impact on individuals of Spending Review decisions, it is important to show the joined-up impact of tax, tax credit and benefit changes, alongside spending decisions. Since the Spending Review sets out a path for all public spending to 2014-15 it is desirable to look at a combined distributional analysis of all policies for this year. To achieve this while minimising the scope for inaccuracies, the analysis of tax, tax credits and benefit policies in this section is extended to 2014-15, but using the same less disaggregated quintile level as the departmental spending analysis.

B.43 The modelling of distribution tax, tax credit and benefit impacts in this section contains three additional policies, all saving over £1 billion pounds per year by 2014-15. These are:

- limiting Pensions Tax Relief to £50,000;
- introducing objective medical assessments for all DLA claimants; and
- time limiting contributory ESA to one year for those in the Work Related Activity Group.

B.44 These measures were excluded from the distribution analysis in the previous section because it is not possible to formulate robust assumptions about how policy impacts would be felt at an individual level. For example, the introduction of objective medical assessments for DLA claimants is excluded because it is not possible to model deterministically how individual claimants might fare against medical assessment. Measures to time limit contributory ESA to one year for the Work Related Activity Group and to limit Pensions Tax Relief are excluded for similar reasons.

B.45 However, given the scale of savings attributed to these three measures and, in particular the less disaggregated quintile level analysis being presented in this section, assumptions have been made to allow their inclusion. Rather than attempting to attribute gains and losses at an individual level as before, this is now done by apportioning to quintiles the Exchequer savings from these measures according to information on the numbers of people affected in each quintile. In addition to these three policies our standard methodology also allows us to model the impact of the household benefit cap which will come into effect in 2013-14.

Results

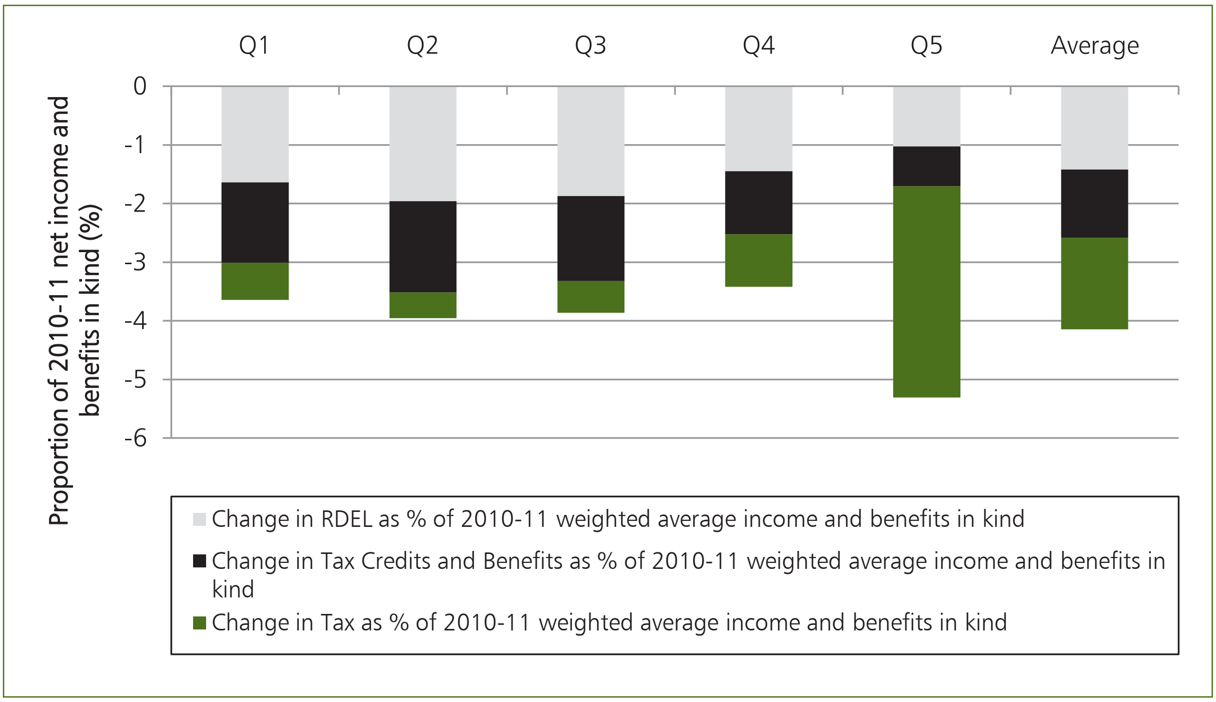
B.46 Chart 1.F shows the percentage changes in income and benefits in kind, by income quintiles, from changes to tax, tax credits and benefits and spending announced in this

[13] Estimated with HM Treasury's tax and benefit microsimulation model, based on 2007-08 Family Resources Survey, projected to 2011-12 and 2012-13.

Spending Review, the June Budget and pre-announced measures in the March 2010 Budget or earlier on which the Coalition Government will be legislating. This includes modelled areas of resource spending reductions within the £6 billion efficiency savings made earlier this year[14], departmental expenditure changes, benefit and tax credit changes and tax changes.

B.47 This chart represents the overall average modelled impact of the consolidation by income quintile as a percentage of net equivalised households income including benefits in kind.

Chart B.6 Impact of the consolidation on households as a per cent of (2010-11) net income (including household benefits in kind)



Next steps

B.48 This Annex publishes for the first time the combined impact on households from the changes both to services and benefits announced in this Spending Review. However, it also notes and highlights some of the methodological problems in trying to make this assessment. In order to be able to continue to refine this analysis, the Government would welcome an open dialogue on how the data and methodology can be improved.

[14] Further details can be found in Spending Review 2010: Distributional Impact Analysis – Data Sources.