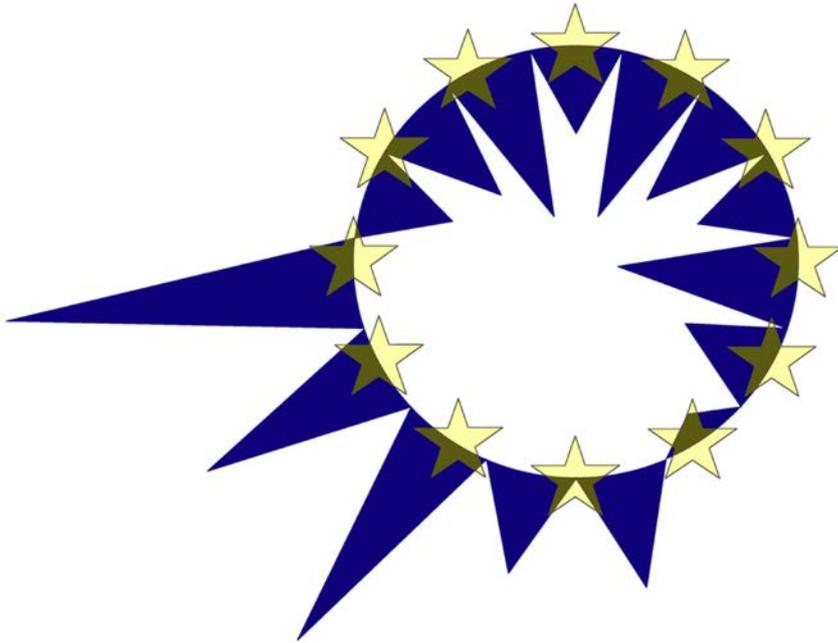


**EUROMOD**  
**COUNTRY REPORT**



**UNITED KINGDOM (UK)**  
**2009-2012**

**Paola De Agostini and Holly Sutherland**

**17/07/13**



EUROMOD is a tax-benefit microsimulation model for the European Union (EU) that enables researchers and policy analysts to calculate, in a comparable manner, the effects of taxes and benefits on household incomes and work incentives for the population of each country and for the EU as a whole.

EUROMOD has been enlarged to cover 27 Member States and is updated to recent policy systems mainly using data from the European Union Statistics on Income and Living Conditions (EU-SILC) as the input database, supported by DG-EMPL of the European Commission.

This report documents the work done in one annual update for the United Kingdom. This work was carried out by the EUROMOD core developer team, based mainly in ISER at the University of Essex, in collaboration with a national team.

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This report accompanies the release of EUROMOD G1.0. There may be minor differences between the results presented here and those obtained with G1.0 due to further improvements since the report was prepared.

For more information, see: <http://www.iser.essex.ac.uk/euromod>

This document is supported by the European Union Programme for Employment and Social Solidarity – PROGRESS (2007-2013).

This programme is managed by the Directorate-General for Employment, social affairs and equal opportunities of the European Commission. It was established to finally support the implementation of the objectives of the European Union in the employment and social affairs area, as set out in the Social Agenda, and thereby contribute to the achievement of the Lisbon Strategy goals in these fields.

The seven-year Programme targets all stakeholders who can help shape the development of appropriate and effective employment and social legislation and policies, across the EU-27, EFTA-EEA and EU candidate and pre-candidate countries.

PROGRESS mission is to strengthen the EU contribution in support of Member States' commitment. PROGRESS is instrumental in providing analysis and policy advice on PROGRESS policy areas; monitoring and reporting on the implementation of EU legislation and policies in PROGRESS policy areas; promoting policy transfer, learning and support among Member States on EU objectives and priorities; and relaying the views of the stakeholders and society at large

For more information see: <http://ec.europa.eu/progress>

The information contained in this publication does not necessarily reflect the position or opinion of the European Commission.



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## 1. BASIC INFORMATION

### 1.1 Basic figures

Table 1. Basic figures

	Population (m.) <sup>[a]</sup>	Population < 14 (%) <sup>[b]</sup>	Population ≥ 65 (%) <sup>[b]</sup>	Life Expectancy (in years) <sup>[c]</sup>	Fertility Rate <sup>[d]</sup>	Unemployment Rate <sup>[e]</sup>	GDP per head (EU27=100) (PPS) <sup>[f]</sup>	Currency Name	Exchange Rate <sup>[g]</sup>
2006	60.410	17.8	16.0	80.20	1.84	5.4	114	Pound Sterling	0.69109
2007	60.781	17.7	16.0	80.35	1.9	5.3	117	Pound Sterling	0.67388
2008	61.192	17.5	16.1	80.55	1.96	5.6	113	Pound Sterling	0.79112
2009	61.595	17.5	16.3	80.90	1.94	7.6	111	Pound Sterling	0.85210
2010	62.027	17.5	16.4	80.65	1.98	7.8	111	Pound Sterling	0.81745
2011	62.436	17.4	16.6	n/a	n/a	8.1	109	Pound Sterling	0.90255
2012	62 989	n/a	n/a	n/a	n/a	7.9	n/a	Pound Sterling	0.80626

Sources: [\[a\] Eurostat \(2012\) Total population \[tsp00001\]](#).

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00001&plugin=1>, last accessed on 20.03.2012.

[b] Eurostat (2012) People by age classes [tsp00010].

<http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tps00010&language=en>, last accessed on 20.03.2012.

[c] Eurostat (2010) Life expectancy at birth by gender [tps00025]. The figures are the unweighted mean of life expectancy of men and women.

<http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tps00025&language=en>, last accessed on 20.03.2012 [d] Eurostat (2012)

[d] Total fertility rate [tsdde220] Number of children per woman.

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdde220&plugin=1>, last accessed on 20.03.2012.

[e] Eurostat (2010) Unemployment rate by gender – total – [tsiem110]

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsiem110&plugin=1>, last accessed on 20.03.2012.

[f] Eurostat (2009) GDP per capita in PPS - [tec00114 - last updated 01.12.2012],

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsieb010> last accessed 20.01.2010.

[g] Euro exchange rate on 30th of June: <http://www.x-rates.com>, last accessed on: 13.07.2011.



Table 2. Tax-benefit system and government budget

	<b>Total general government revenue<sup>[a]</sup> % of GDP</b>	<b>Total tax and social insurance receipts<sup>[b]</sup> % of GDP</b>	<b>Total general government expenditure<sup>[c]</sup> % of GDP</b>	<b>Social protection<sup>[d]</sup> % of GDP</b>
2006	41.3	38.1	44.0	25.9
2007	41.0	37.6	43.7	25.0
2008	42.7	39.3	47.7	26.2
2009	39.9	36.4	51.3	28.9
2010	40.1	37.2	50.4	28.0
2011	40.3	37.8	48.5	n/a
2012	42.4	n/a	n/a	n/a

Sources:

[a] OECD (2012): EO Annex Tables: Fiscal balances and public indebtedness, Annex table 26: General government total tax and non-tax receipt:

[http://www.oecd.org/document/3/0,3746,en\\_2649\\_34573\\_2483901\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/3/0,3746,en_2649_34573_2483901_1_1_1_1,00.html), last accessed on 13.07.2011

[b] Eurostat (2011) Main national accounts tax aggregates,

[http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=gov\\_a\\_tax\\_ag&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=gov_a_tax_ag&lang=en).

[c] Eurostat (2011) Total general government expenditure [tec00023],

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00023>.

[d] Eurostat (2011) Total expenditure on social protection [tps00098]

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00098>.

Table 3. Social protection expenditure by function (as % of total social protection expenditure)

	<b>Sickness/ health care</b>	<b>Disability</b>	<b>Old age</b>	<b>Survivors</b>	<b>Family/ children</b>	<b>Unemployment</b>	<b>Housing</b>	<b>Social exclusion</b>
2006	31.4	9.5	41.2	3.2	5.9	2.5	5.7	0.7
2007	31.7	10.4	42.5	1.0	6.6	2.1	4.8	0.9
2008	31.2	10.8	42.8	0.5	6.7	2.3	4.8	0.8
2009	31.3	10.4	41.9	0.5	6.9	3.0	5.2	0.8
2010	31.5	10.2	41.8	0.5	6.9	2.7	5.6	0.8
2011	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2012	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Source: Eurostat (2012) Social benefits by function [tps00106],

<http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tps00106&language=en>.



Table 4. Taxation (as % of total tax receipts)

	Personal income tax	Corporate income tax	Social security contributions		Taxes on goods and services	Other taxes
			Employees*	Employers		
2005/06 <sup>[a]</sup>	29.1	9.3	7.9	10.3	30.3	13.1
2006/07 <sup>[b]</sup>	28.6	10.8	7.6	10.2	29.0	n/a
2007/08 <sup>[a]</sup>	30.1	9.4	7.5	10.2	29.2	13.6
2008/09 <sup>[c]</sup>	33.8	9.8		22.1	29.8	4.5
2009/10 <sup>[c]</sup>	34.1	8.8		23.4	30.4	3.3
2010/11 <sup>[c]</sup>	33.1	9.4		21.6	32.3	3.6
2011/12 <sup>[c]</sup>	31.3	9.4		21.8	35.1	2.4
2012/13 <sup>[c]</sup>	31.6	8.8		21.8	35.5	2.3

\* Includes self-employed

Sources:

[a] OECD (2009) Revenue Statistics 1965 – 2008, OECD, Paris, Tables 11, 13, 17, 19 and 25, pp. 82 ff.

[b] OECD (2008) Revenue Statistics 1965 – 2007 – 2008, OECD, Paris Tables 7, 13, 17, and 19, pp. 98ff.

[c] See Table 7 below; Basis of these estimates is not consistent with earlier OECD estimates.

## 1.2 Basic information about the tax-benefit system

- The tax-benefit system is largely a unified, national system.<sup>1</sup> The main exceptions are *council tax* and *council tax benefit* which do not apply in Northern Ireland and the *social fund*, a discretionary element of which is managed under fixed local budgets each year.
- The tax system generally changes in April each year. The main benefit changes take place at the same time, but can also be implemented at other times, usually in June or October.
- State pension age in 2006/07 was 60 for women and 65 for men; the state pension age for women started increasing gradually in 2010 and will reach 65 years old in 2020. Policy for the phased increasing of the pension age for both men and women to 66 is planned and a further increase to 67 is currently under discussion.
- Minimum school leaving age is 16; dependent children are usually defined as being under 16 or under 19 years old and in full-time non-advanced education and not married.
- The income tax system is an individual system, with spouses being assessed independently.
- Income tax liability is based on annual income and allowances and thresholds are referred to in annual terms. Income tax withholdings are collected on a cumulative basis, i.e., the system tries to ensure withholding the exact amount due in the financial

<sup>1</sup> The way it operates in practice may vary across regions and by other characteristics.



year. Only individuals paying tax on trading income (e.g. self-employed people), income from more than one job or who pay tax at the higher rate must file a tax return for income tax. Typically, end-year adjustments to tax liability are factored into the next year's tax code.

- The means-tested benefit system assesses entitlement according to benefit unit income. The benefit unit is the nuclear family - the couple (cohabiting or married) or single adult plus any dependent children. Social contributions, state benefits and pensions are usually assessed and paid on a weekly basis. Amounts are referred to in weekly terms.
- For benefit and tax credit purposes lone parents are defined as parents of resident dependent children, not cohabiting with a partner of the opposite sex (whether or not any partner is the parent of the child is irrelevant).
- There are statutory requirements to uprate some elements of the tax-benefit system annually, while for others uprating is discretionary. Until 2011 most components were uprated annually by prices (RPI) with means-tested benefits following the "Rossi" price index excluding housing costs and local taxes. In 2011 the CPI will be used instead for price uprating of benefits and tax credits and from 2012 also for income tax allowances and thresholds. On average the CPI rises more slowly than either the RPI or the Rossi index. Only a few elements are adjusted by earnings and some are not adjusted at all.

### 1.3 Social Benefits

In the UK, social security benefits can be divided into three different types: The first category consists of *contributory* benefits, which are earnings-replacement benefits and pensions. Entitlement to these benefits depends on having met certain conditions regarding National Insurance contributions. Some contributory benefits are subject to specific tests on current income. The second type of benefits is *non-contributory, non-means-tested* benefits. These benefits depend on certain contingencies such as disability or (lone) parenthood but do not require contributions to have been made and are not subject to an income test. The third type of benefits is *means-tested benefits*. These benefits depend on a range of personal and family circumstances but also on family incomes - benefit entitlement is reduced if family incomes increase. Tax credits have changed their name, format and administering authority over the past ten years (see below). In practice, despite being administered by the tax authorities', tax credits are like cash benefits and are treated as such here. The three types of benefits are reviewed separately below.

#### 1.3.1 Contributory benefits

Also known as "National Insurance benefits", the main contributory benefits are:

**Jobseeker's Allowance:** contributory (JSA) is a benefit for the unemployed, conditional on active job search; no additions for dependants; duration is up to six months only; small earnings disregard; only for those under state pension age; private pension income over £50 per week results in reductions to JSA payments; taxable.

**Incapacity Benefit (IB):** benefit for the sick and long-term incapacitated, conditional on claimants' inability to do own job (first 28 weeks) or any job (after that). A lower short term rate is set for those not eligible for Statutory Sick Pay and a higher short-term rate for weeks 29-52 of sickness. After that, a higher long-term rate applies until state pension age; increases are paid for dependent children and spouses caring for children or aged over 60 (and not in receipt of own pension); additions for age in long term rate. Incapacity Benefit is taxable. With effect from the policy year 2009/10 onwards Incapacity Benefit has been changed to Employment and



Support Allowance. Employment and Support Allowance (ESA) – from October 2008 Incapacity Benefit and the disability element of Income Support (IS) - have been superseded by the Employment and Support Allowance (ESA). The main differences are that IB and IS for disabled people have been brought together, the introduction of stricter activity requirements and a work-related activity payment. IB is now contributory ESA with similar qualifying conditions to contributory Jobseeker's Allowance and Income Support with disability element is now income-based ESA. Since October 2008 onwards all new claimants are assessed for ESA while existing claimants are transferred onto the new benefit in time. Both forms of ESA contain an initial assessment phase of 13 weeks during which the basic allowance is paid. The assessment focuses on capability to work. If claimants are assessed as having a limited capability for work-related activity, they will be moved on to the support component which means receiving a higher rate with no additional conditions. If claimants are assessed to have a capability for work-related activity (WRAG), they will receive the work-related activity supplement and have to participate in regular work-focussed interviews in return. Contributory ESA for those on WRAG is limited to twelve months duration period from 2012.

**Retirement pension:** if individuals meet the contribution conditions when they are over state pension age, they get a flat rate basic pension ("Category A"). If conditions are only partly met, a reduced pension of at least 25% of the basic can be paid. Spouses who do not meet the conditions may receive a lower pension based on their partner's contributions ("Category B"). At age 80 contribution conditions are removed. Extra pension increments can be earned if retirement is delayed and additions are paid for dependent spouses under pension age and dependent children. The basic pension is taxable. For pensioners who contributed to the State Earnings Related Pension Scheme (SERPS) an additional earnings-related pension is payable. This is taxable and there are no additions for dependants.

**Widow's benefit:** this is based on the late husband's contributions; younger widows (under 45) do not qualify unless they have dependent children. Widow's benefit is taxable. Part of the husband's SERPS entitlement and private pension can also be inherited.

**Maternity Allowance (MA)** is a flat-rate benefit payable for up to 26 weeks if the claimant has herself met contribution, employment and earnings conditions and does not qualify for Statutory Maternity Payment (SMP, see below). A standard rate is paid to women whose average earnings at least equal the National Insurance Lower Earnings Limit and to self-employed women who have paid a Class 2 contribution (see 1.4 below). There are no additions for dependants. Maternity Allowance is not taxable.

### 1.3.2 Non-contributory, non-means-tested benefits

**Child benefit** is a universal flat-rate benefit paid to the carer of each dependent child. A dependent child is a child that is either under 17 or under 19 and in full-time education or training. There is a higher rate for the eldest or only dependent child, otherwise the rate does not vary. Child benefit is not taxable.

**Attendance Allowance (AA)** is a flat-rate benefit and can be claimed by individuals who need care during the day, at night or both (higher rate) due to their illness or disability. It is taxable.

**Disability Living Allowance (DLA)** can be claimed by individuals if they become disabled before the age of 65 and have personal care and/or mobility needs. The care component is paid at one of three rates and the mobility component at one of two rates, depending on severity of need. DLA is not taxable.



**Severe Disablement Allowance (SDA)** can be claimed by individuals who are at least 80% disabled but who do not qualify for Incapacity Benefit. It is paid at a lower rate and there are additional payments for dependants. SDA is not taxable. Since April 2002 existing SDA recipients aged under 20 were automatically transferred to long-term IB. Those aged 20 or over in 2002 continue to get SDA. In other words, the benefit is now only maintained for existing claimants.

**Carer's Allowance** (used to be called Invalid Care Allowance (ICA) before April 2003) is a benefit for carers of severely disabled people who are themselves not earning more than a specific threshold and are aged under 65 when first claiming. Severe disability is defined as someone getting either the DLA care component or AA. There are additions for dependants and the benefit is taxable.

**Industrial Injuries Disablement Benefit** is a benefit for people who are long-term incapacitated due to injury at work. It is not taxable.

**Guardian's Allowance** is paid to someone bringing up children whose parents have died. It is paid in addition to Child Benefit and is not taxable.

**War Pension** is an "umbrella" term for a series of payments that may be made to people who have been injured or disabled as a result of service in HM Forces (not necessarily in a war). War Pensions are not taxable.

**Winter fuel allowance** is an annual payment made to households containing at least one person aged over 60, with a supplement paid for the presence of anyone aged over 80. The payment is not taxable and not means-tested.

### 1.3.3 Means-tested benefits

**Jobseeker's Allowance** (income-based) is the social assistance benefit for the unemployed which may be claimed after entitlement to contributory JSA if exhausted or on top of it, to meet the income needs of the unemployed person and their family. The structure is the same as for *Income Support* (see below).

**Income Support (IS)** is the main social assistance benefit for people whose family incomes are lower than a specified level and who are exempt from the obligation to find work (or in work for less than 16 hours per week). It is intended to apply to lone parents, sick and disabled people and others who are not expected to seek work. If their family income is less than the applicable amount, IS makes up the shortfall. The applicable amount is made up of personal allowances and premiums for certain groups with special needs. Some housing costs (mortgage interest and ground rent) are included in the applicable amount. Families who share their household with other non-dependent adults have deductions made from the amount allowed for housing costs, whether or not actual contributions to the cost are made. Rent and Council Tax are not included but are covered separately by Housing Benefit and Council Tax Benefit. Income is assessed after tax and contributions; instead of actual income from capital, a "tariff" income is calculated from capital above a lower limit. Families with more than a certain amount of capital are disqualified from IS altogether. Income Support is assessed weekly. It is not taxable. Certain benefits-in-kind, so called passported benefits, are available to recipients of IS. These include free lunches for school children; free prescription medicines (these are already free to all children and pensioners); free milk for babies and pregnant women. Income Support for people aged 60 or over, known as Minimum Income Guarantee (MIG), was replaced by Pension Credit in October 2003.



**Pension Credit (PC)** is made up of a Guarantee Credit, replicating the previous MIG structure and a Saving Credit, rewarding with an additional amount older (65+) pensioners who have savings, pension or earned income above the state basic pension. It is not taxable.

**Housing Benefit (HB)** covers rent for social renters. It is paid in full for IS and income-based JSA recipients, subject to locally specified maxima. For those with higher incomes it is tapered away with additional income, using the same system of applicable amounts as IS and income-based JSA. Income is assessed after income tax and contributions. Families who share their household with other non-dependent adults have deductions made from rent, whether or not actual contributions to the cost are made. Capital rules apply in a similar way as with IS and income-based JSA. HB is assessed on weekly income and rent. It is not taxable.

**Local Housing Allowance (LHA)** provides help with private rent for low income households from April 2008 and it is introduced gradually between 2008 and 2013. It has a similar structure to HB (assessed on weekly income and rent) limiting the amount that can be claimed against housing costs by private sector tenants. The amount of the benefit is linked to a percentile of rent within a local Broad Rent Market Area (BRMA) for similar dwellings. Moreover, the amount of the benefit payable is subject to a national maximum distinguished by accommodation's size.

**Council Tax Benefit (CTB)** provides rebates on Council Tax for low income households; it has a structure similar to HB and is not taxable.

**Working Tax Credit (WTC)** tops up the wage of low paid workers. It is paid to

- people aged 25 or over in employment or self-employment for at least 30 hours per week,
- people with disabilities working at least 16 hours per week and
- to families with dependent children where at least one parent is in employment or self-employment for at least 16 hours per week.<sup>2</sup>

It is not taxable. Working Tax Credit is payable and assessed on a yearly basis but is responsive to changes in household circumstances and income. Recipients are required to report changes in income which can lead to a re-assessment of their tax credit award. WTC contains an element to cover a proportion of qualifying child care costs.

**Child Tax Credit (CTC)** is paid to families with children, whether or not the parents are in work. The transfer is made up of two components: The first component is a "family element" (in some years doubled for the first year following a child's birth), which is paid regardless of income for those not in the higher tax bracket (this aspect is in the process of reform). The second component is a per-child payment (higher if the child is disabled) for those families with a gross annual income up to a given threshold and is tapered off thereafter as income increases. It is payable and assessed on a yearly basis and is not taxable.

**Social Fund** payments include (a) regulated payments which contribute to maternity, funeral and cold-weather fuel costs for certain families on low income; and (b) discretionary payments which take the form of either non-repayable grants or interest-free loans.

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<sup>2</sup> Specific hours limits may vary over time.



- *Scope and scale*

Table 5. Social benefits (including “tax credits”): recipients as percentage of the population

	2006	2007	2008	2009	2010	2011	2012
Total population (thousands)	60.393	60.816	61.179	61.596	62.008	62.436	62.989
as % of population							
<b>Contributory benefits</b>							
Jobseeker’s Allowance (contr.)	0.23	0.2	0.32	0.48	0.36	0.36	0.33
Incapacity Benefit and contributory Employment and Support Allowance	2.42	2.32	2.2	2.18	2.03	1.86	2.23
Retirement Pension	19.41	19.54	19.83	19.95	19.82	19.89	18.55
Widow’s benefit	0.30	0.25	0.19	0.20	0.18	0.16	0.17
Maternity Allowance	0.04	0.06	0.08	0.09	0.09	0.09	0.10
<b>Non-contributory, non-means-tested benefits</b>							
Attendance Allowance	2.47	2.51	2.56	2.88	2.90	2.91	2.57
Disability Living Allowance	4.7	4.79	4.92	5.04	5.14	5.24	5.30
Severe Disablement Allowance	0.04	0.04	0.1	0.42	0.40	0.38	0.34
Carers Allowance	0.76	0.77	0.8	1.55	1.60	1.64	0.94
Industrial Injuries Disablement Benefit	0.24	0.22	0.22	0.43	0.43	0.42	0.41
<b>Means-tested benefits and tax credits (a)</b>							
Jobseeker’s Allowance (means-tested)	1.17	1.03	1.2	1.79	1.74	1.84	n/a
Income Support (including means-tested ESA)	3.49	3.47	3.38	3.14	2.83	2.33	4.76
Pension Credit	4.48	4.49	4.45	4.44	4.38	4.45	4.04
Housing Benefit	6.66	6.64	6.81	7.38	7.72	7.38	8.14
Council Tax Benefit	8.41	8.33	8.43	9.04	9.35	9.09	9.52
Working Tax Credit	3.18	3.30	3.62	3.85	4.04	n/a	n/a
Child Tax Credit	7.04	6.99	7.00	6.95	6.94	n/a	n/a

## Sources:

DWP (2011) Medium term forecast: Benefits - Numbers in receipt [http://research.dwp.gov.uk/asd/asd4/medium\\_term.asp](http://research.dwp.gov.uk/asd/asd4/medium_term.asp), last accessed 17.07.2011

HMRC (2010) Child and Working Tax Credits Statistics, April 2010, Table 1.1. <http://www.hmrc.gov.uk/stats/personal-tax-credits/cwctc-apr2010.pdf>

Notes: (a) The assessment unit for means-tested benefits and tax credits is the narrow family unit, rather than the individual. These figures show the proportion of the population that are recipients of benefit payments rather than the proportion within families that are receiving benefit.



Table 6. Social benefits and tax credits: expenditure as proportion of the total expenditure

	2006	2007	2008	2009	2010	2011	2012
Annual expenditure (£ million) (a)	139,494	147,504	160,476	174,954	181,461	187,756	166,148
as % of total expenditure (b)							
<b>Contributory benefits</b>	<b>45.12</b>	<b>45.40</b>	<b>44.80</b>	<b>44.22</b>	<b>44.05</b>	<b>44.63</b>	<b>45.23</b>
Jobseeker's Allowance (contributory)	0.35	0.30	0.46	0.63	0.45	0.41	0.35
Incapacity benefit	4.81	4.60	4.18	3.57	3.13	2.68	1.69
Employment and support allowance	n/a	n/a	0.04	0.34	0.54	0.76	1.18
Retirement Pension	39.26	39.82	39.48	39.09	39.38	40.26	41.50
Widow's benefit	0.58	0.51	0.43	0.38	0.35	0.33	0.31
Maternity Allowance	0.13	0.17	0.21	0.20	0.19	0.19	0.21
<b>Non-contributory, non-means-tested benefits</b>	<b>13.32</b>	<b>13.39</b>	<b>13.48</b>	<b>13.19</b>	<b>13.10</b>	<b>12.80</b>	<b>12.91</b>
Attendance Allowance	3.03	3.07	3.04	2.99	2.95	2.90	2.85
Disability Living Allowance	6.70	6.83	6.75	6.70	6.70	6.83	7.00
Severe Disablement Allowance	0.66	0.62	0.57	0.53	0.50	0.48	0.47
Carer Allowance	0.87	0.89	0.87	0.87	0.89	0.94	1.00
Industrial Injuries Disablement Benefit	0.58	0.55	0.52	0.49	0.50	0.48	0.47
Winter fuel payments	1.47	1.43	1.73	1.60	1.56	1.17	1.12
<b>Means-tested benefits and tax credits</b>	<b>41.56</b>	<b>41.21</b>	<b>41.72</b>	<b>42.60</b>	<b>42.86</b>	<b>42.57</b>	<b>n/a</b>
Jobseeker's Allowance (means-tested)	1.44	1.26	1.37	2.11	2.07	2.28	2.33
Income Support	6.47	6.25	5.57	4.90	4.43	3.81	2.78
Employment and support allowance (means-tested)	n/a	n/a	0.04	0.40	0.72	1.17	2.31
Pension Credit	5.02	5.09	4.94	4.76	4.65	4.38	3.93
Housing Benefit	10.86	10.89	10.97	11.69	12.09	12.40	12.39
Council Tax Benefit	2.89	2.79	2.72	2.75	2.78	2.67	2.56
Tax Credits	14.87	14.94	16.11	16.00	16.11	15.87	n/a
<b>Total (c)</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>84.45</b>

Sources:

DWP (2013) Medium term forecast: Table 1a: Benefit expenditure, Great Britain, 1948/49 to 2017/18 (nominal terms),

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/195319/expenditure\\_tables\\_Budget\\_2013.xls.xls](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/195319/expenditure_tables_Budget_2013.xls.xls)

HMRC (2013) Child and Working Tax credit statistics: finalised annual awards 2011/12: Table 1.1: Average number of recipient families and entitlement, 2003-04 to 2011-12 <http://www.hmrc.gov.uk/statistics/fin-main-stats/cwtc-awards.pdf>

Notes: (a) figures exclude tax credits in 2012 (estimates not yet available 15 July 2012); (b) percentages for 2012 for other components other than tax credits assume they make up the same proportion of the total as in 2011 (15.5%); (c) Figures for 2013 exclude tax credits.



### 1.3.4 Not strictly benefits

In addition there are components of income that are not strictly part of the benefit system. These include:

**Statutory Sick Pay (SSP)** and **Statutory Maternity Pay (SMP)** payable to employees by the employer for the first 28 weeks of sickness or 18 weeks of maternity leave. SSP is paid at a flat rate (most employers pay full wages for short-term sickness). For SMP there is a minimum flat rate payment and a higher rate (payable for only six weeks) equal to 90% of usual earnings. Both payments are (generally) treated as earnings by the rest of the tax-benefit system.

**Occupational** (employer-provided) and approved personal pensions are **private pensions** that for the majority of employees replace the State-Earnings-Related-Pension-Scheme (SERPS).

**Child Support** is child maintenance paid by absent parents. It depends on an assessment of income and needs of the families of both parents and is enforced where lone parents are on *Income Support*.

**Student loans** are partly non-means-tested and partly means-tested on parental income.

**Foster allowances** are paid to families looking after children who are in Local Authority care (or similar).

**Training allowances and education maintenance allowance** are paid under various schemes. 1998 saw the start of the first New Deal (for young people), which was intended to be a comprehensive scheme to get people into work or training. Since then there have also been New Deals for the long-term unemployed, for lone parents, for older workers, and for the partners of unemployed people. Most of the funding has gone to measures for the under-25s and, with the exception of that group, tends to involve assistance and advice rather than coercion. For instance, lone parents receiving Income Support (see below) are now required to attend annual interviews to discuss finding work and the help available to do so, but do not have to take up work while they have a child aged under 16 years old. The associated cash allowances are small and usually correspond to what would be received on Income Support (see below). The Income Support regulations have since been changed. From November 2008 lone parents whose older child is 12 or older were transferred from IS to income-based JSA; this was then extended to lone parents whose youngest child is aged ten or over in October 2009 and to lone parents whose youngest child is seven or over in October 2010.



## 1.4 Social contributions

### 1.4.1 Brief description

Social contributions, known as National Insurance Contributions (NICs), finance current National Insurance (NI) benefits and NI basic retirement pension. Conditions regarding contributions made in the past determine eligibility to contributory benefits. There are four classes of contributions, the most important in terms of revenue-raising being Class 1, which makes up 97% of the total.

Employees pay “primary” Class 1 contributions on their current weekly earnings between a lower and upper earnings limit and employers pay “secondary” Class 1 contributions on the same earnings base but with no upper limit. Some employer-provided goods in kind are included in the earnings base (such as company cars).

People with self-employment income are liable for Class 2 and Class 4 contributions. These contributions only bring entitlement to the basic retirement pension, not to short-term benefits. Class 2 contributions are a weekly payment at a flat-rate, which is the equivalent of employee Class 1 contributions. Low self-employment income is exempt. The equivalent of the employer contributions are the Class 4 contributions. These are payable on income between a lower and upper profits limit, and are determined annually. There is a maximum annual NIC payment for those with both employment and self-employment income which corresponds to the maximum that can be paid in a full year on earnings. The same maximum applies to people with earnings from several jobs.

Employees who are contracted out of SERPS pay a lower rate of contribution. Their employers also pay a lower rate, up to the upper earnings limit. Married women who elected in 1977 or earlier to pay reduced contributions can still do so, so long as their contribution records have been maintained. This means they do not have to pay Class 2 contributions (if self-employed) and only a lower rate of Class 1 contributions (if employed). A woman who does this can only claim a reduced Category B state pension on the basis of her husband’s contributions on retirement, and is not eligible for other contributory benefits.

Class 3 contributions are voluntary and are usually made by UK citizens living abroad, in order to maintain their contribution record.

Minimum contributions may be credited in certain circumstances, notably during registered unemployment and while caring for young children at home.

There are some special schemes for small groups such as share fishermen.

National Insurance contributions are not tax-deductible.

## 1.5 Taxes

### 1.5.1 Brief description

Table 8 shows the composition of UK taxes, including NICs, in 2005/06 (up to 2007/08) as a percentage of total HMRC revenues. The personal, direct taxes potentially within the remit of EUROMOD are, in addition to NICs, Income Tax, Council Tax, and the three capital taxes: stamp duties, capital gains tax and inheritance tax. Taken together these taxes make up about half of all UK tax revenues. They are considered in turn below.



**Income tax**<sup>3</sup> The UK income tax system is an individual system, with the incomes of married people being taxed independently. In 2005/06 the individual personal allowance was £4,895 yearly, higher for people aged over 65 and still higher for those aged over 75 (“Age Allowances”). Married couples above the age of 65 get the “Married Couple Allowance”.<sup>4</sup> Age additions are withdrawn as taxable income rises.

The UK income tax system has a relatively broad base and there is - for all practical purposes - a unified tax schedule. Some employer-provided goods in kind are included in the income base (such as company cars). In 2005/06 the tax schedule consisted of three rate bands: a narrow first band of 10% (up to £2,090 of taxable income) a wide “standard rate” band of 22% (£2,091-32,400 of taxable income) and a higher rate of 40% (above £32,401). The last rate affects less than a tenth of income taxpayers. Income from financial capital that is not tax-exempt is taxed at 20% if the taxpayer’s marginal rate on that income is within the standard rate band.

From 2008/09 onwards the first rate band of 10% has been abolished for income from earnings and the second rate has been reduced from 22% to 20%. The 10% rate is still applied to income from savings but only in particular circumstances which are explained more fully below.

Table 1 shows the total tax liability and the number of taxpayers with marginal rates in each band. Tax assessment is annual (April - March). Most income tax is collected at source, either through with-holding at 20% on income from capital or through the comprehensive and cumulative Pay As You Earn (PAYE) system on earnings. Most UK income tax payers do not complete tax returns: only those who may be liable for higher-rate tax usually do so. Otherwise, most adjustments are carried out within the tax year using the PAYE system or between years using the tax code.

**Council tax** is a local tax providing approximately 20% of local revenue. It replaced the notorious “poll tax” in 1993. Council tax does not apply in Northern Ireland where the system of domestic rates remains in place. Council tax is mainly based on the estimated market value of the property (as of April 1991). Properties are allocated to one of nine nationally-determined (i.e. different in England, Scotland and Wales but the same within them) bands according to property value. The tax in each band is some multiple of the tax in the 4th band (“Band D”), ranging from 2/3 in the lowest value band to 2 in the top value band. Local authorities set the level of Band D tax each April. The Council Tax is reduced by 25% if the property contains only one resident adult or by 50% if there is nobody resident. There are exemptions for students and members of the Armed Forces. The tax has its own rebate system for low income families (Council Tax Benefit - see above)

**Capital gains tax**<sup>5</sup> is levied on gains arising from the disposal of assets by individuals, representatives and trustees. There is an allowance (£8,500 in 2005/06) on which an individual’s capital gain is exempt from tax (the allowance for trusts is lower). Since March 1998 there has been a taper system which reduces the proportion of the gain that is chargeable to tax, the longer the asset has been owned.

**Inheritance tax**<sup>6</sup> is charged at a single rate of 40% on wealth transferred at (or within 7 years before) death. There is a minimum threshold and in 2005/06 no tax was charged on estates worth less than £275,000. Certain assets such as farms and small businesses are eligible for relief. Transfers to spouses and charities are exempt.

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<sup>3</sup> See [http://www.hmrc.gov.uk/stats/tax\\_structure/menu.htm](http://www.hmrc.gov.uk/stats/tax_structure/menu.htm)

<sup>4</sup> See [http://www.hmrc.gov.uk/stats/tax\\_structure/table-a1a.xls](http://www.hmrc.gov.uk/stats/tax_structure/table-a1a.xls) for details on the tax parameters.

<sup>5</sup> See [http://www.hmrc.gov.uk/stats/capital\\_gains/menu.htm](http://www.hmrc.gov.uk/stats/capital_gains/menu.htm)

<sup>6</sup> See [http://www.hmrc.gov.uk/stats/inheritance\\_tax/menu.htm](http://www.hmrc.gov.uk/stats/inheritance_tax/menu.htm)



*Property and Stamp Duties*<sup>7</sup> (Stamp Duty and Stamp Duty Land Tax) are levied on stock and share transactions and on conveyances and transfers of land and property. There is a threshold below which no duty is paid and a scale of proportional rates applies to property transactions, according to the value of the property. In 2005/06 the rates were zero on properties below of £120,000; 1% on the full value of property up to £250,000; 3% on property between £250,000 and £500,000 and 4% on properties selling for more than that. The first threshold was higher (£150,000) for commercial properties and residential land in disadvantages areas.

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<sup>7</sup> [http://www.hmrc.gov.uk/stats/survey\\_of\\_prop/index.htm](http://www.hmrc.gov.uk/stats/survey_of_prop/index.htm)



## 1.5.2 Scope and scale

Table 7. Taxes and Social contributions: revenues as proportion of the total revenue

	2006/07		2007/8		2008/09		2009/10		2010/11		2011/12		2012/13	
	£ million	% of total revenue												
Income tax	143,327	33.83	147,324	34.77	147,856	33.77	139,281	34.09	147,949	33.09	146,227	31.34	148,008	31.56
National Insurance Contributions	87,273	20.60	100,410	23.70	96,882	22.13	95,517	23.38	96,548	21.59	101,617	21.78	102,294	21.81
Capital gains tax	3,813	0.90	5,268	1.25	7,852	1.79	2,491	0.61	3,601	0.81	4,337	0.93	3,905	0.83
VAT	77,360	18.26	80,601	19.02	78,439	17.92	70,160	17.17	83,502	18.67	98,292	21.06	100,588	21.45
Corporation tax	44,308	10.46	46,383	10.95	43,077	9.84	35,805	8.76	42,121	9.42	43,763	9.38	41,028	8.75
Inheritance tax	3,558	0.84	3,834	0.90	2,851	0.65	2,396	0.59	2,723	0.61	2,913	0.62	3,116	0.66
Stamp duties	13,392	3.16	14,124	3.33	7,999	1.83	7,903	1.93	8,932	2.00	8,920	1.91	9,142	1.95
Fuel duties	23,585	5.57	24,905	5.88	24,615	5.62	26,197	6.41	27,256	6.10	26,800	5.74	26,571	5.67
Tobacco and alcohol duties	16,062	3.79	16,396	3.87	16,869	3.85	17,825	4.36	18,541	4.15	19,588	4.20	19,901	4.24
Other duties <sup>[a]</sup>	2,362	0.56	3,475	0.82	4,521	1.03	5,941	1.45	6,686	1.50	7,153	1.53	7,320	1.56
Other taxes <sup>[b]</sup>	5,273	1.24	4,863	1.15	5,802	1.33	4,024	0.99	8,339	1.86	6,060	1.30	6,180	1.32
Other levies <sup>[c]</sup>	1,033	0.24	1,027	0.24	1,050	0.24	970	0.24	962	0.22	966	0.21	900	0.19
<b>Total HMRC</b>	<b>423,659</b>	<b>100.00</b>	<b>423,659</b>	<b>100.00</b>	<b>437,813</b>	<b>100.00</b>	<b>408,509</b>	<b>100.00</b>	<b>447,159</b>	<b>100.00</b>	<b>466,634</b>	<b>100.00</b>	<b>468,956</b>	<b>100.00</b>

Source:

Figures for latest 2 years from HMRC (2013) HM Revenue and Customs annual receipts, [http://www.hmrc.gov.uk/stats/tax\\_receipts](http://www.hmrc.gov.uk/stats/tax_receipts) last accessed on 26/06/2013.

Earlier figures from previous releases.

Notes:

[a] Air passenger Duty, Customs and Excise Duty and betting and Gaming duty

[b] Insurance Premium Tax, Petroleum Tax and Landfill Tax, plus bank payroll tax

[c] Climate Change Levy and Aggregates Levy.



Table 8. Number of individual Income Taxpayers and proportion of total tax by marginal rate

	2006/07		2007/08		2008/09 <sup>[c]</sup>		2009/10		2010/11		2011/12		2012/13	
	Thousands	% of total income tax	Thousands	% of total income tax	Thousands	% of total income tax	Thousands	% of total income tax	Thousands	% of total income tax	Thousands	% of total income tax	Thousands	% of total income tax
Lower (10%) <sup>[a]</sup>	4,377	13.76	4,510	13.88	--	--	765	2.50	710	2.29	745	2.48	722	2.43
Standard (22% or 20%) <sup>[b]</sup>	23,700	74.53	24,100	74.15	--	--	26,300	85.95	27,100	87.42	25,500	84.72	24,800	83.50
Higher (40%)	3,770	11.86	3,870	11.91	--	--	3,190	10.42	3,000	9.68	3,570	11.86	3,800	12.79
Total	31,800	100.15	32,500	99.94	--	-	30,600	98.87	31,000	99.39	30,100	99.05	29,700	98.73

Source:

HMRC (2013) Income and Tax statistics and distributions: [http://www.hmrc.gov.uk/stats/income\\_tax/table2-1.pdf](http://www.hmrc.gov.uk/stats/income_tax/table2-1.pdf) (last access 15/7/2013)

Notes:

[a] For 2006/07 to 2007/08 this includes tax payers who pay tax on earnings and savings. From 2008/09 onwards, the 10% tax rate only applies to income from savings.

[b] The standard rate was reduced in 2008/09 from 22% to 20%.

[c] Figure for 2008/09 are not currently available (last access 15/7/2013)



## 2. SIMULATION OF TAXES AND BENEFITS IN EUROMOD

### 2.1 Scope of simulation

Not all the taxes and benefits mentioned in the previous section are simulated by EUROMOD (see Table 9). Some are beyond its scope entirely and are neither included in the EUROMOD database nor in its output income variables. Others are not possible to simulate accurately with the available data. They are included in the database and may be chosen as components of output variables, but the rules governing them may not be changed by the model.

### 2.2 Simulated policies and order of simulation

#### 2.2.1 Structural changes from 2006 to 2012

There have been a number of structural changes between 2006 and 2012, in the sense of changes that cannot be straightforwardly described by changes in parameters shown in the tables in this section.

- the abolition of the 10% income tax rate: from 2008/09 the 10% income tax band was abolished for income from earnings but retained for income from capital. (At the same time the rate applying in the second band was reduced from 22% to 20%.)
- the replacement of Incapacity Benefit and Income Support for disabled people with the Employment Support Allowance (ESA). This transition is being phased over several years and will therefore not be fully operational until 2014. It has been implemented in EUROMOD using an adjustment to the input data (see also section 3).
- From October 2008 Local Housing Allowance (LHA) has replaced Housing Benefit (HB) for new claimants among private sector tenants. From 2011 LHA has gone through various reforms including a reduction in local reference rents, introduction of various caps and removal of the £15 addition for those below the reference rent.
- In 2010 the income tax personal allowance was limited to those with taxable income below a certain amount and abated for incomes above that amount.
- From 2010 the pension age for women has been increased by six months every year and will reach 65 years old in 2020. This phased increasing of the pension age is indicated by additional variables in the input data. See section 3.
- In 2012 the family element of Child Tax Credit was tapered away at a 41% rate and immediately after the child element.
- In 2012 the work requirement for Working Tax Credit increased to 24 hours per week for couples with children. Couples with children have to work at least 24 hours between them, with at least one of them working 16 hours in order to be entitled.
- From 2012 couples (with or without children) where one is on Carers Allowance need work no more than 16 hours per week to qualify for Working Tax Credit.
- From April 2012, contributory ESA for those in the WRAG has been limited to a maximum of one year (see section 3.3 for more details).



### 2.2.2 Order of simulation

Table 10 shows the order in which the main elements of the UK system are simulated. The policies below are simulated for all policy years 2006-2012.

The operation of the Minimum Wage (adjusts *yem*) potentially affects all instruments which depend on original income so this is calculated first.

Next employee and self-employed National Insurance contributions (*tscee\_s* and *tscse\_s*) are simulated followed by National Insurance contributions for employers (*tscer\_s*). After the simulation of SICs, unemployment benefit (contribution based JSA – *bunct\_s*) is simulated. Contribution-based JSA is taxable, therefore it must be simulated before income tax. The simulation of winter fuel allowance (*boaht\_s*) and income tax (*tin\_s*) have been done next.

The means-tested tax credits: Working Tax Credit - WTC (*bwkmt\_s*) and Child Tax Credit – CTC (*bfamt\_s*) are based on gross income before income tax and National Insurance contributions. They have been simulated after SIC and tax in line with the order of simulation in the other countries.

The income tests for means-tested benefits also take account of income from Jobseeker's Allowance (JSA - contributory unemployment benefit) and Child Benefit (*bch\_s*). Therefore, these non-means-tested benefits must be simulated first before Income Support, income-based JSA (*bsa\_s*), Pension Credit (*boamt\_s*) and income-based Employment and Support Allowance (*bsadi\_s*). Housing Benefit (*bho\_s*) and Council Tax Benefit (*bm\_u\_s*) include CTC and WTC in their means-test and their calculation depends on whether or not Income Support (income-based JSA or Pension Credit or income-based ESA) is received. Therefore, they are simulated last.



Table 9. Tax-benefit instruments and their treatment in EUROMOD

	Treatment in EUROMOD	Variable name(s)	Why not fully simulated?
<b>BENEFITS</b>			
Jobseeker’s Allowance (contributory)	Partly simulated OR simulated	bunct_s	Eligibility for unemployment benefit is based on actual receipt plus other relevant conditions being satisfied in the baseline. A full simulation of unemployment benefit receipt can be switched on and the duration of the receipt can be changed.
Incapacity Benefit	Included	bdict01	Inadequate data on length of sickness spell and contribution history
Employment Support Allowance (contributory)	Included	bdict02	Inadequate data on length of sickness spell and contribution history
Retirement Pension (basic)	Included	boact00	No data on contribution history or retirement date
Pension credit	Simulated	boamt_s	
Widow’s Benefit	Included	bsuwd	No data on deceased husband’s contributions or date of widowhood
Maternity Benefits	Included	bmana	No data on pregnancy dates, contribution conditions, previous earnings
Child Benefit	Simulated	bch_s	
Attendance Allowance	Included	bdioa	Insufficient information on disability
Disability Living Allowance	Included	bdisc and bdimb	Insufficient information on disability
Severe Disablement Allowance	Included	bdisv	Insufficient information on disability
Invalid Care Allowance	Included	bcrdi	Insufficient information on disability
Industrial Injuries Disablement Benefit	Included	bdiwi	Insufficient information on disability
War Pension	Included	boawr	Insufficient information on injury
Jobseeker’s Allowance (means-tested)	Simulated		Simulated as part of Income Support
Income Support (including Minimum Income Guarantee and Pension Credit)	Simulated	bsa_s	
Employment Support Allowance (means-tested)	Simulated	bsadi_s	
Housing Benefit	Simulated	bho_s	
Council Tax Benefit	Simulated	bmu_s	
Local Housing Allowance	Simulated		Simulated as part of Housing Benefit
Working Tax Credit and Child Tax Credit	Simulated	bwkmt_s and bfamt_s	

Continued...



	Treatment in EUROMOD	Variable name(s)	Why not fully simulated?
Social Fund	Excluded	-	No data; cannot model local discretion
Winter Fuel Allowance	Simulated	boaht_s	
<b>TAXES and deductions</b>			
Income tax	Simulated	tin_s	Some exemptions and small allowances are ignored.
National Insurance contributions	Simulated	tscee_s, tscse_s and tscer_s	Special schemes for small groups are ignored.
Council Tax	Included	tmu	No data on property value; no location information below standard region.
Private pension contributions	Partly simulated	tpcee_s	Implicit rate calculated from recorded contribution and earnings
<b>OTHER INCOME COMPONENTS</b>			
Minimum wage	Simulated		
Earnings related state pension	Included	boactcm	Contribution history unknown
Student loans	Included	bedsl	Parental income is not known for most cases.
Statutory Sick Pay	Included	bhlwk	No data on qualifying conditions
Statutory Maternity Pay	Included	bmaer	No data on pregnancy dates or previous employment record or earnings.
Child Support	Included	yptmp	No data on absent parents.
Education maintenance allowance	Included	bedes	The actual amount depends not only on course attendance but also on achieving learning objectives, i.e. information that is not included in the data.



Table 10. Order of policy simulation in EUROMOD

Section	Policy sheet	Description	Main output	2006	2007	2008	2009	2010	2011	2012
2.3	MinWage_uk	Minimum wage	- - -	X	X	X	X	X	X	X
	takeup_uk	Take-up correction set-up	- - -	X	X	X	X	X	X	X
	poadag_uk	Adjustments to variables on earnings and pensions due to increase in female state pension age	- - -	--	--	--	--	--	X	X
2.5.1	tscee_tscse_uk	Employee and	tscee_s and tscse_s	X	X	X	X	X	X	X
2.5.2		Self-employed Social Insurance Contributions								
2.5.3	tscer_uk	Employer Social Insurance Contributions	tscer_s	X	X	X	X	X	X	X
2.4.2	bunct_uk	Jobseeker's Allowance (contributory unemployment benefit)	bunct_s	X	X	X	X	X	X	X
2.4.1	boaht_uk	Winter Fuel Allowance	boaht_s	X	X	X	X	X	X	X
2.4.4	bch_uk	Child Benefit	bch_s	X	X	X	X	X	X	X
2.6	tin_uk	Income Tax	tin_s	X	X	X	X	X	X	X
2.4.3	bwkmt_bfamt_uk	Working Tax Credit and Child Tax Credit	bwkmt_s and bfamt_s	X	X	X	X	X	X	X
2.4.5	bsa_uk	Job Seeker's Allowance (means-tested) and	bsa_s	X	X	X	X	X	X	X
2.4.6		Income Support, Pension Credit								
2.4.7	bsadi_uk	Employment Support Allowance (means-tested)	bsadi_s	--	--	--	X	X	X	X
2.4.8	bho_uk	Housing benefits	bho_s	X	X	X	X	X	X	X
2.4.9	bmu_uk	Council Tax Benefit	bmu_s	X	X	X	X	X	X	X



## 2.3 National Minimum Wage

- *Brief description*

A national minimum wage (NMW) was introduced in April 1999. It determines the minimum amount employees have a legal entitlement to earn per hour depending on their age. Minimum Wage is simulated as a temporary variable in order to validate earnings.

- *Eligibility conditions*

The Minimum wage covers most employees except for those exempted for various reasons. Our data do not allow EUROMOD to account for exemptions.

- *Amounts*

In June 2006 the National Minimum Wage was £5.05 per hour for employees aged 22 and over, £4.254 for those aged 18-21 and £3.00 for those under 18 and not of compulsory school-age. For the rates for the other policy years, refer to Table 11 below. There are no minimum wage regulations for children of compulsory school age. The implementation in EUROMOD checks that individuals are receiving at least the National Minimum Wage. Where this does not seem to be the case in the data, the EUROMOD calculation increases the income by calculating income based on the number of hours worked on the national minimum wage.

Table 11. Changes in the rate of the National Minimum Wage from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per hour						
Aged 22+	5.05	5.35	5.52	5.73	5.80	5.93	6.08
Aged 18-21	4.25	4.45	4.60	4.77	4.83	4.92	4.98
Aged 16-17	3.00	3.30	3.40	3.53	3.57	3.64	3.68

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

## 2.4 Social Benefits

### 2.4.1 Winter Fuel Allowance (boaht\_s)

- *Brief description*

This is an annual allowance paid to any household containing a person aged 60 or over and is intended to cover extra heating costs for elderly people during winter months. The benefit is paid at household level (household\_uk).

- *Definitions*

A fixed annual amount is paid per household, according to whether any household member is aged 60 years old or above and whether any are aged over 80.



- *Eligibility conditions*

The general eligibility criteria is age though the amount varies according to both age and household composition – see below.

- *Income Test*

Winter Fuel Allowance is a universal, non-means-tested benefit.

- *Benefit amount*

The benefit amounts for the Winter Fuel Allowance over the policy years are laid out in Table 12 below.

Table 12. Winter Fuel Allowance benefit amounts from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per year						
At least one member of the HH is aged 60- 79	200	200	250	250	250	200	200
At least one member of the HH is aged 80 or over	300	300	400	400	400	300	300

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

- *Notes on implementation*

The winter fuel allowance is assumed to be shared equally between all eligible household members.

- *Interaction with taxes and other benefits*

The allowance is non-taxable and it is not taken into account in any other instrument. In practice payments are shared between eligible household members. In EUROMOD the default sharing assumption is that the amount is shared equally by all those in the household aged 60 or over.

## 2.4.2 Contributory Jobseeker's Allowance (bunct\_s)

- *Brief description*

Contributory Jobseeker's Allowance is a contributory benefit for the unemployed. The benefit amounts vary according to the age of the claimant. The basic amount paid depends on the individual's age alone, with lower payments going to younger workers. There are no dependants' additions. There is no relationship with past earnings, beyond the contribution condition. Contributory JSA is payable for six months only.

- *Definitions*

The unit of assessment is the individual



- *Eligibility conditions*

There are four main eligibility conditions for contributory JSA:

- **Age:** to be eligible for contributory JSA women need to be aged between 18-59 and men between 18 and 64.
- **Actively seeking employment:** the claimant must be available for (and show proof of actively seeking) full time employment. This criterion is not simulated in EUROMOD.
- **Contribution record:** the claimant must have paid or been credited sufficient NI contributions in the two tax years before the benefit year of claim.
- **Work hours:** A third condition is that hours of work should be less than the weekly maximum of 16 hours (lwh) in 2006.

- *Income Test*

Contributory Jobseeker's Allowance itself is not means-tested. However, there are two ways in which the basic benefit is reduced £ for £ (sin01\_s):

- with any earnings<sup>8</sup> (yem+yse) after the first disregarded amount of £5 per week or
- any occupational or private pension (ypp+ boactcm) over £50 per week.

See Table 13 for the different rates across the policy years.

- Contributory JSA is taxable and counts as income for means-tested benefits, so it needs to be simulated before income tax and means-tested benefits.

- *Notes on implementation*

The FRS data do not contain the required information to establish the contribution record of individuals. Instead two options have been implemented. Firstly, in the current baseline eligibility is taken from the data (bunct>0) providing the other eligibility conditions outlined above are satisfied. In order to simulate the monthly amount reported in the data, it is assumed that unemployment benefit is received for the whole year. The second option is to fully simulate eligibility. This option is switched off by default. The FRS data only allow us to establish whether an individual has worked for two years at some point while contributory JSA requires the individual to have worked in the last two years. Therefore, the eligibility for contributory JSA is overestimated, if simulated. An option (the last function in the policy) allows the maximum duration of the contributory JSA to be simulated as lasting six months, the maximum entitlement.

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<sup>8</sup> Unless an individual earns more than their entitlement to contributory JSA plus any disregards. If that is the case, he/she would no longer be eligible.



- *Benefit amount*

Table 13. Amount of contributory Jobseeker's Allowance by age for 2006 to 2012

As of...	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12
Fiscal year:	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
	£ per week	£ per hour					
18-24 years old	45.50	46.85	47.95	50.95	51.85	53.45	56.25
25 or over	57.45	59.15	60.50	64.30	66.45	67.50	71.00
Occupational and personal pension disregard	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Earnings disregard	5.00	5.00	5.00	5.00	5.00	5.00	5.00

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

### 2.4.3 Working Tax Credit and Child Tax Credit

- *Brief description*

Working Tax Credit and Child Tax Credit are income-tested refundable tax credits. In practice they are calculated separately from income tax liabilities and their treatment in EUROMOD reflects this and they are treated as benefits. They are calculated on the basis of the previous tax year's annual income.

In principle they are responsive to changes in income or other circumstances if the claimants report it. In practice this is only likely to happen if the claimant's situation changes in a way likely to increase entitlement. However, there is an end-of-year settlement which takes account of changes during the year. Increases in income are disregarded up to a limit which has varied over the period 2006-2012. It was £2,500 (annual) in 2006, £25,000 (ten times as large) in 2007 to 2009 and is reduced to £10,000 in 2011/12 onwards. EUROMOD uses current income to simulate entitlements and cannot take account of changes in income over the year. Essentially, it assumes that the end of year income disregard is very large. See section 4.1.7 for more information.

- *Eligibility conditions*

**Working Tax Credit** (bwkmt\_s) is an income-based credit for working adults who are either (sin02\_s = 1)

- working at least 30 hours per week and aged above 24 years old,
- working at least 16 hours per week and have a dependent child or
- working at least 16 hours per week and disabled, or from 2011 onwards, aged 60 or more, or
- from 2011, if a couple with children, working at least 24 hours per week between them (and at least one of them working 16 hours), but



- (from 2011/12) those in couples (with or without children) where the partner is on Carers Allowance need to work only 16 hours to qualify

**Child tax credit (CTC)** (bfamt\_s) is an income based tax credit paid to families with dependent children, regardless of whether the adults are in employment or not (sin06\_s). It has replaced all the children amounts previously paid under Income Support, income-based Jobseeker's Allowance and Pension Credit. It is composed of a Family element and a Child element.

- **Assessment unit**

The 'assessment unit' for tax credits is the so-called 'benefit unit' (see page 8).

- **Amounts**

The calculation of the amount of tax credit can be broken down into a number of steps by calculating:

- 1) The 'relevant period'
- 2) The 'maximum amount'
- 3) The 'relevant income'
- 4) Comparing the 'relevant income' to the 'threshold figure'
- 5) Calculating the final entitlement

**The 'relevant period'**

This refers to the number of days the benefit unit is eligible within the tax year. For the purposes of EUROMOD we assume that eligibility has lasted all year.

**The 'maximum amount'**

Working Tax Credit contains a number of elements depending on family composition (basic, couple and lone parent element), health (disability and severe disability element), number of hours worked (30 hour element) and age of the claimant (50+ element).

The maximum amount of the Working Tax Credit is calculated by adding up all the elements. In other words, if a benefit unit is entitled to Working Tax Credit according to the criteria outlined above, they qualify for the basic element. Then, according to the family circumstances they qualify for the other elements shown in the Table 13 (sin04\_s).

The maximum of the Child Tax Credit is the sum of the family element (£545 per year (in 2005/06), doubled if one child is aged below 1 years old (sin07\_s) and the child element of £1,690 yearly (in 2005/06), paid for each child in the family. Children with disability are entitled to additional payments (sin08\_s).

For example, if they are a lone parent working 30+ hours per week with two children aged three and five years, for example, they would qualify for the WTC basic element, the WTC lone parent element and the WTC 30+ element.

In addition, they would qualify for the CTC family and two times the CTC child element, i.e. for each child. The elements for both tax credits are annual amounts and are shown in Table 14 and Table 15 below.



Table 14. Working tax credit amounts from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per year						
WTC Basic element	1,665	1,730	1,800	1,890	1,920	1,920	1,920
WTC Lone parent element	1,640	1,700	1,770	1,860	1,890	1,950	1,950
WTC Couple element	1,640	1,700	1,770	1,860	1,890	1,950	1,950
WTC 30 hours element	680	705	735	775	790	790	790
WTC Disability element	2,225	2,310	2,405	2,530	2,570	2,650	2,790
WTC Severe disability element	945	980	1,020	1,075	1,095	1,130	1,190
WTC Max eligible childcare expenditure, 1 child (per week)	175	175	175	175	175	175	175
WTC Max eligible childcare expenditure, 2 + (per week)	300	300	300	300	300	300	300
WTC Proportion of eligible childcare costs covered	80%	80%	80%	80%	80%	70%	70%

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

The childcare element (sin03\_s) is to meet the cost of ‘relevant childcare’ (xcc). Those eligible are lone parents in employment or couple with both in employment or one partner receiving disability benefits. ‘Relevant childcare’ essentially refers to registered childcare for which the childcare element can be claimed. The calculation of the childcare tax credit element is based on average weekly amounts, i.e. the cost of childcare over the whole year is added together and then divided by the number of weeks that childcare has been used. This average childcare amount is then multiplied by 52 and treated as the annual amount. The childcare element is designed to meet a proportion of those costs up to set limits. The proportion was 80% from 2006, but was decreased to 70% in 2011, up to £175 per week per child if only one child and £300 per week if two or more children.



Table 15. Child tax credit amounts from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per year						
CTC Family element	545	545	545	545	545	545	545
CTC extra for child under 12 months	545	545	545	545	545	545	545
CTC Child element	1,765	1,845	2,085	2,235	2,300	2,555	2,690
CTC disability child additional Element	2,350	2,440	2,540	2,670	2,715	2,800	2,950
CTC Severe disability disabled child additional element	945	980	1,020	1,075	1,095	1,130	1,190

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

There is an additional element of the WTC for individuals who are 50 years or older which they can claim for the first 12 months after having moved into work. However, as these are temporary elements, these have not been simulated in EUROMOD.

#### The ‘relevant income’ or means-test

The means test is based on the annual gross income of the parent(s) including earnings, pensions (net of private pension contributions), invalid care allowance, incapacity benefit and property income (see income list il\_TC\_means for the detailed list of components). Some disregards are applied (ydg04\_s): a weekly disregard of £100 applies to statutory sick pay (bhlwk) and statutory maternity (bmana) received by the parent(s) and an annual disregard of £300 applies to some adult income (state and occupational pension, investment and property income). Children’s income (ychot\_s), where applicable, is disregarded. Capital itself is not included in the means-test, although the taxable part of income from capital (yiytx) is taken into account. In the simulation we use current short term income (as reported in the data) and we assume that this reflects the income for the whole year without any substantial change.

#### Comparing the ‘relevant income’ to the ‘threshold figure’

The sum of the relevant income is then compared to the ‘threshold figure’ which differs according to the tax credit that is being claimed. If a benefit unit is only eligible for Working Tax Credit, then the first threshold figure in 2006 was £5,220. The same threshold applies if a benefit unit claimed Working Tax Credit and Child Tax Credit. However, when a benefit unit is only entitled to Child Tax Credit, the first threshold was £14,155 per year in 2006. See Table 16 for the figures for subsequent years.



Table 16. Child tax credit thresholds from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per year						
First threshold	5,220	5,220	6,420	6,420	6,420	6,420	6,420
First threshold if not entitled to Working Tax Credit	14,155	14,495	15,575	16,040	16,190	15,860	15,860
First withdrawal rate	37%	37%	39%	39%	39%	41%	41%
Second threshold	50,000	50,000	50,000	50,000	50,000	40,000	--
Second withdrawal rate	6.67%	6.67%	6.67%	6.67%	6.67%	41%	--

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

### Calculating the final entitlement

If the 'relevant income' worked out in step 3 is lower than the applicable threshold outlined in step 4, the benefit unit is entitled to the 'maximum' tax credit award that had been calculated in steps 1 and 2. If the 'relevant income' is higher than the applicable threshold, then the threshold is to be subtracted from the 'relevant income'. The difference between the two amounts is then tapered away at 37% in 2006 (see Table 15). In this calculation the elements are tapered away in a particular sequence, namely:

- the WTC elements, except for the childcare tax credit element, come first,
- then the childcare tax credit element and
- then the child and any disability elements of the Child Tax Credit.

The family element of CTC is only tapered away if the 'relevant income' is in excess of the second threshold, i.e. £50,000 (reduced to £40,000 in 2011). Only if that is the case it will be tapered away at 6.67%.

From 2012 the child element is tapered away at a higher rate: 41%. From 2012 the family element is also tapered away at a 41% rate immediately after the child element.

If annual entitlement for either CTC or WTC or their sum turns out to be less than £26 per year, no award of tax credit is made.

- *Interaction with other benefits*

WTC counts in full as income for IS, PC, HB and CTB, so needs to be simulated before means-tested benefits. It is not taxable, so it can be simulated after income tax.

CTC counts in full as income for HB and CTB, so needs to be simulated before means-tested benefits. It is not taxable, so it can be simulated after income tax.

- *Notes on implementation:*

Disability for the purposes of tax credits is assessed on the basis of a disability test assigned by a doctor and receiving a so called 'qualifying benefit'. The medical test cannot be simulated in EUROMOD nor can all the rules around qualifying benefits as some refer to receipt in the past six months. Therefore, eligibility for the disability element has been implemented in



EUROMOD as receiving one of the qualifying benefits ( $il\_disab > 0$ ), namely, Incapacity Benefit, Severe Disablement Allowance (from October 2008 the claimants of these two benefits are being increasingly transferred onto Employment and Support Allowance), Attendance Allowance or the care or mobility element of the Disability Living Allowance.

As mentioned above, the additional elements for individuals who are 50 years or older and who have recently moved into work are not simulated as the employment history is incomplete in the data to capture all those that are eligible for this temporary benefit.

In addition, once CTC/WTC is in payment, this continues unchanged for the remainder of the tax year even if circumstances change. This means that some people calculated to not be entitled on the basis of current circumstances may have been entitled at the time when they made the application.

#### 2.4.4 Child Benefit (*bch\_s*)

- *Brief description*

Child Benefit (CB) is a universal flat-rate benefit paid to the person responsible for each dependent child. The amount each benefit unit (see page 8) receives depends on the number of dependent children in the benefit unit. A child is defined as dependent if it is aged below 16 or below 19 if still in full-time education.

- *Eligibility*

Eligibility requires the presence of dependent children in the benefit unit. The claimant does not need to be the parent of the child, e.g. it is sufficient if the claimant is responsible for the upbringing of the child.

- *Income test*

None, as child benefit is a universal benefit paid for all dependent children.

- *Benefit amount*

Child Benefit consists of £17.45 per week for the first or only child in 2006/07. For each additional child £11.70 is paid per week (see Table 17 for the rates in the other policy years). Essentially therefore the weekly entitlement is  $CB = £17.45 + (11.70 * (\text{number of children} - 1))$ .

Table 17. Child benefit rates from 2006 to 2012

As of...	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12
Fiscal year:	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
	£ per week	£ per year					
Only/Eldest child	17.45	18.10	18.80	20.00	20.30	20.30	20.30
Other child(ren)	11.70	12.10	12.55	13.20	13.40	13.40	13.40

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13



- *Interaction with other benefits*

Child Benefit is not taxable and has been ignored in the assessment of income for means-tested benefits since 2004.

## 2.4.5 Income Support (including income-based Jobseeker's Allowance) (bsa\_s)

- *Brief description*

Income Support is a safety net payment for people of working age who are not expected to seek work, while income-based Job Seekers Allowance is the safety net benefit for people who are able to work but who are not (or are no longer) entitled to contribution based Jobseeker's Allowance.

In EUROMOD, income-based Jobseeker's Allowance and Income Support are implemented together as the rules are largely the same.

The unit of entitlement and income assessment for both benefits is the benefit unit (tu\_bu\_uk) i.e. single people or couples (including co-habitees) with their dependent children. The claimant groups are lone parents, disabled people and pensioners (groups not required to seek work) plus the unemployed.

- *Eligibility*

Eligibility to Income Support is based on being exempt from looking for work, e.g. because of being sick or disabled or registered blind, carers, or lone parents (from 2009/10 this only refers to lone parents whose youngest child is 12 or under rather than 16 as before), or people on unpaid parental leave. Additional conditions are that claimants are not full-time students, are under 60, do not have savings or capital above £16,000 and are not entitled to contribution- or income-based Jobseeker's Allowance.

Eligibility for income-based Jobseeker's Allowance is based on being able to work but not (or no longer) entitled to contribution based Jobseeker's Allowance. Recipients are expected to actively look for work.

The following additional rules apply to both benefits:

- Working less than 16 hours per week
- Having less than £8,000 in capital
- Applicable amount

The applicable amount is the figure representing weekly needs, e.g. the amount the claimant and partner are expected to live on each week. It results from the sum of:

$$\text{IS/ib-JSA Applicable amount} = \text{personal allowances} + \text{premiums} + \text{housing costs}$$

The personal allowances (sin05\_s) for both benefits are outlined in Table 18 below.



Table 18. Income Support and income-based Jobseeker's Allowance rates from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Single or lone parent 16-17	34.60	35.65	47.95	50.95	51.85	53.45	56.25
Single 18-24	45.50	46.85	47.95	50.95	51.85	53.45	56.25
Single 25 or over	57.45	59.15	60.50	64.30	65.45	67.50	71.00
Lone parent 18 or over	57.45	59.15	60.50	64.30	65.45	67.50	71.00
Couple one under 18	68.65	70.70	72.35	76.90	78.30	80.75	84.95
Couple both over 18	90.10	92.80	94.95	100.95	102.75	105.95	111.45

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

- **Premiums**

Premiums are amounts which are added to the personal allowance, if the relevant conditions are satisfied (sin01 to sin04\_s and sin06\_s). Rates of premiums are the same for all claimants, irrespective of their age. Relevant premium conditions and weekly rates are listed in Table 17 below. An individual/household can receive several premia.

Disability is defined according to receipt of certain disability benefits, called 'qualifying benefits'. Qualifying benefits have to be received within the last six months of claiming IS/ib-JSA) according to the 'linking rule' introduced to encourage people with disabilities to move into work without losing their disability premiums if they have to leave work.

The disability premium (sin01\_s) is linked to the following qualifying benefits: Disability Living Allowance (either the mobility component bdimb and or the care component bdisc), Severe Disablement Allowance (bdisv) or long-term Incapacity Benefit (bdict) and the disability element of the Working Tax Credit. The latter benefit would not be received at the same time, therefore this condition has not been simulated. The severe disability premium (sin02\_s) is given if the claimant is receiving one of the following qualifying benefits: Attendance Allowance, the middle or higher rate care component of Disability Living Allowance (bdisc), no one is getting the carers allowance (bcrdi) for looking after the claimant and there are no non-dependants living in the household. There are additional rules for those registered blind. However, as this condition cannot be identified in the data, this has not been simulated. The conditions for receiving the enhanced disability premium (sin04\_s) are that the Disability Living Allowance Care Component is received at the highest rate (bdisc>£62.25 per week in 2006).

The carer premium (sin03\_s) will be received if the claimant receives the Carer's Allowance (bcrdi).

The child elements for all the benefits mentioned above are included in the Child Tax Credit.



Table 19. Income Support and income-based Jobseeker's Allowance premia for families and carers from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Carer premium - one qualifies	26.35	27.15	27.75	29.5	30.05	31.00	32.60
Carer premium - both qualify	52.7	54.3	54.3	55.5	60.10	62.00	65.20
Disability premium - single	24.5	25.25	25.85	27.5	28.00	28.85	30.35
Disability premium - couple	39.85	41.1	39.85	41.1	39.85	41.10	43.25
Enhanced disability premium - single	11.95	12.3	12.6	13.4	13.65	14.05	14.80
Enhanced disability premium - couple	17.25	17.75	18.15	19.3	19.65	20.25	21.30
Severe Disability – one qualifies	46.75	48.45	50.35	52.85	53.65	55.30	58.20
Severe Disability- two qualify	93.50	96.90	100.70	105.70	107.30	110.60	116.40

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

- *Means-test*

One claim for IS/ic-JSA is made per benefit unit and the entitlement depends on the income of all the members in the benefits unit as well as the composition of the household, i.e. whether there are adult-non-dependants present in the household. The income of other people in the household is not taken into account except via the non-dependent deduction (see below). Income is defined by `il_IS_means`. It includes gross income from employment and self-employment and all other main current income sources **except** investment income and certain benefits (Housing Benefit and Council Tax Benefit, Attendance Allowance and Disability Living Allowance). In addition, half the value of private pension contributions and all of employee and self employed contributions and income tax are deducted.

Some earnings and other income are disregarded (`ydg01_s`). These are (2006 figures) £20 per week for a lone parent; £20 for a disabled person where disability is signalled by receipt of certain benefits (see above on entitlement to disability premium) within the family unit; £10 for couples not qualifying on disability grounds and £5 for others. In addition, small amounts (£10 in 2006) of war pension and maintenance payments are disregarded. Income from investment income is not included directly in the IS family income assessment. Instead, a tariff income (£1 per week for every £250 capital) is calculated on financial capital between £6,000 and the upper threshold £16,000.



Table 20. Income Support and income-based Jobseeker's Allowance earnings' disregards and capital limits from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Single person	5	5	5	5	5	5	5
Couple	10	10	10	10	10	10	10
Disability	20	20	20	20	20	20	20
Lone parent <sup>[a]</sup>	20	20	20	20	20	20	20
	£	£	£	£	£	£	£
Standard (working age) capital lower limit	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Standard (working age) capital upper limit	16,000	16,000	16,000	16,000	16,000	16,000	16,000

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

[a] Lone parents on HB or CTB have £25 of their earnings ignored.

- **Housing costs**

Housing costs not covered by Housing Benefit can potentially be included in Income Support (and also Pension Credit – see below). Providing that the claimant is responsible for the housing costs (sin24\_s), mortgage interest payments (xhcmomi) are included in the calculation of the applicable amount. The upper limit up of mortgage loans for which interest payments are covered is £100,000 (or, since 2009, £200,000 in some circumstances). There are variable waiting times (between 16 and 39 weeks) after qualifying for benefit before mortgage interest is included in the calculation of the applicable amount. The EUROMOD implementation does not take into account the limit up to which interest is paid nor the waiting time. Some other housing costs (such as ground rent or service charges for the upkeep of communal areas in shared buildings) are in principle also covered by Income Support but because our data do not allow us to distinguish these from other charges that are not covered, EUROMOD does not take account of these extra costs in the Income Support calculation.

- **Multiple 'assessment units' in household and non-dependants**

In the case of multiple-benefit-units households, simulation of means-tested benefits needs to be coordinated across the multiple benefit units. IS and ib-JSA can be received by each benefit unit living in the same household, but entitlement for each benefit unit might be affected by the presence of other benefit units (through so called 'non dependent deductions'). HB and CTB are typically received by one benefit unit only, but entitlement is again affected by the presence of other benefit units (through so called 'non dependent deductions').

Deductions are made from the housing cost element of the Income Support Applicable Amount if there are non-dependent adults in the household in addition to the householder's family unit (sin25\_s). The "householder" in the UK is the person responsible for the rent or mortgage interest (sin24\_s). In the UK data they are the first person in the household, not necessarily the oldest or highest income person (in the case of couples the householder is generally assumed to



be the man). The size of the deduction depends on the type of non-dependent. These types are defined in uk\_sben\_nondep\_ded. No deduction is made where the person is aged under 18 or where they are aged under 25 (hb\_ndd\_isag) and themselves in receipt of Income Support (IS) (sin25\_s). To establish this latter condition, IS must be simulated for each non-dependent. Other exemptions from deductions apply when the person is a full-time student, where they are blind, or where they are in receipt of Attendance Allowance (bdioa), or the middle or higher rate of the care component of Disability Allowance (bdimb). None of these cases are modelled.

Generally, a single deduction applies to each single person or couple according to the following (for couples, the higher deduction applies and income is aggregated): “Work” in this case refers to whether in full-time work for at least 16 hours or not (lwh) and gross income (il\_ISPC\_nondep\_means), which is similar to the income definition used for IS assessment but is before the deduction of income tax and contributions. Table 21 sets out the rates for the different income brackets.

Table 21. Non-dependent deductions on Income Support and income-based Jobseeker’s Allowance from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Deduction applying if	47.75	47.75	47.75	47.75	47.75	60.6	73.85
income is above	338	353	369	382	382	387	394
Deduction applying if	43.5	43.5	43.5	43.5	43.5	55.2	67.25
income is above	271	283	296	306	306	310	316
Deduction applying if	38.2	38.2	38.2	38.2	38.2	48.45	59.05
income is above	204	213	223	231	231	234	238
Deduction applying if	23.35	23.35	23.35	23.35	23.35	29.6	36.1
income is above	157	164	172	178	178	180	183
Deduction applying if	17.00	17.00	17.00	17.00	17.00	21.55	26.25
income is above	106	111	116	120	120	122	124
Deduction otherwise <sup>[a]</sup>	7.4	7.4	7.4	7.4	7.4	9.4	11.45

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

Notes: [a] An additional condition is that the non-dependant is working fewer than 16 hours per week.

- *Preliminary IS used for the nondependent deduction*

This policy module calculates IS entitlement for all benefit units in the household except the householder-unit. It does so in exactly the same way as in the actual IS calculation except that the addition of housing needs to the applicable amount is ignored (by definition, non-



dependants do not have these needs). Note that the parameters for IS in this calculation are specified separately to those used in the main IS calculation. When making policy changes, the user should consider whether the calculations should remain so closely aligned (generally they should).

- ***Calculation***

The award is calculated by adding together the personal allowances, premiums and disregards (plus the housing costs if responsible for them) and then to subtract from that any income and non-dependent deductions. Up to this point IS and ib-JSA have been treated together in the simulation. However, at this final stage they are separated again according to the relevant eligibility criteria for IS (bsa\_s) and ib-JSA (bunmt\_s).

- ***Interaction with other benefits***

Working Tax Credit and Contributory JSA count as income for IS/ib-JSA purposes so they need to be simulated before IS/ib-JSA. Because of non-dependent deductions and the fact that IS/ib-JSA acts as a passport to maximum HB and CTB, IS/ib-JSA is simulated before HH and CTB. IS/ib-JSA is not taxable.

## **2.4.6 Pension credit**

- ***Brief description***

This is an income maintenance benefit paid to those aged 60 years or older. It is composed of two elements, the Guarantee Credit (boamt\_s) meant to ensure a guaranteed level of income, and the Saving Credit (boamtm\_s), meant to reward those who made provisions for retirement above the Basic State Pension level. You can receive either or both components. Once both the GC entitlement and SC entitlement have been calculated, Pension Credit entitlement is the sum of these two components. The housing costs provisions mirror those described for IS, except that the exception to non-dependant deduction is not made (so deduction occurs) in cases where a deduction had already been made under HB.

Pension Credit is implemented in the same policy sheet as Income Support and income-based Jobseeker's Allowance as a number of the rules are very similar such as deductions for non-dependents.

### **2.4.6.1 Guarantee Credit (boamt\_s)**

- ***Brief description***

The aim of the Guaranteed Credit (GC) is to ensure that the income of older people does not fall below an 'appropriate minimum guarantee'.

- ***Eligibility***

In order to be eligible, individuals must be 60 years or older (sin16\_s) and have income (il\_GC\_means) below the 'standard minimum income guarantee' (see Table 22). These are set out in Table 22 below.



Table 22. Pension Credit Minimum Guarantee 2006-2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Single person	114.05	119.05	124.05	130.00	132.60	137.35	142.70
Couple	174.05	181.7	189.35	198.45	202.40	209.70	217.90

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

Unlike for working-aged claimants of IS there is no maximum capital limit for Pension Credit.

- *Means-test*

Means in this instance include income of any adult in the benefit unit (the claimant and the partner if any), while income of dependent children is not included (il\_GC\_means). Income from capital is included in the means-test. Specifically, for every £500 of capital over £6,000 (£10,000 from 2010), £1 of income is added to income for the purpose of the means-test (yiviy01\_s).

- *Applicable amount*

The applicable amount is the figure representing weekly needs for GC purposes, e.g. the amount the claimant and partner are expected to live on each week. It results from the sum of: PC Applicable amount = personal allowances + premiums + housing costs. The personal allowances are shown in Table 21 above (i.e. they are the equivalent to the level of the guarantee) and the premiums are set out in the Table 23 below.

- *Calculation*

The income calculated above is then subtracted from the applicable amount and the difference is the Guarantee Credit award.

Table 23. Pension Credit allowances, premium and rates 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Severe Disability Premium- single or one qualifies	46.75	48.45	50.35	52.85	53.65	55.3	58.20
Severe Disability Premium- couple (both qualify)	93.50	96.90	100.70	105.70	107.3	110.6	116.40
Carer Premium- single or one partner qualifies	26.35	27.15	27.75	29.50	30.05	31.00	32.60
Carer Premium- couple (both qualify)	52.70	54.30	55.50	59.00	60.1	62.00	65.20
Capital lower limit for those 60 and over	6,000	6,000	6,000	6,000	10,000	10,000	10,000

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13



#### 2.4.6.2 The Savings Credit (SC) (boamtmm\_s)

- *Brief description*

The calculation of the saving credit element follows a procedure that is slightly different from the typical UK means-tested benefit. It is designed to top up the GC for those with income from savings or work.

- *Eligibility and means-test*

Either the individual claimant has to be 65 or older and have income **above** the savings threshold `il_SC_qualy`. The income taken into account is the same as for the Guarantee Credit except so called ‘non-qualifying income’, i.e. income linked to work, i.e. Working Tax Credit, Incapacity Benefit, contribution based- ESA, contribution based-Jobseeker’s Allowance, Severe Disablement Allowance, Maternity Allowance and maintenance payments.

Table 24. Savings Credit threshold 2006-2012

As of...	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12
Fiscal year:	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
	£ per week						
Single person	84.25	87.3	91.2	96.0	98.4	103.15	111.80
Couple	134.75	139.6	145.8	153.4	157.25	164.55	178.35

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

- *Amounts*

The savings credit is calculated using the following steps.

Step 1: calculate the income that counts for GC purposes and includes qualifying income.

Step 2: calculate the minimum guarantee plus any additional amounts.

Step 3: calculate 60% of all income except non-qualifying income above the savings credit threshold (see Table 23 above). This amount is compared with the maximum savings credit which was £17.88 per week for a single person and £23.58 for a couple in 2006.

Step 4: if the income calculated in step 1 is smaller than the income in step 2, step 3 will be the savings credit amount.

Step 5: If the income from step 1 is higher than that in step 2, calculate 40% of the total income (including non-qualifying income) above the appropriate minimum guarantee.

Step 6: Deduct the amount from step 5 from step 3 and this is the appropriate savings credit. If the amount is negative, then the person is not entitled to any savings credit.



Table 25. Savings Credit maxima and withdrawal rate 2006 to 2012

As of...	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12
Fiscal year:	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
	£ per week						
Maximum Savings Credit- single	17.88	19.05	19.71	20.40	20.52	20.52	18.54
Maximum Savings Credit- couple	23.58	25.26	26.13	27.03	27.09	27.09	23.73
Savings Credit withdrawal rate	40%	40%	40%	40%	40%	40%	40%

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

- *Interaction with other benefits*

Because PC has no 16 hours a week rule, it may be possible to get both PC and WTC if income is low enough. Any WTC counts as income for PC (GC means). Pension Credit is not taxable.

#### 2.4.7 Income based-Employment and Support Allowance (bsadi\_s)

- *Brief description*

Employment and Support Allowance (ESA) was introduced on 27 October 2008. It is a benefit for people who have “limited capability for work” and who are not entitled to statutory sick pay. ESA replaces IB and IS on “grounds of disability” for new claimants.

Whether somebody has limited capability for work because of mental or physical conditions is determined as part of a work capability assessment.

There are two types of ESA: contributory ESA (c-ESA - bdict02) which is not means-tested and it is paid if one satisfies the national insurance conditions; income-based ESA (ib-ESA) which is paid subject to a means test (there is no NI conditions applying in this case). It is possible to receive c-ESA topped up with ib-ESA. C-ESA is not simulated by EUROMOD.

A number of elements for the calculation of ib-ESA are similar to IS/ ib-JSA such as the personal allowances, some premiums and the inclusion of reductions for non-dependants in the calculations.

ESA is worked out in two phases: in the “assessment phase” the individual gets a basic allowance, which depends on a personal applicable amount (see below) and their income. In the “main phase” of ESA one of two additional components is added to the basic allowance depending on the level of disability. This is the “support component” if the individual is assessed to have “limited capability for work-related activity” or the “work-related activity component” if the individual is regarded as being in the “work-related activity group” (WRAG) which means he/she is required to take part in work-focused interviews and possibly undertake some work-related activity.

- *Eligibility*

The main eligibility rules to qualify for income based Employment and Support Allowance are:

- having limited capability for work and



- having low income (meaning that income is lower than the applicable amount) and
- having capital lower than £16,000.

In addition to these basic rules of entitlement, to be eligible for income-based ESA one needs to:

- be aged 16 or over and under pension age; and
- be not in education; and
- be not entitled to Pension Credit (PC); and
- be not entitled to Income Support or JSA and be not in a couple entitled to joint-claim JSA and
- be not entitled to Statutory Sick Pay; and
- be not engaged in full-time work (if a partner is present, also the partner should not be working full-time) and
- if with partner, the partner should not be entitled to ib-ESA, ib-JSA or PC in his/her own right

- *Calculation*

The calculation of the income-based Employment and Support Allowance amount is based on the ‘applicable amount’ and the income of the claimant and their family unit.

The award is calculated by adding together

- the personal allowances (which are the same as IS and ib-JSA),
- premiums (only the enhanced disability, severe disability, carer and pensioner premiums may apply); and
- in the main phase, either the support component<sup>9</sup> or the work-related activity component<sup>10</sup>; and
- disregards
- plus the housing costs if the claimant is responsible for them)

and then subtracting from that any income and non-dependent deductions.

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<sup>9</sup> The support component is one of the additional components that can be included as part of ESA. It is payable only after the assessment phase has ended and if somebody is assessed as having “limited capability for work-related activity”.

<sup>10</sup> The work-related activity (WRA) component can be included as part of ESA when somebody is regarded as being in the “work-related activity group” (WRAG) which means that he/she is required to take part in work-focused interviews and possibly undertake some work-related activity. Claimants can be entitled to the WRA component if the assessment phase has ended, they are not assessed as having limited capability for work-related activity (i.e. they are not entitled to the support component), they comply with the requirement to attend work-focused interviews and associated activities.



Table 26. Income-based Employment and Support Allowance additional premia from 2008 to 2012

As of... Fiscal year:	Jun-08 2008/09 £ per week	Jun-09 2009/10 £ per week	Jun-10 2010/11 £ per week	Jun-11 2011/12 £ per week	Jun-12 2012/13 £ per week
Work-related activity component	--	25.5	25.95	26.75	28.15
Support component	--	30.85	31.4	32.35	34.05

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2008/09 to 2012/13

- *Notes on implementation*

Many of the parameters related to ESA are the same as those for IS and in EUROMOD they are used with the same name. When making policy changes, the user should consider whether the IS calculations should remain based on (largely) identical income and needs assessments.

- *Interactions with other simulated components of the tax benefit system*

EUROMOD first computes IS/ib-JSA entitlement and then ib-ESA. Because income-based Employment and Support Allowance is payable instead of Income Support based on disability, EUROMOD assumes that when somebody is entitled to both IS and ib-ESA, they will receive the higher amount.

Likewise IS/ib-JSA, Working Tax Credit and Contributory JSA count as income for ib-ESA purposes so they need to be simulated before IS/ib-JSA and ib-ESA. Because of non-dependent deductions and the fact that receipt of either IS/ib-JSA or ib-ESA acts as a passport to maximum HB and CTB, IS/ib-JSA and ib-ESA are simulated before HB and CTB.

Ib-ESA is not taxable.

#### 2.4.8 Housing Benefit (including Local Housing Allowance) (bho\_s)

- *Brief description*

Housing benefit (HB) and Local Housing Allowance<sup>11</sup> (LHA) cover or contribute to the cost of rent for low income families respectively for public sector tenants and for private sector tenants. There are no conditions regarding working hours: the benefits cover those in work, pensioners, the unemployed, the disabled and the inactive. It is assumed that the person in the household identified in the FRS data as responsible for housing costs (dhr) pays the rent and claims the benefit. A number of elements are similar to IS/ ib-ISA such as the personal allowances, premiums and the inclusion of non-dependants in the calculations.

<sup>11</sup> Local Housing Allowance applies to most private tenants from 7<sup>th</sup> April 2008.



The main change introduced in April 2008 by the LHA is a limitation to the contribution toward the cost of rent for private sector tenants. This is achieved by:

- Limiting the amount of the benefit to a certain percentile point of local market rents for similar tenancies in a Broad Rental Market Area (BRMA).
- introducing a maximum level to the benefit for private tenants at the UK level by category of dwelling.

The policy is being rolled-out from 2008 to 2013.

- **Eligibility**

The main eligibility rules for Housing Benefit and Local Housing Allowance are having low income, being responsible for paying the rent (and other housing costs of tenants). Housing benefit is not payable if the property is owned by the partner of the claimant or is Crown property. In this case, housing costs may form part of an IS or ib-JSA claim if the claimant is eligible for either of those (see above).

- **Calculation**

The calculation of the Housing Benefit and Local Housing Allowance amount is based on the ‘applicable amount’, the ‘maximum Housing Benefit’ and the income of the claimant and their family unit.

#### ‘Applicable amount’ (sin09\_s)

The ‘applicable amount’ is calculated in a similar fashion to Income Support, Jobseeker’s Allowance and Pension Credit, i.e. it consists of the personal allowances and premiums. The rates for personal allowances (sin07\_s) and premia are mainly the same as for IS/ib\_JSA for claimants under 60 (see Table 20). Exceptions, and the rates and premia for those 60 and 65+ are shown in Table 27.

Table 27. Housing Benefit Allowances from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Family premium	16.25	16.43	16.75	17.3	17.4	17.4	17.4
Family premium (baby under 1 addition )	10.5	10.5	10.5	10.5	10.5	0	0
Disability premium – child	45.08	46.69	48.72	51.24	52.08	53.62	56.63
Enhanced disability premium - child	18.13	18.76	19.6	20.65	21.0	21.63	22.89
Single pensioner between 60 and 64	114.05	119.05	124.5	130.0	132.6	137.35	142.70
Single pensioner 65 or over	131.95	138.1	143.8	150.4	153.15	157.9	161.25
Pensioner couple both between 60 and 64	107.05	181.7	189.35	198.45	202.4	209.7	217.90
Pensioner couple one or both 65 or over	197.65	207.0	215.5	225.5	229.5	236.8	241.65

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

Note: These allowances also apply to Council tax Benefit (see section 2.4.7 below).



**‘Maximum Housing Benefit’**

The ‘maximum housing benefit’ consists of ‘eligible rent’ less deductions for non-dependents. ‘Eligible rent’ is the amount of rent paid as long as it is within the limits specified by the respective local authorities. In the implementation of EUROMOD we do not currently model any local specifications for Housing Benefit for social tenants. Therefore, the amount of rent paid that is reported in the data is taken as ‘eligible rent’ for the Housing Benefit calculations.

From April 2008 HB for social tenants has been separated from LHA payable to private tenants. The LHA reform is being rolled-out gradually between 2008 and 2013. At its introduction LHA could include actual rent plus £15 per week if this was lower than the median local reference rent for accommodations with similar number of bedrooms (up to 5). The local reference rent is calculated for each Broad Rental Market Area (BRMA). These are not possible to identify in the EUROMOD input data. See section 3 on how this upper limit has been taken into account through indicators provided in the EUROMOD input data).

From 2011, for new claimants

- a) the dwelling categories have been restricted to five: one-bedroom shared accommodation, one-bedroom self-contained accommodation, two-bedrooms, three-bedrooms and four or more bedroom dwellings;
- b) the local reference rent has been set at the 30<sup>th</sup> percentile of local rents within each BRMA, and;
- c) the LHA for each category of dwelling has also been capped at national level distinguishing by number of bedrooms, as shown in Table 28.

From 2012, both new claimants and those already on LHA since April 2008,

- a) the £15 per week addition has been removed;
- b) the local reference rent categories were restricted to 4 (the 5+ and 4 bedroom categories were amalgamated) plus the LHA for one-bedroom shared accommodation.

The non-dependent deductions are the same as those operating in Income Support (IS) for housing needs (see above).

**Table 28. Local Housing Allowance national rent limits from 2008 to 2012**

As of... Fiscal year:	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week				
One-bedroom shared accommodation	--	--	--	125.00	250.00
One-bedroom self-contained accommodation	--	--	--	250.00	250.00
Two-bedroom accommodation	--	--	--	290.00	290.00
Three-bedroom accommodation	--	--	--	340.00	340.00
Four + bedroom accommodation	--	--	--	400.00	400.00

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2008/09 to 2012/13



### Income of the claimant

The income assessment that is used is very similar to that for Income Support and income-based JSA (see section 2.4.5). It also includes WTC (except the 30 hours element which is disregarded) and CTC. The earnings disregard (ydg03\_s) for HB is the same as that for IS/ib-JSA except if the following conditions are met:

- the claimant or partner receive the 30 hour element in WTC,
- the claimant or partner are aged 25 or over and work 30+ hours,
- the claimant or partner work 16 hours or more and the claim includes the family premium,
- the claimant or the partner are working 16 hours or more and the HB claim includes the disability or higher pensioner premium.

In these instances, referred to as ‘full-time’ the earnings disregards (sin11\_s) are topped up by £14.90 in 2006 (£15.45 in 2007, £16.05 in 2008, £16.85 in 2009 and £17.10 in 2010-12).

The earnings disregard for lone parents for the purposes of HB is £25. There is an additional condition which would result in an earnings disregard, namely getting the 50+ element in Working Tax Credit. However, as that has not been simulated, it is not included in the simulation here. Finally, there is an additional disregard for childcare costs. An allowance for childcare costs (sin13\_s) up to £175 per week for one child and up to £300 for two or more children can be deducted from earnings if the claimant is a lone parent and working 16 hours or more per week or if a couple are claiming who are either both working 16 hours or more or one is working 16 hours or more and the other is ‘incapacitated’, i.e. unable to work and in receipt of income replacement disability benefits (such as Incapacity Benefit, Employment and Support Allowance or the disability element of IS). This childcare addition is designed so that those receiving the childcare element of WTC do not lose any of the payment through the HB means-test.

Finally, tariff income for working aged people is treated as in Income Support, i.e. for every £250 over £6,000, £1 is counted towards the income of a claimant. For those of Pension Credit age £1 is deducted for every £500 capital over £6000 (£10,000 from 2010).

For families in receipt of Income Support (see section 2.4.5) or Pension Credit Guarantee Credit or Income-based Employment and Support Allowance, HB covers 100% of “eligible rent” (see above), less non-dependent deductions. Non-dependent deductions work in the same way as for IS and ib\_JSA and Pension Credit (see above).

For those with higher incomes (or not in receipt of IS for some reason), the amount of eligible rent (less non-dependent deductions) that is covered by the benefit will be 100% if the ‘applicable amount’ is larger than the income. Where the ‘applicable amount’ is bigger than the income, the ‘maximum Housing Benefit’ is tapered away at the rate of 65%.

- *Notes on implementation*

While many of the parameters related to HB are the same as those for IS or Pension Credit (and also Council Tax Benefit – see below) in EUROMOD they are specified separately so that they can be varied if this is desired. When making policy changes, the user should consider whether the IS/PC and HB calculations should remain based on (largely) identical income and needs assessments.



- *Interactions with other simulated components of the tax benefit system*

Housing Benefit is simulated after tax credits and PC and IS and ib-ESA as the non dependent deductions and means calculations require these other benefits to be simulated first. Housing Benefit (and LHA) is not taxable.

#### 2.4.9 Council Tax Benefit (bmu\_s)

- *Brief description*

Council Tax is a local tax covering the costs of schools, social housing and environmental costs at a local level. The amount of council tax depends on the size and value of the house and the number of occupiers. Council tax is set by local authorities and the amounts thus vary considerably between areas. The structure of Council Tax Benefit (CTB) is very similar to that of Housing Benefit. Instead of rent, Council Tax is the element that is rebated. In addition to CTB, there are a number of other reductions to Council Tax that are not modelled and are already incorporated in the Council Tax data in the database. These are: exemptions for particular groups of people, e.g. specified type of impairment or disability as well as a reduction of 25% if the dwelling is occupied by a single adult

There are really two alternative forms of CTB. One is based on the council tax liability, needs and resources of a benefit unit. The other is the “Second Adult Rebate (SAR)”. Only the higher of the two benefits is paid. The SAR is allowable even when the capital limit is exceeded and is payable when there is more than one adult but only one non-exempt adult. In most cases the main CTB is worth more, so EUROMOD ignores SAR cases and does not model them.

- *Simulation*

In the “main” CTB, benefit is calculated in the same way as HB except: the taper is 20% and the non-dependent deductions are different (shown in Table 29 below). The parameter sheets for IS, HB and CTB are independently specified. When making policy changes, the user should consider whether the three sets of calculations should remain based on (largely) identical income and needs assessments.



Table 29. Non-dependent deductions for Council Tax benefit from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
Deduction applying if	6.95	6.95	6.95	6.95	6.95	8.6	9.9
income is above	338	353	369	382	382	387	394
Deduction applying if	5.8	5.8	5.8	5.8	5.8	7.2	8.25
income is above	271	283	296	306	306	310	316
Deduction applying if	4.6	4.6	4.6	4.6	4.6	5.7	6.55
income is above	157	164	172	178	178	180	183
Deduction otherwise	2.3	2.3	2.3	2.3	2.3	2.85	3.3

Source: CPAG Welfare Benefits and Tax Credits Handbooks, 2006/07 to 2012/13

## 2.5 Social Contributions

### 2.5.1 Employee social insurance contributions (tscee\_s)

- *Brief description and definitions*

Individuals between the ages 16 and pension age are subject to Class 1 contributions on their gross earnings (il\_empNlearns). The amount of so-called National Insurance contributions depend on weekly earnings from employment (yem) as well as earnings replacement benefits paid by the employer, namely, Statutory Sick Pay (bhlwk) and Maternity Pay (bmana).

- *Rates and amounts*

Contributions are paid on earnings between a weekly lower limit, called the Primary Threshold (PT) and Upper Earnings Limit (UEL). If earnings are less than the PT, a 0% rate applies. Earnings above the UEL are subject to a 1% rate in 2006 (sin02\_s). The rate applying to earnings between PT and UEL varies according to whether or not the employee is contracted-out<sup>12</sup> of the State-Earnings-Related-Pension-Scheme (lim=0). If the employee is not contracted out an 11% rate applies in 2006 while if the employee is contracted out a 9.4% rate applies in 2006 (sin01\_s).<sup>13</sup>

<sup>12</sup> Whether the employee is contracted out or not is not observed as such in the data; this variable has been imputed according to reported earnings and amount of contribution.

<sup>13</sup> Women who are married or divorced and opted out before 1977 pay a lower rate of 4.85% (in 2006) applying to earnings between PT and UEL. However, since this can only apply to married/divorced women aged 47 or more in 2008, and only to those continuously in the labour force since 1977 the numbers affected are now small and we do not identify these cases or simulate this lower rate of contribution.



Table 30 sets out the different rates.

Table 30. Gross earnings limits and rate for Class 1 (employee) social insurance contributions 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per week						
<b>Gross earnings limits:</b>							
Primary Threshold (PT)	97	100	105	110	110	139	146
Upper Earnings Limit (UEL)	645	670	770	844	844	817	817
<b>Rates:</b>							
Below PT	0%	0%	0%	0%	0%	0%	0%
Between PT and UEL:							
<i>Non contracted out</i>	11%	11%	11%	11%	11%	12%	12%
<i>Contracted out</i>	9.4%	9.4%	9.4%	9.4%	9.4%	10.4%	10.60%
Above UEL	1%	1%	1%	1%	1%	2%	2%

Source: HMRC: Rates and Allowances – National Insurance Contributions, <http://www.hmrc.gov.uk/rates/nic.htm>

- ***Compulsory private pension contribution***

For those who are contracted out of the state pension scheme, the rate of their occupational private pension contribution is imputed as a flat rate in the input data (tpceepx=yem/contributions). The rate is then applied to uprated (or otherwise adjusted) earnings in EUROMOD and the resulting private contribution (tpcee\_s) is, by default, included in standard output income list (ils\_sicee).

## 2.5.2 Self-employed social insurance contributions, Class 2 and Class 4 (tscse\_s)

- ***Brief description***

People with income from self-employment (yse) may be subject to Class 2 and Class 4 contributions.

- ***Amounts and rates***

**Class 2** is a flat payment of £2.10 per week in 2006, paid by those whose yearly profit/self employment income (yse) exceeds the so-called ‘Small Earnings Exception’ (£4,465 per year in 2006 (sin02\_s) – see Table 31 for the rates in subsequent years.



Table 31. Rates for self-employment class 2 social insurance contributions from 2006-2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
Flat rate (£ per week)	2.10	2.20	2.30	2.40	2.4	2.5	2.65
Small Earnings Exception (£ per year)	4,465	4,635	4,825	5,075	5,075	5,315	5,595

Source: HMRC: Rates and Allowances – National Insurance Contributions, <http://www.hmrc.gov.uk/rates/nic.htm>

**Class 4** contributions are paid on self-employment income (yse) at a rate, in 2006 of 8% between a Lower Profits Limit (LPL - £5,035 per year in 2006) and an Upper Profits Limit (ULP - £33,540 per year in 2006) (sin04\_s) and a 1% rate applies (in 2006) above the upper limit (sin05\_s). No contributions are paid below the lower limit (see Table 32 below). The limits apply to annual income but are modelled on a monthly basis in EUROMOD.

Table 32. Upper and Lower Profit Limits for self-employment class 4 social insurance contributions from 2006- 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
Lower Profits Limit(LPL) (£ per year)	5,035	5,225	5,435	5,715	5,715	7,225	7,605
Upper Profits Limit(ULP) (£ per year)	33,540	34,840	40,040	43,875	43,875	42,475	42,475
Rate between LPL and UPL	8%	8%	8%	8%	8%	9%	9%
Rate above UPL	1%	1%	1%	1%	1%	2%	2%

Source: HMRC: Rates and Allowances – National Insurance Contributions, <http://www.hmrc.gov.uk/rates/nic.htm>

### 2.5.2.1 Maximum contributions for those with income from self-employment and from employment

- *Brief description*

Class 4 contributions are subject to an annual maximum for people who have both employment (yem) and self employment earnings (yse). It is calculated as follows:

- First the Class 2 and Class 4 NICs maximum is calculated by taking the maximum amount of Class 4 NICs payable on profits between the UPL and the LPL and adding 53 times the weekly Class 2 NICs at the rate in force for the year in question (sin06\_s)
- Then, from that combined figure any Class 1 and Class 2 NICs that have been paid are deducted (sin07\_s)
- This gives the maximum amount of Class 4 NICs that the contributor is liable to pay at the main rate (sin08\_s)



- Then the amount of profits that would be needed to pay that amount of Class 4 NICs is calculated and this is deducted from the contributor's total profits
- If that figure is positive it represents the amount of profits on which Class 4 NICs at 1% are payable (sin09\_s).

The calculation then allocates every Class 4 NICs contributor who is subject to a Class 4 NICs annual maximum into one of three categories:

- those who are due to pay (in 2006):
  - Class 4 NICs at a rate of 8 % only (sin12\_s)
- those who are due to pay:
  - a mixture of Class 4 NICs at rate of 8% and 1% (sin11\_s) and
- those who are due to pay:
  - Class 4 NICs at a rate of 1% only (above the UEL = sin13\_s and below the UEL = sin14\_s)<sup>14</sup>

Source: HMRC (2010) National Insurance manual,  
<http://www.hmrc.gov.uk/manuals/nimmanual/NIM24170.htm>, last accessed 19.07.2010.

The final calculation for National Insurance contributions on income from self-employment then adds Class 2 and Class 4 contributions together (tscse\_s).

### 2.5.3 Employers' social insurance contributions (tscer\_s)

- *Brief description*

Employers have to pay National Insurance contributions for each of their employees if their earnings are above the Secondary Threshold (see Table 33) and if the employees are aged 16 years or older.

- *Amounts and rates*

No contributions are paid for earnings below the so called 'Secondary Threshold' corresponding to £97 per week in 2006. On all earnings above this level, employers pay a 12.8% rate (in 2006) contribution for non-contracted-out employees (lim=1) and a reduced 9.3 % rate applies to contracted out employees' earnings (lim=2) between the 'Secondary Threshold' and the UEL. The 12.8% rate also applies to all earnings above the UEL even if contracted out. There is no upper ceiling on contributions from employers. The rates for the policy years covered in the report are laid out in Table 33 below.

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<sup>14</sup> If an individual has already paid more Class 1 and Class 2 contributions than the combined maximum (sin08\_s), then the overpayment will be deducted later on (sin14\_s).



Table 33. Amounts and rates of employers' social insurance contributions from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
Secondary Threshold (ST) £/week	97	100	105	110	110	136	144
Non contracted out rate above ST	12.8%	12.8%	12.8%	12.8%	12.8%	13.8%	13.8%
Contracted out rate between ST and UEL	9.3%	9.1%	9.1%	9.1%	9.1%	10.1%	10.4%
Contracted out rate above UEL	12.8%	12.8%	12.8%	12.8%	12.8%	13.8%	13.8%

Source: HMRC: Rates and Allowances – National Insurance Contributions,  
<http://www.hmrc.gov.uk/rates/nic.htm>

## 2.6 Personal Income Tax (tins\_s)

- *Tax Unit*

The UK income tax system is an individual system. The incomes of married couples are taxed independently.

- *Tax Base*

Taxable income (ils\_tinty) includes:

- earnings from employment and benefits from employer (yem + bmana+ bhlwk)
- earnings from self-employment (yse)
- state, occupational, personal pensions and widow pension (boact00 + boactcm + ypp + bsuwd)
- Carer's allowance (bcrdi)
- Incapacity benefit<sup>15</sup> (bdict01)
- Contributory ESA (bdict02)
- contributory JSA (bunct\_s)
- rental income from a second property or over certain limits (yprtx)
- interests and dividends (except from Individual Savings Accounts (ISAs) and Personal Equity Plans (PEPs)) (yiytx)
- other income (from odd jobs) (yot01)

Contributions to personal (xpp), private and occupational pensions (tpcpe) are deducted from the tax base.

<sup>15</sup> According to the legislation, IB is taxed only after the first 28 weeks of payment; we assume that receipt has lasted this long, as information of length of IB award is not available in the data at hand.



- *Other points to note*

Investment income (yiytx) which falls within the standard rate band was taxed at the reduced rate of 20% until 2007. From 2008 onwards, with the reduction in the standard rate from 22% to 20% and the abolition of the 10% band for earned income, only income from investment income can be taxed at a rate of 10%. This happens in practice only if, without the investment income, taxable income is less than a threshold (e.g. £2,320 in 2008 and £2,440 in 2009). In that case, the tax system treats the savings income as the “top slice” and applies the lower rate of 10% to any excess of the threshold over non-savings taxable income (or to the savings income itself, if this is lower).

Losses from self-employment can be offset against other taxable income (or carried forward, or used against previous year income). For simulation purposes we assume they are only offset against other taxable income of the same year.

- *Tax allowances (tinta\_s)*

The only tax allowance for the purposes of income tax is the **Personal Allowance**<sup>16</sup> (sin01\_s). The amount of the Personal Allowance depends on age and, for those aged 65 years old or above, on total taxable income. The basic tax free personal allowance was £4,895 in 2006. It applies to people of working age and younger.

The additional **personal tax allowances for individuals 65 and over** are income-tested. Thus, if an older taxpayer has taxable income over £19,500 in 2006 the additional age-related allowances (the Personal Allowance above the basic ‘under 65’ level (£5,035 per year in 2006) and the MCA) are reduced using a 50% taper until the basic ‘under 65’ level of Personal Allowance is reached (sin02\_s).

Although the Married Couples’ (and Additional Personal Allowances for lone parents) were abolished by 2001, for taxpayer couples where one or both is aged over 65 a residual allowance has been retained. It is treated like a non-refundable tax credit. This residual **Married Couples Allowance (MCA)** applies to couples (married or living together in a civil partnership; dms=2) where one partner was born before April 1935 (i.e. aged 71 years old or over in 2006) (sin05\_s). The MCA can be claimed by the husband if the couple married before 2005 (otherwise by partner with highest income);<sup>17</sup> any unused allowance can then be transferred to the spouse or civil partner (sin09\_s). Fifty per cent of the difference between taxable income (before deducting Allowances) and the income limit is subtracted from the MCA, down to a minimum level. This minimum is the value of the MCA for couples aged under 65 as it was before it was abolished in 2001, indexed by prices. 10% of such amount represents the MCA tax credit (sin08\_s). MCA levels for the relevant policy years are listed in the bottom rows of Table 34 below.

From 2010 an **income limit** for personal allowances was introduced. For each £2 of taxable income above £100,000 the personal allowance is reduced by £1 until the entire personal allowance (and MCA where appropriate) is abated to zero.

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<sup>16</sup> There is an allowance for blind people. However, this is not simulated here due to lack of information in the input data.

<sup>17</sup> EUROMOD assumes that the MCA is claimed by the husband in all cases.



The personal allowance amounts are laid out in Table 34 below.

Table 34. Tax allowances from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per year						
Personal Allowance - under 65 years old	5,035	5,225	6,035	6,475	6,475	7,475	8,105
Personal Allowance - 65- 74 years old	7,280	7,550	9,030	9,490	9,490	9,940	10,500
Personal Allowance - 75 years old or over	7,420	7,690	9,180	9,640	9,640	10,090	10,660
MCA - aged 65-74	6,065	6,285	6,535	<sup>[a]</sup>	n/a	n/a	n/a
MCA - 75 years old or over	6,135	6,365	6,625	6,965	6,965	7,295	7,705
Minimum MCA	2,350	2,440	2,540	2,670	2,670	2,800	2,960
Income limit for age- related allowances	20,100	20,900	21,800	22,900	22,900	24,000	25,400
Tax relief rate for the MCA	10%	10%	10%	10%	10%	10%	10%
Income limit for personal allowances	n/a	n/a	n/a	n/a	100,000	100,000	100,000

Source: HMRC: Rates and Allowances – Income Tax, [http://www.hmrc.gov.uk/stats/tax\\_structure/table-a2a.pdf](http://www.hmrc.gov.uk/stats/tax_structure/table-a2a.pdf).

Notes:

[a] In the 2009-10 tax year all in this category will become 75 at some point and will therefore be entitled to the age 75 and over allowance. HMRC 2010, <http://www.hmrc.gov.uk/rates/it.htm>, last accessed 19.07.11.

- *Tax schedule*

The upper limits of the income tax bands for the relevant policy years are shown in Table 35 below.

Table 35. Income tax thresholds from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
	£ per year						
Starting rate band/savings rate threshold	2,150	2,230	2,320	2,440	2,440	2,560	2,710
Basic rate threshold	33,300	34,600	34,800	37,400	37,400	35,000	34,370
Higher rate threshold	n/a	n/a	n/a	n/a	150,000	150,000	150,000

Source: HMRC: Rates and Allowances – Income Tax, [http://www.hmrc.gov.uk/stats/tax\\_structure/table-a2a.pdf](http://www.hmrc.gov.uk/stats/tax_structure/table-a2a.pdf)



Income up to the starting rate band is taxed at 10% in 2006 and 2007. Income in the basic rate band is taxed at 22% in 2006 and 2007. As mentioned above, the 10% tax rate for income from earnings was abolished in 2008/09. At the same time, the standard rate of 22% was reduced to 20%. Thus, from 2008 onwards all taxable income up to the upper limit of the basic rate band is taxed at 20%. Income above the basic rate threshold is taxed at 40% and since 2010 an additional rate of 50% is charged above the higher rate threshold of £150,000 per year.

The income tax rates for the relevant policy years are shown in Table 36 below.

Table 36. Income tax rates from 2006 to 2012

As of... Fiscal year:	Jun-06 2006/07	Jun-07 2007/08	Jun-08 2008/09	Jun-09 2009/10	Jun-10 2010/11	Jun-11 2011/12	Jun-12 2012/13
Starting rate	10%	10%	n/a <sup>[a]</sup>				
Basic rate	22%	22%	20%	20%	20%	20%	20%
Higher rate	40%	40%	40%	40%	40%	40%	40%
Additional rate	n/a	n/a	n/a	n/a	50%	50%	50%

Source: HMRC: Rates and Allowances – Income Tax,  
[http://www.hmrc.gov.uk/stats/tax\\_structure/table-a2a.pdf](http://www.hmrc.gov.uk/stats/tax_structure/table-a2a.pdf),

Notes: [a] From 2008-09 the 10 per cent starting rate for earnings has been abolished and only retained for income from savings.

### 3. DATA

#### 3.1 General description

The UK database is drawn from the Family Resources Survey (FRS) 2009/10.<sup>18</sup> This is a cross-sectional household survey based on a two-stage stratified clustered probability sample of private households and collected throughout the fiscal year (April-March). It was launched in 1992 to meet the information requirement of the Department for Work and Pensions. In Great Britain, the sampling frame for the FRS is the Royal Mail Small Users Postcode Address File (PAF), listing addresses receiving less than 50 items of mail a day (intended to exclude business or other non-private residential addresses). Postcode sectors are drawn with probability proportional to size and subsequently stratified according to Government Office Regions, proportion of heads of households in particular socio economic groups, economic activity rate and male unemployment rate as derived from the 1991 Census of Population. In a second stage a random sample of 25 addresses is drawn within each Primary Sampling Unit (PSU) and represents an interviewer's monthly assignment.

The Northern Ireland 2009/10 sample frame is the Valuation and Land Agency's list of domestic properties and follows an unclustered, regionally stratified design. The sample covers only households living at private residential addresses. The main exclusions consist of people living in student accommodation, the homeless, those in nursing homes, hospitals or other types

<sup>18</sup> See [http://research.dwp.gov.uk/asd/frs/2009\\_10/frs\\_2009\\_10\\_report.pdf](http://research.dwp.gov.uk/asd/frs/2009_10/frs_2009_10_report.pdf). From 2013 the EU-SILC for the UK will be based on the FRS.



of residential care, prisoners and people living in military or police institutions.<sup>19</sup> This sample limitation means that taxes and benefits and other income components are under-represented for Northern Ireland to the extent that they are received (or paid) by people living in institutions.

Fieldwork is carried out by two organisations continuously from April to March of the following year in such a way that each quarter sub sample is nationally representative. Interviewers are instructed to choose up to three households at multi household addresses and are required to try a minimum of four calls per households. A few days before the beginning of the fieldwork, an advance letter is posted to selected addresses providing information about the purpose of the survey. Non-response questionnaires collecting information about non-responding households are completed by interviewers. The face-to-face interview lasts on average one hour and 20 minutes per household and involves all adult individuals (aged 16 years old or more, excluding unmarried people 16 to 18 years old who are full time students in non-advanced education). It is carried out using the Computer Assisted Personal Interviewing (CAPI) mode, and makes use of built-in consistency checks. Respondents are also encouraged to consult documentation when asked about reporting monetary amounts. Where possible, questions are harmonised to maximise comparability with other surveys.<sup>20</sup> After the interview, additional survey leaflets are left with the household, informing about the prospective use of data collected, the relevance of survey response and confidentiality issues.

Several adjustment procedures take place after the data collection, including taking into account interviewers' notes, checking fixed-amounts benefits, disentangling multiple benefit receipts, investigating outliers and zero amounts. Item non-response mostly relates to self employment and investment income and is limited to 0.5% of all responses. The EUROMOD database makes use of the imputed data.

Table 37. EUROMOD database description

EUROMOD database	UK_2009_b2
Original name	Family Resources Survey
Provider	Department for Work and Pensions
Year of collection	2009/10
Period of collection	April 2009 – March 2010
Income reference period	Current year incomes
Sampling	Stratified clustered probability sample for Great Britain and unclustered, regionally stratified design for Northern Ireland
Coverage	Residents in private households
Achieved sample	57,380 individuals
Response rate	58%

<sup>19</sup> For a quantitative assessment of the non-household population see 'Out for the count: the incomes of the non-household population and the effect of their exclusion from national income profiles', Martin Evans, LSE Welfare State Programme WSP/111, 1995.

<sup>20</sup> <http://www.statistics.gov.uk/about/data/harmonisation/default.asp>



## 3.2 Sample quality and weights

### 3.2.1 Non-response

In 2009/10, 58% of the 48,315 sampled households provided full cooperation<sup>21</sup> with regional variation in response rates reflecting patterns found in other major surveys (see Table 38 below). In 2009/10, for those households classed as fully co-operating, proxy responses were obtained for 17 per cent of adults.

Table 38. Household response rates in the FRS 2009/10 by government office regions

Government Office Region	Response rate of all households
North East	62
North West	59
Yorkshire and the Humber	62
East Midlands	61
West Midlands	60
East of England	60
London	49
South East	54
South West	52
England	57
Wales	61
Scotland	63
Northern Ireland	65
United Kingdom	58

Source: DWP, Family Resources Survey 2009/10  
[http://campaigns.dwp.gov.uk/asd/frs/2009\\_10/chapter7.pdf](http://campaigns.dwp.gov.uk/asd/frs/2009_10/chapter7.pdf)

Lower response rates than the average were seen in households in London (as shown in Table 38), single person households, households containing couples with non-dependent children or lone parents, households in purpose-built flats or maisonettes, households who owned their house outright and households whose household reference person was self-employed or unemployed.

### 3.2.2 Weights

The FRS data are provided with weights attempting to correct for differential non response while scaling up sample numbers to the overall population. They are calculated as the ratio of population to sample counts for subgroups defined according to variables reflecting differential response rates. Population control totals are derived from external data sources and are adjusted to exclude people non resident in private households.

<sup>21</sup> Individual full cooperation requires less than 13 “don’t know” or “refusal” answers to monetary amount questions out of approx 50 questions.  
 ([http://campaigns.dwp.gov.uk/asd/frs/2009\\_10/chapter7.pdf](http://campaigns.dwp.gov.uk/asd/frs/2009_10/chapter7.pdf))



Control totals for Great Britain 2009/10 are based on population totals by gender and age groups in each Government Office Region (ONS and General Register Office for Scotland); number of families with children in Scotland, England and Wales (DWP Child Benefit data); number of male and female lone parents in Great Britain (DWP estimates); households tenure type (ODPM<sup>22</sup>, Scottish Executive, National Assembly for Wales) and council tax band (Valuation Office; Scottish Executive; except for Northern Ireland). Control totals for Northern Ireland include population totals by gender and age group (NISRA<sup>23</sup>), number of lone parents and households (Northern Ireland Department for Social Development estimates).<sup>24</sup>

Table 39. Descriptive Statistics of the Grossing-up weight

	UK_2009_b2
Number	57,380
Mean	1056.107
SD	486.2411
Maximum	5935
Minimum	209
Max/Min	28.40

No households have been dropped from the sample. The original sample size includes 57,380 individuals and 25,200 households. Applying weights included in the dataset to gross the numbers up to population figures gives 60,599,396 individuals and 26,379,932 households.

### 3.3 Imputations and assumptions

The FRS data are obtained from the UK Data Archive at the University of Essex.<sup>25</sup> Adjustments to variables are kept to a minimum.

It should be noted that in the 2009/10 FRS data:

- Age is top-coded at 80.

Key variables that are imputed are:

- Mortgage interest is imputed for cases where a single repayment amount includes both interest and capital repayment.
- Rent is calculated to be gross (in some cases housing benefit has been deducted).

<sup>22</sup> Then, the Office of the Deputy Prime Minister.

<sup>23</sup> Northern Ireland Statistics and Research Agency.

<sup>24</sup> For more detail about the extent of imputation and control totals variables used to generate grossing factors, see DWP, Family Resources Survey 2008/09 [http://campaigns.dwp.gov.uk/asd/frs/2009\\_10/chapter7](http://campaigns.dwp.gov.uk/asd/frs/2009_10/chapter7).

<sup>25</sup> Data from the Family Resources Survey are Crown Copyright. They have been made available by the Office for National Statistics (ONS) through the Data Archive and are used by permission. Neither the ONS nor the Data Archive bear any responsibility for the analysis or interpretation of the data reported here.



- The regime under which individuals pay National Insurance contributions (Not contracted out or Contracted out) is imputed from information on (imputed) gross earnings and the contribution payment.

FRS data include a single variable covering all state pension payments. As well as the basic state retirement pension, this includes payments under the State Earnings Related Pension Scheme (SERPS) and the graduated pension scheme that preceded it (under which some current pensioners receive relatively small payments) and the State Second pension which followed it. It also includes any increases due to deferred retirement. This single variable is split into two in the EUROMOD database. One part is the basic state pension. This is imputed by calculating what it would be for the person in question assuming they had made full contributions and, in the case of married women, also if they had made no contributions of their own. In the latter case a rough judgement is made about which situation applied in each case by comparing the two calculated values with the actual pension payment. Then, any excess is assumed to be SERPS/State Second Pension.

***Council tax: variables “tmu01” and “tmu02”.***

Because only about 20% of households (i.e. those paying it yearly) report the amount of council tax (after discounts, but gross of council tax benefit), it needs to be imputed. Households are assigned to mutually exclusive strata defined according to council tax band, government office region, and separately for single person households. The average council tax for each stratum is calculated based on non missing observations, and then such sample average is imputed to the missing ones (more precisely, the variable “tmu01” is derived when stratum average is imputed to all households; the variable “tmu02” is derived when on stratum average is imputed to missing households only). By default, tmu02 is used.

The input database contains also a variable for council tax band (“amriv00”).

***Carer for means tested benefits premium purposes: “lcr01”***

Individuals providing care for at least 35 hours a week<sup>26</sup> can qualify for IS if the following applies to them: (a) they receive carer’s allowance (CA) or (b) the person they care for has claimed or already receives attendance allowance (AA) or the higher or middle rate care component of disability living allowance (DLA).

In the FRS we distinguish two cases: care provided within the household for which we can control for the conditions described above; care provided outside the household, for which we do not observe whether care recipients receive AA or DLA. For this second case we create a binary variable lcr01, which takes value 1 for somebody who (a) receives ICA (in this case should implicitly be providing more than 35 hours per week); or provides care to somebody inside the household receiving AA/DLA(care) at the middle rate or above; or (b) provides care to somebody outside the household for more than 35 hours per week.

In EUROMOD this variable is used to distinguish IS from ib-JSA.

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<sup>26</sup> To qualify for IS, if somebody does not receive CA, the decision maker may consider the quality and quantity of care provided and grant entitlement to IS on the basis of care provided even if the total number of hours is less than 35 per week.



### ***Benefits***

Consistency checks are carried out for most benefit variables; for example, checking the coherence between recipients' age and benefit rules (e.g. Pension Credit and Income Support); or reported receipt of mutually exclusive benefits (e.g. Attendance Allowance and Disability Living Allowance); also, where reported amounts were higher than the maximum benefit rates, amounts were reset to such maximum value (e.g. Incapacity benefit, Invalid Carer Allowance, etc.).

### ***Earnings and hours of work variables***

Earnings information refers to employment income (yem), based on current employment, self-employment income (yse) estimated from information from survey questions on accounts and income drawn from own business, and earnings from odd jobs (yot01). Moreover, last employment earnings not from the last pay period are recorded in the variable yot02, but these do not enter in the simulations or the definition of disposable income. Each earning variable, with the exception of yot01, has a corresponding hours of work variable: yem (lhw00), yse (lhw01) and yot02 (lhw02). The total number of hours, lhw, is equal to lhw00+lhw01.

### ***Local reference rent and housing benefit restrictions***

Local Housing Allowance (LHA) restricts entitlement to Housing Benefit for tenants in privately rented accommodation. It has been gradually rolled out from 7<sup>th</sup> April 2008 and it will be fully in place by 2013.

The amount of the benefit results from a combination of a claimant's actual rent and the LHA rate that applies in their local area (specifically, LHA entitlement = min(LHA rate, actual rent+£15) in 2008-2010; and LHA entitlement = min(LHA rate, actual rent) from 2011 onward). See previous section for more details on calculations.

LHA rates were initially set at the median of local rents within each Broad Rental Market Areas (BRMA) and separately according to the dwelling's number of bedrooms.

The End User License version of the FRS reports only standard regions of residence for each individual. Thus, in order to include the information about LHA into the input data used by EUROMOD we need to approximate the local LHA rate faced by claimants in each region. To do this we link the FRS to a Local Authority District (LAD)-BRMA table<sup>27</sup> and compute averages of LHA rates across standard regions. A new variable *bhoen50* for each household records the 50<sup>th</sup> centile of local rent for the corresponding number of bedrooms per house. By doing this, we are also able to model the cut in LHA rates starting from April 2011 that sets LHA rates at the 30<sup>th</sup> centile of local rents for 6 dwelling categories (*bhoen1130*) for new claimants and the further cut in LHA from April 2012 that sets LHA rates at the 30<sup>th</sup> centile of local rents by 5 dwelling categories (*bhoen30*).

### ***Increase in female pension age***

From April 2010, the age at which women become entitled to the State Pension (SPA) and cease having to pay National Insurance contributions is rising by six months every year (hence, one year every two years) from its pre-2010 level of 60. The state pension age will then rise from 65

<sup>27</sup> We would like to thank Alex F. Fenton, Research Fellow at the Centre for Analysis of Social Exclusion London School of Economics who kindly made this table available to us.



to 66 for both men and women between December 2018 and April 2020. This changes the composition of the sample of people who are of “working-age”, which is clearly important when simulating how various fiscal systems will affect the working-age population. But it also has implications for household incomes, as it affects receipt of several state benefits and liability to national insurance.

In our base data (FRS 2009/10) we observe women entitled to SPA from age 60, while in 2010 onward women will be entitled to State Pension only from age 60 and one month<sup>28</sup>, in 2011 from age 60 and 7 months, in 2012 from age 61 and one month, in 2013 from age 61 and seven months and in 2014 from age 62 and one month and so on. Therefore women age 60 observed as receiving the State Pension in our base data will not be entitled to it in our simulated year 2012 and only some of those aged 61 will be entitled to it. These women could either be working, inactive or receiving/entitled to some kind of income replacement benefit.

We allow for some mechanical and some simple behavioral response to the increases in the female SPA for these affected women. First, we remove entitlement to the basic state pension, pension credit, and other benefits payable only to those above the female SPA (this is done directly in EUROMOD by policy *poadag\_uk*). Second, we predict entitlement to IB/ESA, which are invalidity benefits paid only to working-age adults. We do this by using data on women aged 58-59 in our base data to estimate a probit regression of receipt of IB/ESA, using the following as predictors: education, region or residence, council tax band, housing tenure, marital status, whether partner works (if present) and local authority disability status. This regression is then used to generate predicted IB/ESA entitlement probabilities for women age 60 and over (up to the new SPA) in our base data. Finally, we allow for a labour supply response to the rise in the female SPA amongst the women directly affected. We do this by using data on women aged 51-65 in our base data to estimate a regression of employment status, using the following as predictors: education, number of children in various age groups, region, housing tenure, council tax band, local authority disability status, entitlement to Disability Living Allowance (DLA), a cubic in age and an indicator variable for being under SPA. For women in couples we include an indicator of the partner’s employment status. We use this to predict the probability of being in work for women 60 and over (up to the new SPA) in our base data in a world where the SPA has increased over 60 years. Aggregating these predicted probabilities tells us the predicted proportion of those directly affected by the SPA change who will be in work after that change, and we then select sufficient number of women with highest predicted probabilities of being in work when below SPA in order to match the predicted increased employment rate each year. Finally, for those women aged 60 and over (up to the new SPA) whom we have now simulated as being entitled to ESA/IB or being in work, we impute additional information (each woman simulated as being entitled to IB/ESA is allocated an IB/c-ESA amount (*bdict01yy* or *bdict02yy*), disability status (*ddi01* and *ddi02* = 09, 10, 11, 12, ... indicating the year when somebody become entitled to IB or ESA respectively) and duration on benefit (*ddipd00*), and women simulated as being in work are allocated a monthly earning (*yemiv* or *yseiv*), hours of work (*lhwiv01* or *lhwiv02*) and a compulsory private pension contribution (*tpceeivpx*)).<sup>29</sup>

Although relatively complicated, this procedure still embodies the following assumptions:

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<sup>28</sup> See Pension Act 2007 and 2011 for more details.

<sup>29</sup> We do this by matching on the propensity score, where the “treatment” variable identifies people being either below SPA and the propensity score is estimated using a probit regression with the same predictors as the employment equation, other than the cubic in age.



- People below the original SPA and those above the new SPA are not affected by the rise in SPA: in this sense, there are no anticipation effects or dynamic effects on employment of raising the SPA.
- Other members of the household not directly affected by the SPA increase do not change their labour market behaviour (ie, no change in hours worked or postponed retirement).

Having simulated the additional IB/ESA entitlements and gross earnings, we can run the modified base data through EUROMOD.

### ***Transitions from incapacity benefit to employment and support allowance***

Incapacity benefit (IB) has been unavailable to new claimants since October 2008, with adults who are unable to work through disability or ill-health having to claim employment support allowance (ESA) instead. By 2014 all those unable to work through disability or ill health should be transferred from IB to ESA. In simulating the population between 2009-10 and 2012-13, we need to take into account the steady fall in the number receiving IB, and the steady rise in the number receiving ESA.

We do this in a number of steps.

First, we reflect the turnover in the population on disability benefits between 2009-10 (the period of our data) to 2010-11. The DWP tabulation tool (accessed July 2012) tells us that the number of individuals claiming long-term IB fell by 124,000 between 2009 and 2010, whilst ESA claims increased by 72,000. We replicate this by randomly selecting some individuals receiving IB in our base data to no longer receive it, and, from those, randomly select some to receive ESA.

Second, we take account of the fact that, between April 2011 and March 2014, existing claimants of IB (including women age 60-61 “moved” to IB because of the SPA rise (see above)) will be reassessed to determine whether they are entitled to ESA and, if so, which level of the benefit they are entitled to. We assume that the rate of reassessment is constant (i.e. 25% of those on IB in 2010 are reassessed for ESA in each year between 2011 and 2014).

Of those reassessed, we assume that 29% move into the Support Group, 34% to the Work Related Activities Group (WRAG) and 37% are found to be fit for work and lose entitlement to disability benefits (figures taken from [http://research.dwp.gov.uk/asd/asd1/stats\\_summary/stats\\_summary\\_may12.pdf](http://research.dwp.gov.uk/asd/asd1/stats_summary/stats_summary_may12.pdf)).

The final IB/c-ESA benefit values for each year are recorded in specific variables. The IB amount is saved in *bdict0109-bdict0113* for each simulated year between 2009 and 2013. The c-ESA amount is reported by *bdict0209-bdict0214* for each year between 2009 and 2014. From 2014 nobody should be receiving IB anymore. In EUROMOD this is taken into account by setting the default values of variables *bdict01* (IB) and *bdict02* (c-ESA) to the appropriate variable for the policy system in use within the parameter sheet *Uprate\_UK*.

Third, from April 2012, contributory ESA for those in the WRAG has been limited to a maximum duration of one year. We simulate this by removing entitlement from some of those we estimate to be entitled to c-ESA. Table 40 below shows the end product by 2014/15 (when the whole transition processed should be completed) of all these adjustments.



Table 40. Estimated number of ESA recipients in 2014-5

	number of cases	Grossed up number of cases
Total individual observed with a disability	1,358	1,289,035
ESA claims		
Support Group (SG)	695	664,792
Working Related Activities Group (WRAG)	176	166,689
Total ESA successful claims (SG+WRAG)	871	831,481

Source: Authors' calculation. A further 487 cases (457,554 grossed-up) who in the original FRS are receiving IB are simulated to be Fit for Work under ESA in 2014.

### 3.3.1 Time period

Information on earnings refers to the last pay period. Similarly, information about pensions and benefits refers to receipts in the most recent relevant period (e.g. week, 4-week, month, etc.) before the interview. Self-employment income is based on the most recent period (usually 12 months) for which annual business accounts are prepared for the Inland Revenue for tax purposes; in some cases this may be several years prior to the interview. Investment income is based on the last 12-month receipt. All monetary amounts in the FRS are expressed in weekly terms. These are converted into monthly terms for the EUROMOD database. In the EUROMOD calculations it is implicitly assumed that income is received at the same rate throughout the year. However it should be remembered that this may not be the case and in particular that income tax (based on annual income) simulations do not take account of changes that may happen during the year. On the other hand, it is generally the case that personal and household characteristics are consistent with the current incomes that are observed, since they apply to the same or very similar reference periods. For more information about the adjustment of FRS variables into the EUROMOD database variables see the UK Data Requirements Document (DRD). For more information about the FRS variables as originally available see the FRS documentation available at <http://www.esds.ac.uk/findingData/snDescription.asp?sn=6523>

### 3.3.2 Gross incomes

Gross incomes are imputed using the simple formula:

$$\text{Gross income} = \text{net income} + \text{tax} + \text{employee social insurance contributions} + \text{other deductions}$$

FRS data include variables on income tax, employee social insurance contributions and other deductions from gross earnings. In general, net income and taxes paid are recorded separately. For the great majority of people, the quality of data on direct taxes is very good. People in receipt of regular income are taxed through a pay-as-you-earn system and most taxable sources of investment income are paid net of standard rate tax. The difficulty comes for those whose earnings are irregular, particularly the self-employed and, to a lesser extent, those moving in and out of employment during the year and higher rate tax-payers with significant income from investments. In these cases, the individuals may make lump sum tax payments or receive tax refunds. This information is collected in the FRS. However, these lump sums may not be



contemporaneous with the reported income. Basing net income on the reported direct tax, including lump sum payments, can lead to a few households having disposable income very much out of line with their expenditure. In future a more elaborate procedure for imputing gross income from net will be considered for these individuals.

### **3.3.3 Updating**

The factors that are used to update monetary variables (parameter sheet Uprate\_UK) from the mid-point of the data year (October 2009) to the mid point of the policy years applying on June 30<sup>th</sup> (i.e. October 2006 to October 2012) are shown in Table 41.

No other updating adjustments are employed. Thus the distribution of characteristics (such as employment status and demographic variables) as well as the distribution of each income source that is not simulated remain as they were in 2009/10.



Table 41. Updating factors

Variable	Income source/ expenditure	Index type	2009/10 to 2008/09	2009/10 to 2009/10	2009/10 to 2010/11	2009/10 to 2011/12	2009/10 to 2012/13	Source
	Default	Price index	0.9781	1	1.0351	1.0797	1.0919	[b]
yem	Earnings	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
yse	Self-employment income	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
bdicoa	Attendance allowance	Change in benefit amount	0.9524	1	1.0149	1.0462	1.1009	[e]
bdisc	Disability living allowance (self care)	Change in benefit amount	0.9524	1	1.0149	1.0462	1.1009	[e]
bdimb	Disability living allowance (mobility)	Change in benefit amount	0.9521	1	1.0153	1.0468	1.1008	[e]
bdict01	Incapacity benefit	Change in benefit amount	0.9410	1	1.0178	1.0496	1.1041	[e]
bdict02	Employment and support allowance	Change in benefit amount	0.9410	1	1.0178	1.0496	1.1041	[e]
bdiwi	Industrial injuries pension	Change in benefit amount	0.9526	1	1.0153	1.0467	1.1010	[e]
bcrdi	Invalid care allowance	Change in benefit amount	0.9520	1	1.0151	1.0461	1.1008	[e]
boact00	NI retirement pension	Change in benefit amount	0.9522	1	1.0252	1.0724	1.1281	[e]
bdisv	Severe disablement allowance	Change in benefit amount	0.8886	1	1.0348	1.0957	1.2010	[e]
bhlwk	Statutory sick pay	Change in benefit amount	0.9526	1	1.0000	1.0310	1.0846	[e]
bunct	Unemployment benefit	Change in benefit amount	0.9409	1	1.0179	1.0498	1.1042	[e]
boawr	War pension	Change in benefit amount	0.9077	1	1.0151	1.0466	1.1010	[e]
bsuwd	Widow`s pension	Change in benefit amount	0.9522	1	1.0252	1.0572	1.1123	[e]
bmana	Maternity Allowance	Change in benefit amount	0.9522	1	1.0148	1.0461	1.1007	[e]
bmaer	Statutory maternity pay	Change in benefit amount	0.9522	1	1.0148	1.0461	1.1007	[e]
xhcmomi	Mortgage interest payment	Specific price index (mort. int.)	1.5492	1	1.0114	1.0345	1.0548	[c]
xhcr	Rent	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]
bhoen30	Local ref. rent 30th percentile	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]
bhoen50	Local ref. rent 50th percentile	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]



bhoen1130 Local ref. rent 30th percentile Specific price index (rent) 0.9817 1 1.0169 1.0358 1.0737 [d]

Variable	Income source/ expenditure	Index type	2009/10 to 2008/09	2009/10 to 2009/10	2009/10 to 2010/11	2009/10 to 2011/12	2009/10 to 2012/13	Source
yot01	Other income (odd jobs etc)	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
yot02	Previous earnings	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
yprnt	Rent received (not taxed)	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]
yprtx	Taxable rent received	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]
ypr	Total rent received	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]
xcc	Childcare expenditure	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
xhcot	Other housing costs	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]
xhcsc	Service charges	Specific price index (rent)	0.9817	1	1.0169	1.0358	1.0737	[d]
xmp	Maintenance payments	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
yptmp	Maintenance received	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
yptot	Private transfers	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
xpp	Private+ personal pension contributions	Earnings index	0.9831	1	1.0180	1.0382	1.0537	[a]
yls	Lump sum income	Price index	0.9781	1	1.0351	1.0797	1.0919	[b]
ypp	Personal pension income	Price index	0.9781	1	1.0351	1.0797	1.0919	[b]
tmu02 if drgn1=1*	Council Tax: North East	Change in average Council Tax	0.9663	1	1.0218	1.0218	1.0249	[f]
tmu02 if drgn1=4	Council Tax: Yorkshire & Humberside	Change in average Council Tax	0.9695	1	1.0198	1.0198	1.0229	[f]
tmu02 if drgn1=2	Council Tax: North West	Change in average Council Tax	0.9683	1	1.0186	1.0186	1.0217	[f]
tmu02 if drgn1=5	Council Tax: East Midlands	Change in average Council Tax	0.9758	1	1.0217	1.0217	1.0248	[f]
tmu02 if drgn1=6	Council Tax: West Midlands	Change in average Council Tax	0.9706	1	1.0207	1.0207	1.0237	[f]
tmu02 if drgn1=7	Council Tax: Eastern	Change in average Council Tax	0.9702	1	1.0196	1.0196	1.0226	[f]
tmu02 if drgn1=8	Council Tax: London	Change in average Council Tax	0.9876	1	1.0003	1.0003	1.0033	[f]
tmu02 if drgn1=9	Council Tax: South East	Change in average Council Tax	0.9673	1	1.0215	1.0215	1.0245	[f]
tmu02 if drgn1=10	Council Tax: South West	Change in average Council Tax	0.9662	1	1.0253	1.0253	1.0284	[f]



tmu02 if drgn1=11	Council Tax: Wales	Change in average Council Tax	0.9613	1	1.0378	1.0378	1.0399	[f]
tmu02 if drgn1=12	Council Tax: Scotland	Change in average Council Tax	1	1	1	1	1	[f]

Notes: \* The variable drgn1 is following the coding in the original FRS variable where drgn1=3 is also missing.

Sources: [a] **Earnings:** Average weekly earnings index including bonuses using data from series K54U, <http://www.ons.gov.uk/ons/datasets-and-tables/data-selector.html?cdid=K54U&dataset=emp&table-id=AWE15>; updated for the last part of 2011 and Q1 of 2012 by extrapolating known 2011 changes. [b] **Prices:** Eurostat CPI; updated for the last part of 2011 and Q1 of 2012 by extrapolating known 2011 changes [c] **Mortgage Interest** element in RPI: (ONS series DOBQ) assumed no change in the last month of 2011 and Q1 of 2012. [d] **Rent** element in RPI (ONS series DOBP), assuming no change in last month of 2011 and Q1 of 2012; taken from ONS <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcM%3A77-223935>; [e] **Benefits:** *CPAG Welfare benefits and tax credits handbook* for the respective years. [f] **Regional factors** for growth in Council Tax: CIPFA website: [http://www.cipfastats.net/uploads/ctax0708\\_commentary134200741934.pdf](http://www.cipfastats.net/uploads/ctax0708_commentary134200741934.pdf)



Table 42. Take-up probabilities

<b>Benefit and tax credit claimant type</b>	<b>Probability of take-up</b>
Housing benefit for pensioners (>60/65) if not receiving PC(GC)	0.825
Housing benefit for people of working age in work if not receiving IS	0.45
Housing benefit for people of working age without work if not receiving IS	0.95
Council tax benefit for owners (with and without mortgage) if not receiving IS or PC	0.385
Council tax benefit for tenants if not receiving IS or PC(GC)	
Council tax benefit for private tenants	0.83
Council tax benefit for social tenants	0.905
Pension credit (guarantee or guarantee+savings)	0.765
Pension credit (savings only)	0.455
Income support for people without children	0.795
Income support for people with children	0.875
Child tax credit* and working tax credit for lone parents (not London)	0.94
Child tax credit* and working tax credit for couples with children (not London)	0.74
Child tax credit* and working tax credit (all parents) in London	0.69
Child tax credit family element only	0.68
Working tax credit (no children)	0.27

Source: DWP 2010 and HMRC 2010

\* If parents are taking up IS, CTC is assumed to be taken up.

### 3.3.4 Correcting for non take-up

As will be clear from the report on validation exercises in the next section, assuming that all means-tested benefits and tax credits are received by those calculated by EUROMOD to be entitled results in over-estimates of most of these instruments and an under-estimate of poverty and inequality. To adjust for this we employ a simple non take-up correction by applying the take-up proportions estimated on a caseload basis by the Department of Work and Pensions (DWP, 2010) and HM Revenue and Customs (HMRC, 2010).<sup>30</sup> For example we assume that some 5% of lone parents do not receive the combination of Child Tax Credit and Working Tax Credit to which they are entitled, and that this proportion is higher in London (24% of all families with children). Of those entitled to Pension Credit, 23.5% do not take up, with the proportion much higher (51%) if there is only entitlement to the Savings Credit component. Take-up probabilities are applied at the household level (so that people entitled to the same benefits within a household exhibit the same take-up behaviour), for each benefit separately. In general we assume that take-up behaviour is not affected by changes in the size of benefit or tax credit entitlements. However, by applying differential take-up probabilities according to type of claimant, as summarised in Table 42 above, some of this effect is captured.

<sup>30</sup> Where ranges of take-up proportions are published, the mid point is used.



**The correction is switched on by default in the baseline.** To switch the take-up correction off, a user needs to switch off the relevant function (i.e. func\_ArithOp) in the sheet containing the definition of constants used in the system (i.e. sheet ConstDef\_UK). Take-up probabilities summarised in Table 42 are defined in each relevant policy sheet at the end of the simulation. A user can change these probabilities or switch off the take-up correction for each benefit separately by modifying the relevant parameters in each policy sheet.

#### 4. VALIDATION

Validation of outputs from EUROMOD, as well as some key inputs such as income from employment, is documented here for the policy system corresponding to the input data (2009) and the three following policy years.

While many sources of original income are difficult to validate because of lack of independent sources of information, this does not apply to earnings from employment. Table 43 compares aggregate earnings in EUROMOD with estimates from the Annual Survey of Hours and Earnings (ASHE) in 2009. ASHE is based on a 1% sample of employees on the Inland Revenue PAYE register for February and April in the relevant year, supplemented by data from the Inter Departmental Business Register for businesses registered for VAT but not registered for PAYE, to cover businesses which do not have employees above the PAYE threshold.

Table 43 shows that average earnings across all employees in the EUROMOD 2009/10 FRS database is close (97%) to the corresponding average value from ASHE 2009, across all employees whose pay is not affected by absence. The male earnings are covered less well (96%) than female earnings (99%).

Also shown are the EUROMOD averages for 2010, 2011 and 2012 compared with ASHE for the corresponding years. The match is similar for the non-updated FRS data, with the EUROMOD estimate moving closer to that of ASHE in the later years (99%), although female earnings are overestimated in EUROMOD to some extent (by less than 1%).

Table 43. Average gross monthly earnings from employment in 2009-2012, comparing ASHE and the EUROMOD (EM) input database

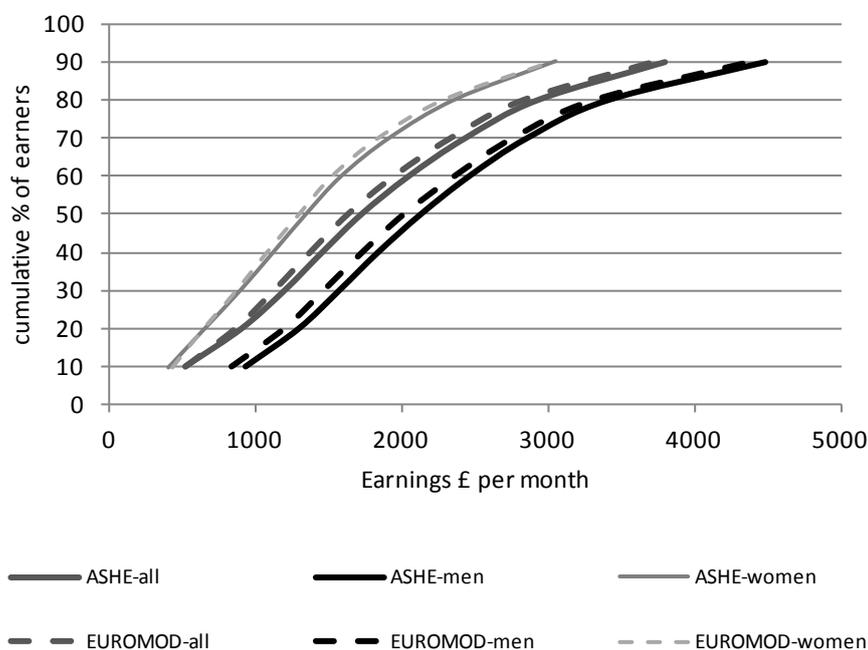
	2009			2010			2011			2012		
	EM	ASHE	Ratio									
All	2014.7	2083.9	0.967	2050.9	2112.9	0.971	2091.7	2111.2	0.991	2121.9	2124.6	0.999
Male	2444.9	2554.1	0.957	2488.8	2580.5	0.964	2538.3	2581.8	0.983	2576.1	2583.5	0.997
Female	1580.8	1604.2	0.985	1609.2	1635.0	0.984	1641.2	1626.3	1.009	1665.2	1654.0	1.007

Sources: ASHE 2012: Table 1.1a, weekly gross pay including overtime for adults whose gross pay was not affected by absence, multiplied by 4.333 to produce the monthly figures. See [http://www.statistics.gov.uk/downloads/theme\\_labour/ASHE\\_2012](http://www.statistics.gov.uk/downloads/theme_labour/ASHE_2012)

Figure 1 compares the cumulative earnings distribution from ASHE and the EUROMOD input data for 2009 for all employees and for men and women (plotting decile points cumulatively). The distributions are close, although the distribution diverges around the bottom and middle of the distribution for men (earnings are somewhat higher in the ASHE data).



Figure 1. Cumulative earnings distributions in 2008: EUROMOD (FRS) and ASHE



Source: see Table 43.

## 4.1 Aggregate Validation

### 4.1.1 Non simulated taxes and benefits

Table 44a, Table 44b and Table 45 compare statistics on benefits and taxes that are not simulated by EUROMOD with external sources. This provides an assessment of the quality of the database and hence the estimates are referred to as “EUROMOD/FRS estimates” although in a few cases some imputation has taken place in order to provide EUROMOD with the necessary information for simulation (see previous section). The information also provides some useful background information for the validation of simulated components of income which may depend on or be associated with the non-simulated components.

Table 44a and 44b show the ratio of the EUROMOD/FRS estimate of the number of recipients of benefits or payers of tax (Council Tax) to that given by administrative statistics. The EUROMOD/FRS estimate is the same for each policy year but the external estimate naturally varies with time. Our main comparison for most benefits is for 2009 policies but Table 44a shows the evolution of EUROMOD estimates for Incapacity Benefit, Employment and Support Allowance and the State Pension 2009-12, since these vary over time according to our imputations related to the phasing out of Incapacity Benefit and phasing in of Employment and Support Allowance, as well as the increase in the state pension age for women from 60 to 61 years of age in 2012. See Section 3.3 “Increase of females pension age” and “Transition from Incapacity Benefit to Employment and Support Allowance” above.

The numbers on Incapacity Benefit and contributory Employment and Support Allowance combined are under-estimated by EUROMOD/FRS in 2009 and 2010 by 6%, the shortfall



slightly increases in 2011, whilst in 2012 the simulated estimate, which accounts for increasing restrictions on entitlements related to the transition from IB to ESA (see section 3.3), matches very well the official forecasts.

Similarly while the numbers in receipt of basic state retirement pension are very well estimated in EUROMOD (the external figures are adjusted to remove recipients living outside the UK) the actual numbers rise slowly over the period but our simulation of the effect of the rising state pension age for women reduces the EUROMOD estimate from 2012 (see section 3.3). It is likely that the general trends of more retirees qualifying for the pension in their own right, plus the ageing of the population, neither of which are captured in our simulation, is the cause of this discrepancy.

In contrast, recipients of the Second State pension are underestimated by EUROMOD/FRS by 16% in 2009 and 23% in 2012 (Table 44b). The two sources of state pension are not distinguished in the data, our imputations may contribute to this under-estimation (see section 3.3). One might expect both to be under-estimated to some extent, because of not capturing recipients living in residential care.

Widows/Bereavement benefit recipient numbers were falling over the period and are over-estimated by 5% in EUROMOD in 2012 but underestimated in 2009 by 15%.

For some of the benefits with small numbers of recipients (especially Maternity allowances but also War pension and Industrial Injuries Disablement allowance), it is to be expected that there would be a wide variation around the actual number from a survey.

The numbers in receipt of Carer's Allowance have grown over the period and in 2009 it is underestimated in EUROMOD/FRS by 16% and in 2012 by 29%.

The number of Jobseeker's Allowance (contributory) recipients fell by 70% between 2009 and 2012. The estimates from EUROMOD/FRS are generally too low at the beginning of the period but too high by 2012.

Severe Disability Allowance (SDA) is under-reported in the FRS and this is thought to be explained by respondent confusion between SDA and the disability premia in the Pension Credit. Many claimants of one of these receive both and may not report the actual situation accurately when asked in the survey. Both Disability living allowance (DLA) and Attendance allowance (AA) are under-reported, in the former case by 20% but by much more (42%) in the latter.

Finally, on the basis of a 2007 comparison (later figures are not available) the number of Council tax payers appears to be well-represented in the FRS. However, the external figure corresponds to the number of dwellings on which payments are potentially due and includes second homes and empty properties which are not captured by the FRS data, suggesting that EUROMOD slightly over-estimates the number of payers.

Table 45 shows ratios of EUROMOD estimates of total expenditure on each benefit (or revenue from Council tax) and administrative totals. In this comparison the expenditures do vary across policy years, driven by the uprating factors described in the previous section. Generally, the closeness of expenditure/revenue estimates to external statistics follows the same pattern as for the number of recipients/payers shown in Table 44a and Table 44b suggesting that average amounts per recipient/payer are approximately right.

In the case of contributory ESA the ratios for expenditures are always a bit higher than those for recipients due to the fact that imputation of benefit amount assumes that the claims is within the



“main phase” (not assessment phase). The amount paid in the main phase is higher and it includes the support or WRAG component, while in the assessment phase only a lower “basic” amount without any addition is paid.

Gross Council tax revenue is well-estimated by EUROMOD/FRS in 2011 and 2012. External figures for the earlier years are net of Council tax benefit while EUROMOD figures are gross of this.

Under-representation of non-simulated benefits has implications for the values of the benefits that are simulated that depend in some way upon receipt of the non-simulated benefits. Where receipt of the latter automatically “passports” eligibility for a simulated benefit this will lead to under-estimation of that benefit. On the other hand if income from the non-simulated benefit is included in a means-test for a simulated benefit, under-estimation of the former will lead to over-estimation of the latter. Similar mechanisms apply in reverse to the case of over-estimation of non-simulated benefits.



Table 44. a. Tax benefit instruments that are included in EUROMOD but not simulated: comparison of aggregates with external statistics: Recipients/payers (THOUSANDS)

	EUROMOD				External				Ratio EUROMOD/external				Sources
	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	
Incapacity benefit+ c-ESA	1,263	1,216	1,123	1,022	1,344	1,291	1,230	1,020	0.94	0.94	0.91	1.00	A
Incapacity benefit	1,161	1,040	784	556	1,177	1,054	909	538	0.99	0.99	0.86	1.03	A
c-ESA (contributory)	102	176	339	466	167	237	321	482	0.61	0.74	1.06	0.97	A
Retirement Pension	11,172	11,172	11,172	10,899	11,149	11,226	11,401	11,504	1.00	1.00	0.98	0.95	A

Sources:

A. DWP table <https://www.gov.uk/government/publications/benefit-expenditure-and-caseload-tables-2013>

Note: c-ESA is contributory Employment and Support Allowance



Table 44b. Tax benefit instruments that are included in EUROMOD but not simulated: comparison of aggregates with external statistics: Recipients/payers (THOUSANDS)

	EUROMOD	External				Ratio EUROMOD/external				Sources
	2009-12	2009	2010	2011	2012	2009	2010	2011	2012	
Second State Pension	7,606	9,012	9,272	9,570	9,840	0.84	0.82	0.79	0.77	A
Widows and Bereavement Benefits	111	131	119	112	106	0.85	0.93	0.99	1.05	A
Jobseeker's Allowance (contributory)	234	351	256	226	206	0.67	0.91	1.04	1.14	A
Attendance Allowance	1,009	1,607	1,620	1,602	1,592	0.63	0.62	0.63	0.63	A
Disability Living Allowance	2,485	3,106	3,177	3,224	3,284	0.80	0.78	0.77	0.76	A
Severe Disablement Allowance	140	240	230	220	212	0.58	0.61	0.64	0.66	A
Carer's Allowance	412	492	521	553	584	0.84	0.79	0.75	0.71	B
Industrial Injuries Disablement Allowance	158	266	265	261	257	0.59	0.60	0.61	0.61	A
Maternity allowances	42	56	54	57	59	0.75	0.78	0.74	0.71	A
War Pension and allowances	81	191	175	161	-	0.42	0.46	0.50	-	C
Council Tax (payers)	25,528	-	-	-	-	-	-	-	-	D

Sources:

A. DWP table C1 <https://www.gov.uk/government/publications/benefit-expenditure-and-caseload-tables-2013>

B. DWP tabulator [http://83.244.183.180/100pc/ca/tabtool\\_ca.html](http://83.244.183.180/100pc/ca/tabtool_ca.html)

C. War Pensions Quarterly Statistics <http://www.dasa.mod.uk/applications/newWeb/www/index.php?page=67&pubType=1&thiscontent=500&date=2009-09-10>

D. Not available for 2009-12. The ratio of EUROMOD:external in 2007 was 1.02.

Note: EUROMOD estimates for recipients are the same across policy years.

- not yet available.



Table 45. Tax benefit instruments that are included in EUROMOD but not simulated: comparison of aggregates with external statistics: Expenditure (£ million/year)

	EUROMOD				External				Ratio EUROMOD/external				Source
	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	
Incapacity benefit+ c-ESA	6,045	6,032	5,730	5,529	6,689	6,511	6,339	5,522	0.90	0.93	0.90	1.00	A
Incapacity benefit	5,672	5,174	4,021	3,031	6,108	5,556	4,940	3,261	0.93	0.93	0.81	0.93	A
c-ESA	373	858	1,709	2,498	581	955	1,399	2,260	0.64	0.90	1.22	1.11	A
Retirement Pension	50,543	51,816	54,204	55,660	49,095	51,081	54,178	57,597	1.03	1.01	1.00	0.97	A
Second State Pension	12,534	12,973	13,533	13,686	12,696	13,074	14,167	15,723	0.99	0.99	0.96	0.87	A
Widows and Bereavement Benefits	591	605	624	657	650	614	593	594	0.91	0.99	1.05	1.11	A
Jobseeker's Allowance (contributory)	745	759	782	823	1,089	802	745	661	0.68	0.95	1.05	1.24	A
Attendance Allowance	3,002	3,047	3,140	3,305	5,106	5,228	5,339	5,481	0.59	0.58	0.59	0.60	A
Disability Living Allowance	8,362	8,488	8,750	9,206	11,459	11,877	12,566	13,451	0.73	0.71	0.70	0.68	A
Severe Disablement Allowance	502	520	550	603	907	888	881	890	0.55	0.59	0.62	0.68	A
Carer's Allowance	1,184	1,202	1,239	1,304	1,495	1,572	1,733	1,922	0.79	0.76	0.72	0.68	A
Industrial Injuries Disablement Allowance	346	352	363	381	844	888	888	905	0.41	0.40	0.41	0.42	A
Statutory Maternity Pay	1,010	1,025	1,056	1,111	2,023	2,138	2,241	2,355	0.50	0.48	0.47	0.47	A
Maternity allowances	250	254	262	276	345	343	366	392	0.73	0.74	0.72	0.70	A
War Pension and allowances	362	367	379	398	1,020	953	944	-	0.35	0.39	0.40	-	B
Council Tax	29,536	30,036	30,036	30,117	24,943	25,464	30,100	30,400	1.18	1.18	1.00	0.99	C

Sources:

A. DWP GB Expenditure from table 3 at <https://www.gov.uk/government/publications/benefit-expenditure-and-caseload-tables-2013>

B. UK Blue Book Table 5.2.4S <http://www.ons.gov.uk/ons/rel/naa1-rd/united-kingdom-national-accounts/the-blue-book--2012-edition/index.html>

C. EFO supplementary fiscal table (OBR Budget 2013) downloaded from [http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium\\_term](http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium_term). External figures for 2009 and 2010 are from a different source and show Council tax net of Council tax benefit.

Note: c-ESA is contributory Employment and Support Allowance

~ not yet available.



#### 4.1.2 Simulated taxes and benefits

Validation of simulated elements of income is carried out in relation to independent external sources. Table 46 shows comparisons of the number of benefit recipients and tax and contribution payers against official statistics based on administrative sources. These comparisons assume 100% take-up of means-tested benefits and tax-credits. Table 47 repeats the comparison for the means-tested instruments, applying non take-up probabilities as described in the previous section.

Table 48 shows the aggregate annual expenditure, or revenue from each instrument, compared with official sources, assuming full take-up. Table 49 makes the same comparison for means-tested benefits and tax credits, correcting for non-take-up. Finally, Table 50 compares EUROMOD and external estimates of expenditure for 2009 for selected simulated benefits and tax credits with aggregates from the FRS data (using the same weights as in the EUROMOD estimates).

#### 4.1.3 Simulated Income tax

Compared with tax statistics, the number of income tax payers estimated by EUROMOD is very similar: under-estimated by 3 percentage points (Table 46). Revenue from income tax is under-estimated, however, by 15% (Table 48).

The most likely explanation is that there is some under-reporting of high incomes and under-representation in the FRS of high income earners.

It should be noted that the assumption that the incomes recorded in the FRS for the previous week or month are in fact received for the whole tax year is likely to have an effect on the EUROMOD estimates. If EUROMOD could account for part-year incomes there would be more taxpayers in any whole year, resulting in an over-estimate. But to the extent that a part-year income is subject to a lower average tax rate than the equivalent whole year income (because of the progressivity of the tax schedule), accounting for part-year incomes would reduce the estimated tax revenue on aggregate.

#### 4.1.4 Social insurance contributions

External figures on contributors are only available up to 2008. At that point there was a shortfall of 19%. The explanation for the underestimation numbers of both employed and self employed contributors are underestimated by EUROMOD is that the administrative figures refer to any payment of a contribution within the year while employee contributions are paid depending on weekly earnings. At any one point in time the number of contributors is less than that shown by the administrative statistics. Consistent with this explanation, revenue from employee contributions are relatively well captured (100% in 2009 falling to 97% in 2011) – see Table 48. Information on the number of employees for whom employers make contributions is not available. There is a shortfall of revenue from employer contributions of 12-13% over the period.

EUROMOD estimates of revenue from contributions made by the self-employed are larger (by 20% in 2009) than those given in external statistics but estimates of number of contributors are smaller (by 17% in 2008, not shown). The explanations for this are a combination of those provided above for income tax and for employee contributions. Self-employed contributions are of two types. Class 2 are weekly flat-rate payments and external estimates count those making any contribution within the year. Class 4 contributions depend on annual self-employment



income in a previous year. The explanations for income tax are relevant for Class 4 and the explanations for employee contributions are relevant for Class 2. The over-estimation rises to 66% by 2012 because the EUROMOD estimate rises slowly but the external estimate falls, more sharply. EUROMOD does not capture the effect of people leaving self-employment during the recession, only the average change in income for those who remain in work.

Overall revenue from all contributions is underestimated, by 6% to 7%..

#### **4.1.5 Child benefit**

EUROMOD produces estimates very close to the administrative figures for the number of families in receipt. Given the universal nature of the benefit and the fact that the FRS weights control for the number of families with children eligible for child benefit (in 2009/10), this is not surprising. However, the number of children for whom benefit is received is underestimated by 5% and the expenditure on the benefit under-estimated by 2% in 2009. However, as shown by Table 50 the FRS data on Child Benefit (weighted) under-estimate expenditure by more: 6%. Over the period, the under-estimation in EUROMOD rises slightly, as it does not capture the small increase in number of children in the population.

#### **4.1.6 Winter fuel allowance**

EUROMOD over-estimates recipients by 5% and captures expenditure quite precisely in 2008. There is no clear reason for this pattern given that the payment depends only on the age of the oldest person in the household. By 2012 the number of recipients is matched exactly and there is an under-estimation of expenditure by 5%.

#### **4.1.7 Means-tested benefits and tax credits**

When complete take-up of means-tested benefits and tax credits is assumed (as in Table 46 for recipients and Table 48 for expenditure) the number of recipients in 2009 is over-estimated compared with administrative statistics. This applies particularly to Income Support (including income tested JSA and income tested ESA), Pension Credit, Child Tax Credit and Council Tax Benefit. Once the take-up correction described in section 3 is applied, as shown in Table 47, the ratios of the number of recipients generally improve and move closer to one. The numbers on Child Tax Credit, Income Support (including other working age income tested benefits) and Council Tax benefit are still too high relative to external statistics (by 16%, 15% and 14% respectively); for Pension Credit they are underestimated (by 15%) and are very well estimated for Housing Benefit; but Working Tax Credit recipients are under-estimated by 32%.

For Income Support (including other working age income tested benefits) and Council Tax Benefit, and to some extent Housing Benefit the expenditure is over-estimated by EUROMOD before any take-up correction (Table 48) but is too low for Working Tax Credit (by 19%) and Child Tax Credit (by 5%). The take up correction reduces expenditure such that it is closer but still somewhat over the administrative total for Council Tax Benefit (by 8%) but underestimated by 7% for Housing Benefit and by 28% for Pension Credit. It is very under-estimated for Child Tax Credit (by 29%) and especially Working Tax Credit (47%) (Table 49). Correcting for take-up in the way that we do does not allow for the fact that within client group, it is likely that those with small entitlements are the most likely to not claim. Our caseload based correction thus probably over-corrects on an expenditure basis. However, with the exception of the Working Tax Credit, Table 50 shows how the weighted aggregates from FRS are generally similar to those from EUROMOD or compare less favourably with external statistics.



We now consider each benefit/credit separately and discuss reasons for the apparent discrepancies.

- *Tax Credits*

After the take-up correction the numbers on Child Tax Credit are over-estimated relative to the administrative total by 16% (Table 47) whereas the estimated expenditure is under-estimated by 29% (Table 49). The over-estimation of numbers is to some extent explained by the administrative statistics not containing some long-term recipients of Income Support, whose child payments have still not been migrated to the tax credit system. The reasons for the under-estimation of expenditure include the fact that those taking up are likely to have higher entitlements. While our take-up adjustment allows for some of this effect (the average payment assuming full take up is a little lower than the average payment with partial take up) it does not capture it all.

Probably the main cause of the apparent under-estimation also applies to Working Tax Credit. The administrative statistics that we use are for finalised awards of Tax Credits. Adjustments are made after the end of the tax year to take account of changes in income during the year. It is likely that those with changes that lead to increased entitlement would re-claim during the year. Thus those with end of year adjustments are likely to see reductions in their awards. Our simulations, on the other hand, are based on current incomes and circumstances. If circumstances stay the same all year our simulation should match the final award. However, in 2009/10 there was a very large income disregard of £25,000 which meant that the final award would only require a repayment if the repayment exceeded this amount. So in any cases where incomes did change we expect EUROMOD to under-estimate the actual payment. According to the HMRC statistics on final awards in 2008/9, for example, of 4,765 in-work families receiving one or both tax credits 3,400 thousand had an income which increased over the year and up to £25,000 was disregarded (Table 3.7). It is therefore not surprising that the EUROMOD expenditure estimate is only 71% of expenditure assessed in this way.

The disregard has been reduced to £10,000 in 2011/12 and £5,000 in 2012/13. It is still the case that what EUROMOD simulates does not take account of increases in income later in the tax year or reductions in payment due to over-payment the previous year. However, when administrative figures on final payments become available for 2011 and 2012 and later they are likely to show a reduction in spending, and the discrepancy with EUROMOD will be correspondingly reduced.

However, as shown by Table 50 FRS reported income from Child Tax Credit is also low relative to the administrative total, and similar to the EUROMOD estimate. This may be due to respondents not knowing how much of their total tax credit payment is from WTC or from CTC.

Working Tax Credit expenditure is also underestimated (by almost half the administrative figure) for the same reasons: due to the “overhang” of entitlement, especially when there is a large year-to-year disregard. Entitlement is even more likely to vary over the year as this depends on being in low paid work which is likely to be unstable in various ways. Unlike Child Tax Credit, Working Tax Credit recipients are also under-estimated by EUROMOD (by 32%) and the “overhang” is again the explanation. Families are unlikely to shift on and off Child Tax Credit but are likely to meet the eligibility criteria for Working Tax Credit for short periods but still receive payments when they would not qualify if re-assessed.



Table 46. Tax benefit instruments that are simulated by EUROMOD: comparison of aggregates with external statistics: assuming 100% take-up of means-tested benefits and tax credits Recipients/payers (THOUSANDS)

	Unit	EUROMOD				External				Ratio EUROMOD/external				Source
		2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	
Income tax	Individual	29,776	29,980	29,428	29,002	30,600	31,300	30,300	29,900	0.97	0.96	0.97	0.97	A
SIC Employees (Class 1)	Individual	19,737	19,793	18,985	18,851	-	-	-	-	-	-	-	-	B
SIC Self employed (Class 2 + 4)	Individual	2,435	2,459	2,426	2,339	-	-	-	-	-	-	-	-	B
Child Benefit	Child	12,874	12,874	12,874	12,874	13,604	13,685	13,721	13,772	0.95	0.94	0.94	0.93	C
	Family	7,682	7,682	7,682	7,682	7,770	7,842	7,885	7,920	0.99	0.98	0.97	0.97	C
Working Tax Credit (WTC)	Family	2,725	2,667	2,484	2,262	2,374	2,508	-	-	1.15	1.06	-	-	D
Child Tax Credit (CTC)	Family	6,560	6,525	5,381	4,313	4,283	4,302	-	-	1.53	1.52	-	-	D
<i>Both CTC and WTC</i>	<i>Family</i>	<i>1,603</i>	<i>1,577</i>	<i>1,478</i>	<i>1,312</i>	<i>1,892</i>	<i>1,964</i>	-	-	<i>0.85</i>	<i>0.80</i>	-	-	<i>D</i>
<i>Either CTC or WTC</i>	<i>Family</i>	<i>7,683</i>	<i>7,615</i>	<i>6,387</i>	<i>5,263</i>	<i>6,249</i>	<i>5,764</i>	-	-	<i>1.23</i>	<i>1.32</i>	-	-	<i>D</i>
<i>Without children (WTC only)</i>	<i>Family</i>	<i>1,122</i>	<i>1,090</i>	<i>1,006</i>	<i>950</i>	<i>482</i>	<i>544</i>	-	-	<i>2.33</i>	<i>2.00</i>	-	-	<i>D</i>
Income Support (IS) +JSAinc	Family	3,800	3,793	3,714	3,811	3,037	2,895	2,846	2,469	1.25	1.31	1.30	1.54	E
inc ESA	Family	714	733	767	837	190	237	321	482	3.76	3.09	2.39	1.74	E
<i>Income Support+JSAinc+inc ESA</i>	<i>Family</i>	<i>4,514</i>	<i>4,525</i>	<i>4,482</i>	<i>4,648</i>	<i>3,227</i>	<i>3,132</i>	<i>3,167</i>	<i>2,951</i>	<i>1.40</i>	<i>1.44</i>	<i>1.42</i>	<i>1.58</i>	<i>E</i>
<i>Income Support lone parents only</i>	<i>Family</i>	<i>711</i>	<i>732</i>	<i>724</i>	<i>720</i>	<i>706</i>	<i>653</i>	<i>589</i>	<i>518</i>	<i>1.01</i>	<i>1.12</i>	<i>1.23</i>	<i>1.39</i>	<i>E</i>
Pension Credit (PC)	Family	3,515	3,522	3,424	3,208	2,736	2,718	2,649	2,508	1.28	1.30	1.29	1.28	E
<i>Pension Credit GC only</i>	<i>Family</i>	<i>1,237</i>	<i>1,267</i>	<i>1,250</i>	<i>1,259</i>	<i>963</i>	<i>961</i>	<i>949</i>	<i>1,013</i>	<i>1.28</i>	<i>1.32</i>	<i>1.32</i>	<i>1.24</i>	<i>F</i>
<i>Pension Credit GC+SC</i>	<i>Family</i>	<i>1,082</i>	<i>1,029</i>	<i>994</i>	<i>885</i>	<i>1,196</i>	<i>1,186</i>	<i>1,115</i>	<i>942</i>	<i>0.90</i>	<i>0.87</i>	<i>0.89</i>	<i>0.94</i>	<i>F</i>
<i>Pension Credit SC only</i>	<i>Family</i>	<i>1,196</i>	<i>1,225</i>	<i>1,180</i>	<i>1,065</i>	<i>577</i>	<i>572</i>	<i>585</i>	<i>553</i>	<i>2.07</i>	<i>2.14</i>	<i>2.02</i>	<i>1.93</i>	<i>F</i>
Housing benefit	Household	5,475	5,615	5,525	5,481	4,547	4,798	4,932	5,045	1.20	1.17	1.12	1.09	E
Council tax benefit	Household	8,663	9,027	8,808	8,721	5,571	5,805	5,874	5,905	1.56	1.56	1.50	1.48	E
Winter fuel allowance	Household	13,326	13,326	13,326	12,636	12,681	12,783	12,686	12,667	1.05	1.04	1.05	1.00	E

Sources:

- A. HMRC 2011 [http://www.hmrc.gov.uk/stats/tax\\_receipts/table1-4.pdf](http://www.hmrc.gov.uk/stats/tax_receipts/table1-4.pdf) ;
- B. Updated figures are unavailable.
- C. HMRC [http://www.hmrc.gov.uk/stats/child\\_benefit/chb-geog-aug09.pdf](http://www.hmrc.gov.uk/stats/child_benefit/chb-geog-aug09.pdf) ;
- D. HMRC finalised table 1.1 <http://www.hmrc.gov.uk/stats/personal-tax-credits/cwtc-final-awards-may11.pdf>



- E. DWP table C1 [http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium\\_term](http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium_term);
- F. DWP 2011 <http://83.244.183.180/100pc/tabtool>. (mean of 4 quarterly figures, starting in May)


 Table 47. Means-tested tax benefit instruments that are simulated by EUROMOD: comparison of aggregates with external statistics: assuming incomplete take-up Recipients/payers (THOUSANDS)

	Unit	EUROMOD				External				Ratio EUROMOD/external				Source
		2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	
Working Tax Credit (WTC)	Family	1,615	1,589	1,470	1,323	2,374	2,508	-	-	0.68	0.63	-	-	D
Child Tax Credit (CTC)	Family	4,951	4,922	4,059	3,239	4,283	4,302	-	-	1.16	1.14	-	-	D
<i>Both CTC and WTC</i>	<i>Family</i>	<i>1,302</i>	<i>1,283</i>	<i>1,205</i>	<i>1,076</i>	<i>1,892</i>	<i>1,964</i>	-	-	<i>0.69</i>	<i>0.65</i>	-	-	<i>D</i>
<i>Either CTC or WTC</i>	<i>Family</i>	<i>5,264</i>	<i>5,228</i>	<i>4,324</i>	<i>3,486</i>	<i>6,249</i>	<i>5,764</i>	-	-	<i>0.84</i>	<i>0.91</i>	-	-	<i>D</i>
<i>Without children (WTC only)</i>	<i>Family</i>	<i>313</i>	<i>306</i>	<i>266</i>	<i>247</i>	<i>482</i>	<i>544</i>	-	-	<i>0.65</i>	<i>0.56</i>	-	-	<i>D</i>
Income Support (IS) +JSAinc	Family	3,141	3,136	3,073	3,136	3,037	2,895	2,846	2,469	1.03	1.08	1.08	1.27	E
inc ESA	Family	566	584	611	669	190	237	321	482	2.98	2.46	1.90	1.39	E
<i>Income Support+JSAinc+inc ESA</i>	<i>Family</i>	<i>3,707</i>	<i>3,720</i>	<i>3,684</i>	<i>3,804</i>	<i>3,227</i>	<i>3,132</i>	<i>3,167</i>	<i>2,951</i>	<i>1.15</i>	<i>1.19</i>	<i>1.16</i>	<i>1.29</i>	<i>E</i>
<i>Income Support lone parents only</i>	<i>Family</i>	<i>636</i>	<i>653</i>	<i>645</i>	<i>641</i>	<i>706</i>	<i>653</i>	<i>589</i>	<i>518</i>	<i>0.90</i>	<i>1.00</i>	<i>1.10</i>	<i>1.24</i>	<i>E</i>
Pension Credit (PC)	Family	2,337	2,328	2,280	2,151	2,736	2,718	2,649	2,508	0.85	0.86	0.86	0.86	E
<i>Pension Credit GC only</i>	<i>Family</i>	<i>953</i>	<i>978</i>	<i>972</i>	<i>977</i>	<i>963</i>	<i>961</i>	<i>949</i>	<i>1,013</i>	<i>0.99</i>	<i>1.02</i>	<i>1.02</i>	<i>0.96</i>	<i>F</i>
<i>Pension Credit GC+SC</i>	<i>Family</i>	<i>818</i>	<i>783</i>	<i>755</i>	<i>669</i>	<i>1,196</i>	<i>1,186</i>	<i>1,115</i>	<i>942</i>	<i>0.68</i>	<i>0.66</i>	<i>0.68</i>	<i>0.71</i>	<i>F</i>
<i>Pension Credit SC only</i>	<i>Family</i>	<i>566</i>	<i>567</i>	<i>554</i>	<i>505</i>	<i>577</i>	<i>572</i>	<i>585</i>	<i>553</i>	<i>0.98</i>	<i>0.99</i>	<i>0.95</i>	<i>0.91</i>	<i>F</i>
Housing benefit	Household	4,474	4,531	4,483	4,466	4,547	4,798	4,932	5,045	0.98	0.94	0.91	0.89	E
Council tax benefit	Household	6,331	6,540	6,412	6,372	5,571	5,805	5,874	5,905	1.14	1.13	1.09	1.08	E

Source: See Table 46.



Table 48. Tax benefit instruments that are simulated by EUROMOD: comparison of aggregates with external statistics assuming 100% take-up of means-tested benefits and tax credits. Expenditure/revenue (£million/year)

	EUROMOD				External				Ratio EUROMOD/external				Source
	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	
Income tax	122,896	129,590	130,073	129,948	144,881	153,491	150,939	150,992	0.85	0.84	0.86	0.86	A
SIC Employees (Class 1)	37,208	37,923	39,255	39,119	37,179	38,495	40,350	-	1.00	0.99	0.97	-	B
SIC Employers	48,037	49,185	51,430	51,896	54,387	56,134	58,869	-	0.88	0.88	0.87	-	B
SIC Self employed (Class 2 + Class4)	3,452	3,511	3,908	3,900	2,879	2,720	2,641	-	1.20	1.29	1.48	-	B
<i>SIC total (any SIC)</i>	<i>88,696</i>	<i>90,619</i>	<i>94,593</i>	<i>94,915</i>	<i>94,445</i>	<i>97,349</i>	<i>101,860</i>	<i>102,294</i>	<i>0.94</i>	<i>0.93</i>	<i>0.93</i>	<i>0.93</i>	C
Child Benefit	11,571	11,745	11,745	11,745	11,824	12,160	12,177	-	0.98	0.97	0.96	-	B
Working Tax Credit (WTC)	6,204	6,203	5,850	5,207	7,675	8,069	-	-	0.81	0.77	-	-	D
Child Tax Credit (CTC)	18,626	18,996	19,380	19,650	19,696	20,474	-	-	0.95	0.93	-	-	D
<i>CTC and WTC</i>	<i>24,830</i>	<i>25,199</i>	<i>25,230</i>	<i>24,858</i>	<i>27,371</i>	<i>28,726</i>	<i>29,615</i>	<i>-</i>	<i>0.91</i>	<i>0.88</i>	<i>0.85</i>	<i>-</i>	D
<i>WTC only</i>	<i>1,924</i>	<i>1,908</i>	<i>1,824</i>	<i>1,746</i>	<i>1,134</i>	<i>1,298</i>	<i>-</i>	<i>-</i>	<i>1.70</i>	<i>1.47</i>	<i>-</i>	<i>-</i>	D
Income Support (IS) +JSAinc	13,111	13,453	13,799	14,901	12,656	11,528	11,182	9,837	1.04	1.17	1.23	1.51	F
inc ESA	3,752	3,915	4,241	4,843	-	1,277	2,156	4,439	-	3.07	1.97	1.09	
Income Support+JSAinc+ESA	16,862	17,368	18,040	19,744	12,656	12,805	13,337	14,276	1.33	1.36	1.35	1.38	
<i>Income support lone parents only</i>	<i>2,353</i>	<i>2,547</i>	<i>2,607</i>	<i>2,731</i>	<i>2,842</i>	<i>2,621</i>	<i>2,391</i>	<i>1,970</i>	<i>0.83</i>	<i>0.97</i>	<i>1.09</i>	<i>1.39</i>	E
<i>Pension Credit Guarantee Credit</i>	<i>6,362</i>	<i>6,561</i>	<i>6,671</i>	<i>6,400</i>	<i>6,915</i>	<i>7,042</i>	<i>6,869</i>	<i>6,560</i>	<i>0.92</i>	<i>0.93</i>	<i>0.97</i>	<i>0.98</i>	E
<i>Pension Credit Savings Credit</i>	<i>1,478</i>	<i>1,471</i>	<i>1,416</i>	<i>1,145</i>	<i>1,214</i>	<i>1,205</i>	<i>1,191</i>	<i>1,007</i>	<i>1.22</i>	<i>1.22</i>	<i>1.19</i>	<i>1.14</i>	E
Pension Credit(PC) total	7,840	8,032	8,087	7,545	8,129	8,247	8,061	7,535	0.96	0.97	1.00	1.00	
Housing benefit	21,729	22,766	22,377	22,400	19,989	21,427	22,814	23,805	1.09	1.06	0.98	0.94	E
Council tax benefit	6,638	7,011	6,839	6,807	4,698	4,925	4,920	4,922	1.41	1.42	1.39	1.38	E
Winter fuel allowance	2,709	2,709	2,121	2,038	2,735	2,760	2,150	2,151	0.99	0.98	0.99	0.95	E

Sources: A. HMRC table 1.2 [http://www.hmrc.gov.uk/stats/tax\\_receipts/table1-2.pdf](http://www.hmrc.gov.uk/stats/tax_receipts/table1-2.pdf)

B. Blue Book 2012 Table 5.2.4s; <http://www.ons.gov.uk/ons/rel/naa1-rd/united-kingdom-national-accounts/the-blue-book--2012-edition/united-kingdom-national-accounts---blue-book--2012-edition.pdf>

C. HMRC Table 1.2 [http://www.hmrc.gov.uk/stats/tax\\_receipts/table1-2.pdf](http://www.hmrc.gov.uk/stats/tax_receipts/table1-2.pdf)



- D. HMRC finalised table 1.1 1 <http://www.hmrc.gov.uk/stats/personal-tax-credits/cwtc-final-awards-may11.pdf>
- E. DWP GB Expenditure from table 3 [http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium\\_term](http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium_term)
- F. DWP GB Expenditure from table 7 [http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium\\_term](http://statistics.dwp.gov.uk/asd/asd4/index.php?page=medium_term)



Table 49. Means-tested tax benefit instruments that are simulated by EUROMOD: comparison of aggregates with external statistics assuming incomplete take-up. Expenditure/revenue (£million/year)

	EUROMOD				External				Ratio EUROMOD/external				Source
	2009	2010	2011	2012	2009	2010	2011	2012	2009	2010	2011	2012	
Working Tax Credit (WTC)	4,061	4,076	3,827	3,383	7,675	8,069	-	-	0.53	0.51	-	-	D
Child Tax Credit (CTC)	13,963	14,238	14,534	14,663	19,696	20,474	-	-	0.71	0.70	-	-	D
<i>CTC and WTC</i>	<i>18,023</i>	<i>18,314</i>	<i>18,361</i>	<i>18,046</i>	<i>27,371</i>	<i>28,726</i>	<i>29,615</i>	-	<i>0.66</i>	<i>0.64</i>	<i>0.62</i>	-	D
<i>WTC only</i>	<i>534</i>	<i>534</i>	<i>504</i>	<i>488</i>	<i>1,134</i>	<i>1,298</i>	-	-	<i>0.47</i>	<i>0.41</i>	-	-	D
Income Support (IS) +JSAinc	10,852	11,132	11,442	12,288	12,656	11,528	11,182	9,837	0.86	0.97	1.02	1.25	E
inc ESA	3,004	3,153	3,413	3,895	-	1,277	2,156	4,439	-	2.47	1.58	0.88	E
Income Support+JSAinc+ESA	13,856	14,285	14,855	16,183	12,656	12,805	13,337	14,276	1.09	1.12	1.11	1.13	E
<i>Income support lone parents only</i>	<i>2,104</i>	<i>2,275</i>	<i>2,325</i>	<i>2,437</i>	<i>2,842</i>	<i>2,621</i>	<i>2,391</i>	<i>1,970</i>	<i>0.74</i>	<i>0.87</i>	<i>0.97</i>	<i>1.24</i>	E
<i>Pension Credit Guarantee Credit</i>	<i>4,912</i>	<i>5,068</i>	<i>5,181</i>	<i>5,018</i>	<i>6,915</i>	<i>7,042</i>	<i>6,869</i>	<i>6,560</i>	<i>0.71</i>	<i>0.72</i>	<i>0.75</i>	<i>0.76</i>	E
<i>Pension Credit Savings Credit</i>	<i>902</i>	<i>885</i>	<i>857</i>	<i>694</i>	<i>1,214</i>	<i>1,205</i>	<i>1,191</i>	<i>1,007</i>	<i>0.74</i>	<i>0.73</i>	<i>0.72</i>	<i>0.69</i>	E
Pension Credit(PC) total	5,814	5,954	6,037	5,712	8,129	8,247	8,061	7,535	0.72	0.72	0.75	0.76	E
Housing benefit	18,676	19,298	19,025	19,110	19,989	21,427	22,814	23,805	0.93	0.90	0.83	0.80	E
Council tax benefit	5,078	5,322	5,211	5,202	4,698	4,925	4,920	4,922	1.08	1.08	1.06	1.06	E

Source: See Table 48.



Table 50. Selected benefits that are simulated by EUROMOD: comparison of aggregates with external statistics and data from FRS (2009/10) assuming incomplete take-up in EUROMOD estimates. Expenditure/revenue (£million/year)

	FRS 2009	EUROMOD 2009	External 2009	Ratio FRS / External	Ratio EUROMOD / External
Child Benefit	11,142	11,571	11,824	0.94	0.98
Working Tax Credit (WTC)	4,379	4,061	7,675	0.57	0.53
Child Tax Credit (CTC)	13,711	13,963	19,696	0.70	0.71
<i>CTC and WTC</i>	<i>18,090</i>	<i>18,024</i>	<i>27,371</i>	<i>0.66</i>	<i>0.66</i>
<i>WTC only</i>	<i>1,210</i>	<i>534</i>	<i>1,134</i>	<i>1.07</i>	<i>0.47</i>
Income Support+JSAinc+ESA	9,078	13,856	12,656	0.72	1.09
Pension Credit(PC) total	4,384	5,814	8,129	0.54	0.72
Housing benefit	15,709	18,676	19,989	0.79	0.93

Source: See Table 48.

- *Income Support*

Even after the take-up correction the number of recipients of Income Support (IS) is over-estimated by 3% (Table 47). (The external figures include those on income-tested JSA which is simulated along with Income Support in EUROMOD.) The numbers on income-related ESA are greatly over-estimated in 2009 (by 3 times) but this reduces to 39% in the 2012 estimate. Combined, the over-estimation rises from 15% in 2009 to 29% in 2012. This is a period of transition for those potentially qualifying for IS or ib-ESA and it is difficult to capture the individual components correctly in EUROMOD simulations in particular because the entitlement to ib-ESA is based on a “limited capability for work” which is not explicitly measured in the FRS. The combined (IS+ib-JSA+ib-ESA) total expenditure from EUROMOD is also somewhat too high relative to the external total (by 9% in 2009 rising to 13% in 2012). Considering the greater proportional over-estimation of recipients, this suggests that the average simulated amount is therefore too low compared with the average amount actually received. This can be explained by those with low entitlements not taking up; whereas we do not account for this directly in our take-up adjustment.

This is in spite of the fact the FRS report says that IS recipients are 28% under-reported in FRS, even after adjusting admin total for people in institutions. Thus EUROMOD simulations perform better in this respect.

- *Pension Credit*

After accounting for non take up Pension Credit recipients as a whole are under-reported by 15% and expenditure by 28%. However the external administrative total includes payments to recipients living in institutions who are not captured by FRS/EUROMOD. Adjusting for this (making use of an adjustment factor of 150,000 or 5.5% derived from table M.6 of the FRS report) brings the recipient totals closer and reduces the expenditure shortfall in EUROMOD. The remaining shortfall might be explained by EUROMOD not controlling for size of entitlement in the take-up adjustment (although it is worth noting that our adjustment does move the average payment in the right direction).



However, within PC there are many too few recipients of both Savings Credit (SC) and Guarantee Credit (GC), and too many receiving one or the other alone. One clue as to why there may be too many receiving SC alone may lie in the under-reporting of Pension Credit in the FRS (see Table 50). If FRS respondents confuse Pension Credit with their basic state pension payments and just report both as the basic state pension then this will be over-estimated in the FRS, and EUROMOD will automatically calculate them to be not quite eligible for GC. But their excess of income over the basic pension amount will entitle them to some SC. Cases with GC but no SC may be over-estimated if the incomes which give rise to SC entitlement are under-reported.

- ***Housing Benefit***

After the take-up correction Housing Benefit recipients are well-estimated by EUROMOD. This is a significant improvement on the under-estimation in the FRS data (under-reported by 21%).<sup>31</sup> However, in later policy years there is some under-estimation (11% by 2012) possibly explained by our modelling of the restrictions on the LHA component of Housing Benefit having too large an effect, combined with not capturing increasing numbers of households becoming entitled due to the recession. Expenditure is under-estimated by 7% in 2009 rising to 11% in 2012. (which is a great improvement on the 21% under-estimation in the FRS data, shown in Table 50). The updating of rents to 2012 may not capture differential growth in rent satisfactorily, and as mentioned above, the modelling of LHA rent restrictions which were strengthened in this period, can only be approximate. However, since Housing Benefit is calculated at the end of the EUROMOD “spine” and entitlement depends on income including other simulated components, the main explanation for any under-estimation of expenditure probably lies in the over-simulation of some benefits/tax credits, perhaps for certain groups of people that cannot be identified in the sort of aggregate validation exercise reported here.

- ***Council Tax Benefit***

Council Tax Benefit (CTB) recipients are over-estimated even after the take-up correction, by 14%. Expenditure is over-estimated by less (8%). The reasons for this are difficult to establish exactly, except that entitlement to CTB depends not only on receipt of IS or PC (in which case it is virtually automatic) but also on whether the tax credits are received and whether other non means-tested benefits are received. As with Housing Benefit, to the extent that some non-simulated benefits are under-reported and tax credits are under-simulated, we might expect some over-estimation of CTB.

## **4.2 Income distribution**

All income distribution results presented here are computed for individuals according to their household disposable income (HDI) equivalised by the “modified OECD” equivalence scale. HDI is calculated as the sum of all income sources of all household members net of income tax and social insurance contributions. The weights in the modified OECD equivalence scale are: first adult = 1; additional people aged 14+ = 0.5; additional people aged under 14 = 0.3.

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<sup>31</sup> [http://statistics.dwp.gov.uk/asd/frs/2009\\_10/frs\\_2009\\_10\\_report.pdf](http://statistics.dwp.gov.uk/asd/frs/2009_10/frs_2009_10_report.pdf). See Table M.6.



#### 4.2.1 Poverty

Table 51 shows a comparison with published UK official statistics (Households Below Average Income or HBAI) based on the same data as EUROMOD (FRS) (2009/10).

The unshaded, panel shows the comparison of 2009/10 HBAI (Before Housing Costs) poverty statistics with EUROMOD's 2009 policy year. Because of differences due to using simulated rather than recorded income components and any differences in the precise sample or income concept<sup>32</sup> there is no reason to expect the HBAI and EUROMOD results to be identical. Also shown for 2009 are our own calculations using FRS micro-data and the same sample and income concept as is employed in the EUROMOD statistics. The differences between the HBAI estimates (which are rounded to the nearest whole percentage) and our own calculations (here rounded to one decimal point) indicate the effects of the different income concepts and sample selections. The EUROMOD income concept and use of the full FRS sample results in a higher poverty threshold (median) and the difference mainly impacts on poverty measured at the 50% threshold and poverty among older people, at 60% of the median. The differences between the "FRS" measures and those from EUROMOD are due to the use of simulated values for taxes and benefits, including the imprecise take-up adjustments. As we have seen, simulated values may correspond more closely, in aggregate, to external statistics, than those from the FRS, which are subject to reporting and measurement errors of various kinds.

Before any take-up correction, EUROMOD estimates of poverty rates are too low relative to the HBAI estimates. Using the 60% of median poverty threshold the rate from EUROMOD is 11.8% compared with 17% in HBAI. Once the take-up correction is applied the EUROMOD estimate rises to 15.6%. The (rounded) poverty rate is also 1 percentage point too low at the 50% threshold, and the same (25%) at the 70% threshold.

At the 60% threshold the child poverty rate (after the take up adjustments) is 17.7% compared to 20% from HBAI. Using the 50% threshold shows similar estimates using the two methods (10.4% in EUROMOD and 10% in HBAI). At the higher level of threshold, 70% the estimates diverge by 1 percentage point.

The comparisons for older people show less similar results: EUROMOD underestimates at each threshold. At the 60% threshold the poverty rate for older people is 13.9% compared with 18% from HBAI.

The lower panel of Table 51 compares HBAI poverty statistics using 2010 data with estimates from the EUROMOD baseline for the corresponding policy year. While there is no reason to expect the statistics from the two sources to move in the same way (since one fully captures economic and demographic changes as well as policy changes and the other does not), it is still interesting to compare the estimates. In fact, the comparisons are similar to those for 2009, again showing most underestimation for older people.

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<sup>32</sup> HBAI excludes cases with spouses living away from home. EUROMOD includes them. HBAI includes for students, top-up loans and deducts loan repayments. EUROMOD ignores the loan repayments. HBAI adds the cash value of certain forms of income in kind (free school meals, Healthy Start vouchers and free school milk and free TV licence for those aged 75 and over); EUROMOD ignores these.



One plausible explanation for the underestimation of poverty rates, relative to those shown by HBAI is the fact that FRS data under-report receipt of means-tested benefits, particularly Pension Credit but also Income Support (and other working-age income tested benefits) and Housing benefits (Table 50). To the extent that EUROMOD estimates provide a closer match to external statistics on recipients of these benefits, we might expect EUROMOD estimates of poverty to be lower than those from HBAI. As a rough test of the hypothesis that under-reporting in the FRS explains the discrepancy we calibrated the take-up rates of these benefits in the EUROMOD simulations so that the number of recipients corresponds to that in FRS. This lowered the simulated median to some extent (by about 3%) and also increased the poverty rates to match those in HBAI to a much closer extent than when using un-calibrated EUROMOD recipient numbers. On this basis EUROMOD estimated the numbers below 60% of the median as 17.3% (compared with 18% in HBAI), for children the figure was 19.3% (20% in HBAI) and for older people it was 16.0% (18% in HBAI). The match using 50% and 70% thresholds showed a similar improvement.

Under-reporting of means-tested benefits in FRS is therefore a plausible component of the explanation of the discrepancy between HBAI and EUROMOD. However, we cannot be certain about this as it depends on the underlying reason for the FRS shortfall in recipients of these benefits. It could be due to non-reporting by recipients, mis-reporting by recipients (the income appears, but as part of another income component) or differential non-response by recipients. We would need to draw different conclusions, depending on which of these applies. If the main explanation is confusion about income sources by recipients then the explanation above is not relevant. However, this seems unlikely as few benefits are over-represented in terms of expenditure in FRS (see Table 45), although it is possible that this applies to some extent to the basic state retirement pension, leading to underestimation in recorded Pension Credit. But if this were the case, we would also expect to under-simulate Pension Credit to the same extent and this does not happen.

More work is required to fully understand the discrepancy in poverty rate estimates. This will include an examination of incomes at the median, which as shown by Table 51 are lower in EUROMOD than in HBAI.



Table 51. Poverty risk indicators from the UK Households Below Average Income (HBAI) statistics (2009/10 and 2010/11 incomes) and from EUROMOD (2009 and 2010 policies)

		Take up assumption	Median £ per month	Poverty risk: all			Poverty risk: children			Poverty risk: older people		
				50%	60%	70%	50%	60%	70%	50%	60%	70%
2009	HBAI		1,248	10	17	25	10	20	31	9	18	28
	FRS		1,277	8.8	16.6	25.2	10.2	20.1	31.5	7.4	16.8	27.5
	EUROMOD	100%	1,165	4.6	11.8	22.2	3.8	11.7	26.3	1.5	10.2	21.2
	EUROMOD	Incomplete	1,141	8.8	15.6	24.6	10.4	17.7	30.0	4.9	13.9	23.8
2010	HBAI		1,210	9	16	25	9	18	29	9	17	28
	EUROMOD	100%	1,188	4.5	11.4	21.6	3.7	11.0	25.0	1.3	9.7	20.9
	EUROMOD	Incomplete	1,164	8.8	15.4	24.3	10.2	17.3	29.4	4.7	13.6	23.3

Source: DWP, 2012: HBAI <http://research.dwp.gov.uk/asd/hbai/hbai2011/index.php?page=contents>

Notes: Poverty risk is defined as the percentage of people with household incomes below 50%, 60% or 70% of median equivalised household incomes. Incomes are shown as monthly £ sterling amounts equivalised by the modified OECD equivalence scale (single = 1). In these comparisons children are defined as aged under 16 or under 19 if in full-time non-advanced education and unmarried; older people are defined as 65+ if male and 60+ if female.

~ not yet available



#### 4.2.2 Income inequality

Table 52 compares estimates of income inequality and descriptions of the income distribution from EUROMOD with those published in the official UK HBAI statistics for 2009/10. The comparison is shown using two sets of EUROMOD estimates: assuming 100% take-up of means-tested benefits and tax credits, and using the incomplete take-up assumption. Also shown are statistics calculated by us from the FRS, using the EUROMOD sample and income concept.

In a similar way to the poverty estimates, the correction for non take-up improves the comparison. The Gini coefficient is increased by two points although there is still quite a large discrepancy between the HBAI estimate (0.36) and the EUROMOD estimate (0.32). One contributory factor is the way in which the HBAI statistics are corrected for lack of enough households with sufficiently high income in the FRS data. (The FRS estimate is only one percentage point higher than that from EUROMOD.) The correction uses information from tax statistics to inflate the incomes of some of the higher income households in the data (DWP, 2012). This has no effect on the median or poverty estimates but does affect the HBAI estimates shown on Table 52 for the Gini and the income share of the top decile group.<sup>33</sup> It also, by implication, reduces the share of all other decile groups. Once this is taken into account, the EUROMOD and HBAI estimates are generally quite close.

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<sup>33</sup> It does not seem to affect the median of the top decile group since the value of this taken from the FRS is higher rather than lower than the HBAI estimate. The definition of the “rich” in the 2008 HBAI data (who have their weights inflated and their income imputed from tax records) are working age individuals in GB with annual net income in excess of £150,000 or in N. Ireland in excess of £100,000. Those of pension age are treated similarly if they have annual gross income in excess of £60,000. It is not possible to translate these individual income levels into equivalised household disposable income as used in the HBAI statistics.



Table 52. Income distribution statistics from UK Households Below Average Income (HBAI) statistics and from, the FRS data and from EUROMOD 2009 incomes, for two take-up assumptions

	HBAI	FRS	EUROMOD		Ratio EUROMOD / HBAI	
			100%	Incomplete	100%	Incomplete
Gini coefficient	0.36	0.33	0.30	0.32	0.84	0.90
Mean	1,566	1,551	1,408	1,375	0.90	0.88
Median	1,248	1,277	1,165	1,141	0.93	0.91
Decile Group medians						
1	485	529	588	459	1.21	0.95
2	716	744	736	676	1.03	0.94
3	870	893	846	804	0.97	0.92
4	1,011	1,037	956	928	0.95	0.92
5	1,164	1,195	1,088	1,063	0.93	0.91
6	1,335	1,370	1,247	1,230	0.93	0.92
7	1,546	1,580	1,434	1,423	0.93	0.92
8	1,806	1,855	1,671	1,664	0.93	0.92
9	2,224	2,285	2,060	2,055	0.93	0.92
10	3,331	3,340	2,921	2,919	0.88	0.88
Decile Group Share %						
1	3.0	2.9	3.8	3.0	1.28	0.98
2	4.0	4.8	5.2	4.9	1.31	1.22
3	6.0	5.7	6.0	5.9	1.00	0.98
4	6.0	6.7	6.8	6.7	1.13	1.12
5	8.0	7.7	7.7	7.7	0.97	0.97
6	8.0	8.8	8.9	9.0	1.11	1.12
7	10.0	10.2	10.2	10.3	1.02	1.03
8	12.0	12.0	11.9	12.2	0.99	1.01
9	14.0	14.9	14.7	15.0	1.05	1.07
10	29.0	26.3	24.8	25.4	0.85	0.87

Sources: DWP, 2012: HBAI <http://research.dwp.gov.uk/asd/hbai/hbai2011/index.php?page=contents>  
 Notes: Mean and medians are in equivalised £ per month using the modified OECD equivalence scale (single=1). Two take-up assumptions for EUROMOD estimates: 100% and incomplete take-up.

### 4.3 Summary of “health warnings”

This final section summarises the main findings in terms of particular aspects of the UK part of EUROMOD or its database that should be borne in mind when planning appropriate uses of the model and in interpreting results.

- Although the sample size of the FRS survey data is large by international standards, care should be any way taken in interpreting results for small sub-groups of the population.
- High income people, self employment earnings and investment income are generally underrepresented, possibly due to higher survey non-response by the types of people concerned, and under reporting of such sources of income, particularly by high income respondents.



- Receipt of benefits or tax credits based on past circumstances is not modelled. It is effectively assumed that entitlement is based on current circumstances. This has particular bearing on simulations of Child Tax Credit and especially Working Tax Credit, which are in practice based on income in the previous year. Final awards are only adjusted if current year income exceeds a threshold which, in 2009 and 2010 especially was very high.
- Our baseline applies a correction for non take-up of means-tested benefits and tax credits to reduce the proportions of those entitled who are modelled to receive the benefit/credit. This correction is only approximate. It improves poverty and inequality estimates relative to those produced officially using the same underlying data. But some benefits remain over-simulated (Pension Credit Guarantee; Council Tax Benefit) and others under-simulated (Working Tax Credit and Child Tax Credit). For some applications of EUROMOD users are advised to explore the full-take up option as well.
- When comparing results for the UK with those for other countries it is important to remember that:
  - UK results are based on FRS data, not data from the EU-SILC. These data relate to 2009/10 not 2008 (2007 incomes).
  - The reference time period for UK data is (generally) the last month, rather than the previous year (as for EU-SILC).
- When using results from the 2010 to 2012 policy years it is important to remember that no adjustments have been made for demographic changes or changes in the composition or distribution of market incomes since 2009/10 (except those captured by updating by income source). In particular 2010 to 2012 baseline results do not capture the effects of recession on increased unemployment and inactivity or reductions in hours worked.
- The validation exercises conducted so far point to some puzzles that require further work to fully understand. Users are advised to read the validation section of this report and be aware of the issues raised in interpreting the results of their simulations.

## 5. REFERENCES

Department for Work and Pensions (2012), Households Below Average Income 1994/95 – 2010/011, DWP: London.

Department for Work and Pensions (2010), *Income Related Benefits Estimates of Take-Up in 2008/2009*. DWP: London.

HMRC (2010), *Child Tax Credit and Working Tax Credit Take-up Rates 2008-09*. HMRC: London.

## 6. SOURCES FOR TAX-BENEFIT DESCRIPTIONS/RULES

### 6.1 General sources for tax-benefit descriptions/rules

Adam S. and J. Browne (2006) 'A survey of the UK tax system', IFS Briefing note n.9, Institute for Fiscal Studies, London, available from <http://www.ifs.org.uk/publications/1711>

Child Poverty Action Group (2006) "Welfare Benefits and Tax Credits Handbook 2006/2007", CPAG London

Child Poverty Action Group (2007) "Welfare Benefits and Tax Credits Handbook 2007/2008", CPAG London

Child Poverty Action Group (2008) "Welfare Benefits and Tax Credits Handbook 2008/2009", CPAG London



Child Poverty Action Group (2009) “Welfare Benefits and Tax Credits Handbook 2009/2010”, CPAG London

Child Poverty Action Group (2010) “Welfare Benefits and Tax Credits Handbook 2010/2011”, CPAG London

Child Poverty Action Group (2011) “Welfare Benefits and Tax Credits Handbook 2011/2012”, CPAG London

Child Poverty Action Group (2012) “Welfare Benefits and Tax Credits Handbook 2012/2013”, CPAG London

HMRC (2009) “Tax Benefit Reference Manual 2009-10 Edition”, HM Treasury London.

## 6.2 Useful websites

**Her Majesty’s Revenue and Excise - [www.hmrc.gov.uk](http://www.hmrc.gov.uk)**

For particular topics:

<http://www.hmrc.gov.uk/taxcredits/index.htm>

<http://www.hmrc.gov.uk/incometax/index.htm>

<http://www.hmrc.gov.uk/individuals/tmanational-insurance.shtml>

**Information website**

<http://www.direct.gov.uk/en/MoneyTaxAndBenefits/index.htm>

**Department for Work and Pensions**

<http://www.dwp.gov.uk/>

**Institute for Fiscal Studies**

<http://www.ifs.org.uk/fiscalFacts/taxTables>