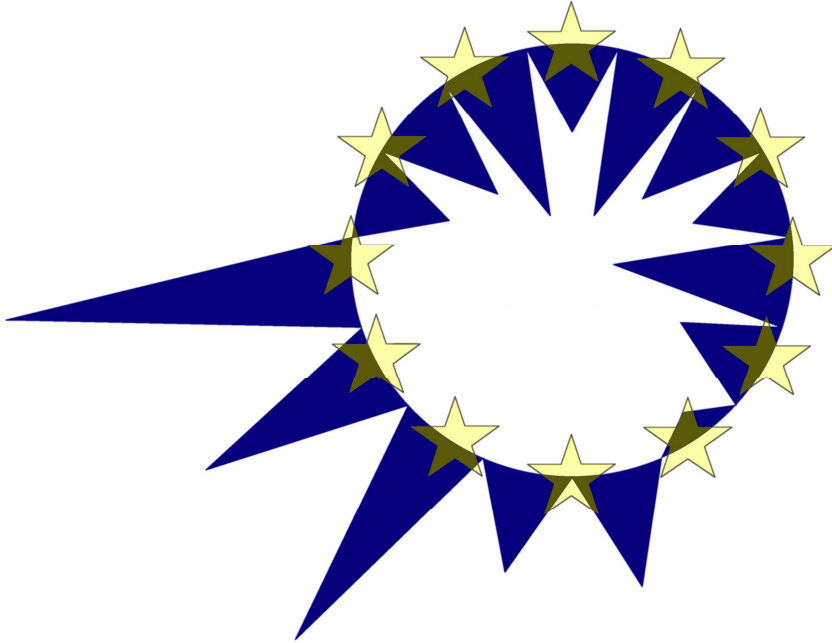


# **EUROMOD**

## **COUNTRY REPORT**



EUROMOD Country Report

**UNITED KINGDOM**  
**(2001 TAX-BENEFIT SYSTEM)**

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July 2004

# EUROMOD Country Report - United Kingdom

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## 1. Outline of the UK tax-benefit system in 2001

### Some basic information:

- 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*, the discretionary element of which is managed under fixed local budgets each year.
- The tax system generally changes in April each year. Main benefit changes happen at the same time, but may also be implemented in June or October.
- State pension age in 2001 was 60 for women and 65 for men.
- Minimum school leaving age is 16; dependent children are defined as aged under 16 or under 19 and in full-time non-advanced education and not married.
- For benefit purposes lone parents are the parents of resident dependent children; they do not cohabit with a partner of the opposite sex (whether or not any partner is the parent of the child is irrelevant).
- The income tax system is an individual system, with the spouses being assessed independently.
- 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 and state benefits and pensions are usually assessed and delivered on a weekly basis. Amounts are referred to in weekly terms. The exception is income tax, where liability is based on annual income and allowances and thresholds are referred to in annual terms.

### 1.1 Benefits<sup>2</sup>

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 which depends on having met certain conditions regarding *National Insurance contributions*. Some contributory benefits are subject to specific tests on current income. The second type is **non-contributory, non-means-tested** benefits. These benefits depend on certain contingencies such as disability or parenthood but do not require contributions to have been made and are not subject to an income test. The third type 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. From 1999, when Working Families' Tax Credit (WFTC) replaced Family Credit, some cash benefits have been replaced or supplemented by "tax credits". In 2001 WFTC was the only example. In practice, in spite of being administered by the tax authorities WFTC is very like a cash benefit and is treated as such here. The three types of benefits/credits are reviewed separately below.

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

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

<sup>2</sup> For more detailed information see (i) Tolley's *Social Security and State Benefits Handbook 2000-01*, Tolley's: Croydon; (ii) *National Welfare Benefits Handbook*, 2000/01, Child Poverty Action Group: London; (iii) The Department for Work and Pension's Tax-Benefit Model Tables Appendix A is a useful summary; see [http://www.dss.gov.uk/asd/asd1/Tax\\_Benefit\\_Model-2003.pdf](http://www.dss.gov.uk/asd/asd1/Tax_Benefit_Model-2003.pdf)

- 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 6 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 donee families are on *Income Support*.
- Student grants were replaced by loans in September 1998. The grant was non-taxable and means-tested on parental income. 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 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).

### ***1.1.a Contributory benefits***

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

**Job Seeker’s Allowance:** contributory (JSA) is a benefit for the **unemployed**, conditional of active job search; no additions for dependants; duration is up to 6 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:** 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 for those not eligible for SSP; 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; taxable.

**Retirement pension:** if they meet the contribution conditions people **over state pension age** 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; additions are paid for dependent spouses under pension age and dependent children; 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 benefit** is payable for 18 weeks if the claimant has herself met contribution conditions but she does not qualify for SMP. It is a flat rate benefit (there are two rates - a lower one for women not covered by an EC directive). There are no additions for dependants. Maternity benefit is not taxable.

### ***1.1.b Non-contributory, non-means tested benefits***

**Child benefit** is a universal flat-rate benefit paid to the carer of **each dependent child**. There is a higher rate for eldest or only dependent children, otherwise the rate does not vary. Child benefit is not taxable.

**Lone parent benefit** was a per-family addition payable to lone parents. From July 1998 lone parent benefit was abolished for new lone parents, and phased out for existing claimants.

**Attendance allowance** (AA) is a flat-rate benefit payable for people who are so disabled or sick that they **need care** during the day, at night or both (higher rate); not taxable.

**Disability Living Allowance** (DLA) is for people who become disabled before the age of 65 and have **personal care and/or mobility needs**. The care component is paid at one of 3 rates and the mobility component at one of two rates, depending on severity of need; not taxable.

**Severe Disablement Allowance** (SDA) is for people with at least 80% disability who do not qualify for *Incapacity Benefit* and is paid at a lower rate; additional payments for dependants; not taxable.

**Invalid Care Allowance** (ICA) 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 *DLA care component* or AA; dependants additions; taxable.

**Industrial Injuries Disablement Benefit** is a benefit for people who are long-term incapacitated due to injury at work; non-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 disabled as a result of service in HM Forces (not necessarily in a war). Not taxable.

### *1.1.c Means-tested benefits and credits*

**Job Seeker's Allowance** (income tested) is the social assistance benefit for the **unemployed** which may be claimed after entitlement to *contributory JSA* is 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*.

**Income Support (IS)** is the main **social assistance** benefit for people whose family incomes are lower than a specified level and who are not in work (or in work for less than 16 hours per week). It is intended to apply to pensioners, lone parents, sick and disabled people and others who are not expected to seek work. If 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 Support for people aged 60+ is known as **Minimum Income Guarantee (MIG)**

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 taxable (but most people on IS have incomes below the tax threshold).

Certain benefits-in-kind 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.

**Housing Benefit (HB)** covers rent. It is paid in full for IS 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. 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*. HB is assessed on weekly income and rent. It is not taxable.

**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 Families' Tax Credit (WFTC)** is a benefit for families with dependent **children where at least one parent is in employment** or self-employment for at least 16 hours per week. The benefit is tapered away with income increases above a minimum level; income is assessed after income tax and contributions; the maximum amount of benefit depends on the number of children but is paid at the same rate for couples and lone parents; a higher amount is paid if at least 30 hours are worked per week by at least one parent; capital rules apply in a similar way as in *IS*. In 1999 WFTC replaced Family Credit. This had the same structure but has a less generous maximum payment and a higher taper. WFTC it is allowed as a refundable

tax credit through the pay packet of the main earner rather than as a cash benefit paid to the carer of the children.

WFTC payments depend on income and circumstances in the few weeks before the claim, but entitlement lasts for 6 months, regardless of changes in income or circumstance. WFTC is taken into account in assessment of *HB* and *CTB*. It is not itself part of the income tax base.

**Disabled Persons Tax Credit** (DPTC) has a similar structure to *WFTC* but applies to **disabled people who are in paid work** for at least 16 hours per week (with or without children). It replaced Disability Working Allowance in 1999.

**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.

Table 1.1 provides an indication of the relative scale and coverage of each benefit by showing the number of recipients and the expenditure on each benefit. (According to the 2001 Census, the population in the UK was 58.79 million.<sup>3</sup> UK GDP was £994 billion in 2001.<sup>4</sup>)

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<sup>3</sup>Office for National Statistics, [www.statistics.gov.uk/census2001/pop2001/united\\_kingdom.asp](http://www.statistics.gov.uk/census2001/pop2001/united_kingdom.asp).

<sup>4</sup>Office for National Statistics, [www.statistics.gov.uk/STATBASE/tsdataset.asp?vlnk=205&More=Y](http://www.statistics.gov.uk/STATBASE/tsdataset.asp?vlnk=205&More=Y).



**Table 1.1 Benefits by number of recipients and expenditure in 2001/02: Great Britain**

BENEFIT	Recipients <sup>a</sup> (thousand)	Expenditure <sup>b</sup> £m / year
<b>Contributory benefits</b>		
Job Seeker's Allowance (contributory)	165	470
Incapacity Benefit	1,520	6,749
Retirement Pension (basic)	11,067 <sup>c, d</sup>	36,594 <sup>d, e</sup>
Widow's Benefits	256 <sup>c</sup>	1,099
Maternity Allowance	16	56
<b>Non-contributory, non-means-tested benefits</b>		
Child Benefit	7,066	8,795 <sup>f</sup>
Attendance Allowance	1,290	3,124
Disability Living Allowance	2,240	6,580
Severe Disablement Allowance	367	1,040
Invalid Care Allowance	406	932
Industrial Injuries Disablement Benefit	280	778
War Pension <sup>g</sup>	273	1,238
Winter Fuel Payment	11,202 <sup>h</sup>	1,681
<b>Means-tested benefits</b>		
Job Seeker's Allowance (means-tested)	701	2,136
Income Support (includes MIG)	3,928	14,101
Housing Benefit	3,863	11,589
Council Tax Benefit	4,686	2,686
Working Families' Tax Credit <sup>i</sup>	1,258	5,205
Disabled Persons Tax Credit <sup>j</sup>	31	120

**Sources:** *Department for Work and Pensions* <sup>a</sup> May 2001 from *Work and Pensions Statistics 2001*, [www.dwp.gov.uk/asd/WPS\\_2001.pdf](http://www.dwp.gov.uk/asd/WPS_2001.pdf) unless otherwise specified.

<sup>b</sup> 2001-2 out-turns from Benefit Expenditure Tables: medium-term forecast Table 3 (as at 9/1/04) from [www.dwp.gov.uk/asd/asd4/medium\\_term.asp](http://www.dwp.gov.uk/asd/asd4/medium_term.asp) unless otherwise specified.

<sup>c</sup> March 2001;

<sup>d</sup> Includes 853 thousand recipients resident overseas;

<sup>e</sup> Excludes SERPS, includes non-contributory retirement pension (£29m);

<sup>f</sup> Includes residual one parent benefit;

<sup>g</sup> *War Pension*: Defence Information and Analysis Agency, Table 1.1 [www.dasa.mod.uk/natstats/warpens/historical/warpens\\_sep02.pdf](http://www.dasa.mod.uk/natstats/warpens/historical/warpens_sep02.pdf).

<sup>h</sup> *Work and Pensions Statistics 2002* [www.dwp.gov.uk/asd/asd1/workandpens/2002/WPS\\_2002.pdf](http://www.dwp.gov.uk/asd/asd1/workandpens/2002/WPS_2002.pdf);

<sup>i</sup> *Inland Revenue* WFTC Statistics Quarterly Enquiry, UK, May 2001; expenditure calculated as recipients x average payment; includes £278m childcare component [www.inlandrevenue.gov.uk/wftctables/wftc\\_may\\_01.pdf](http://www.inlandrevenue.gov.uk/wftctables/wftc_may_01.pdf);

<sup>j</sup> *Inland Revenue* DPTC (figure for UK) July 2001; expenditure calculated as recipients x average payment: [www.inlandrevenue.gov.uk/dptctables/dptc\\_jul01.pdf](http://www.inlandrevenue.gov.uk/dptctables/dptc_jul01.pdf)

## 1.2 Contributions<sup>5</sup>

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 contribution, the most important in terms of revenue-raising being Class 1, which makes up 96% of the total for 2001/02.

Employees pay “primary” Class I 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 flat payment which is the equivalent of employee Class 1 contributions. Low self-employment income is exempt. The equivalent of the employer contribution is 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 employments.)

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 allows them to pay no Class 2 (if self-employed) or a low rate of Class 1 (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.

## 1.3 Personal direct taxes

Table 1.2 shows the composition of UK taxes, including NICs, in 2001/02 as a percentage of GDP. The personal direct taxes that potentially come within the remit of EUROMOD are NICs, income tax, Council Tax, and the three capital taxes, stamp duties, capital gains tax and

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<sup>5</sup> For more detailed information see Child Poverty Action Group *Welfare Benefits Handbook 2001-02*, CPAG: London.

inheritance tax. These together make up about half of all UK tax revenues. They are considered in turn below.

**Table 1.2 UK taxes and contributions, 2001/02**

	£ billion	% of GDP	% of total
Income tax <sup>a</sup>	108.1	10.8	29.2
Social security contributions	63.2	6.3	17.1
Value Added Tax	61.0	6.1	16.5
Customs and Excise duties and levies	43.9	4.4	11.9
Corporation tax	32.1	3.2	8.7
Business rates	18.0	1.8	4.9
Council Tax	15.3	1.5	4.1
Stamp duties	7.0	0.7	1.9
Capital gains tax	3.0	0.3	0.8
Inheritance tax	2.4	0.2	0.6
Other taxes and royalties	15.9	1.6	4.3
<b>Total net taxes and contributions<sup>a</sup></b>	<b>369.9</b>	<b>36.8</b>	<b>100.0</b>

**Source:** HM Treasury, *Financial Statement and Budget Report March 2003*, Table C8 and C9, [www.hm-treasury.gov.uk/budget/bud\\_bud03/budget\\_report/bud\\_bud03\\_repbcr.cfm](http://www.hm-treasury.gov.uk/budget/bud_bud03/budget_report/bud_bud03_repbcr.cfm)

<sup>a</sup> Figures have been calculated so that taxes are gross of WFTC and DPTC but net of the Children's Tax Credit.

### 1.3.a Income Tax

The UK income tax system is an individual system, with the incomes of married people being taxed independently. There is an individual personal allowance and, in 2001/02, non-refundable tax credits for married couples above the age of 65 ("Married couples allowance - MCA"). The personal allowance is higher for people aged over 65 and higher still for those aged over 75 ("Age allowance"), although the 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). The value of the main tax expenditures and structural reliefs is shown in Table 1.3. (Note that these figures are provided to give a flavour of the magnitudes involved. Interaction between income tax and corporation tax makes exact calculations for income tax alone difficult. In addition, the incidence of some of the reliefs is not clear-cut.)

The total estimated cost of reliefs and tax expenditures is £64.5 billion, which can be compared with revenue of income tax £110.2 billion (Table 1.2).

The 2001 tax schedule consists of three rate bands: a narrow first band of 10%, a wide "standard rate" band of 22% and a higher rate of 40%, affecting only 10% of income taxpayers. Income from financial capital that was not tax-exempt was taxed at 20% if the taxpayer's marginal rate on that income was within the standard rate band. Table 1.4 shows the total tax liability and the number of taxpayers with marginal rates in each band.

**Table 1.3 Estimated costs of principal tax expenditures and structural reliefs, income tax, 2001/02**

	£ million
Personal allowance	34,800
Age related allowance	1,400
Other reliefs and exemptions	20,655
including <i>Contributions to approved pension schemes</i>	13,000
Tax credits	7,725
including <i>Working Family Tax Credit</i>	5,400
<i>Disabled Persons Tax Credit</i>	130
<i>Children's Tax Credit</i>	2,100
<b>TOTAL</b>	<b>64,580</b>

Source: HM Treasury, 2002, *Tax Ready Reckoner and Tax Reliefs*, Table 7.  
[www.hm-treasury.gov.uk/media/DB8B5/adtr02.pdf](http://www.hm-treasury.gov.uk/media/DB8B5/adtr02.pdf)

**Table 1.4 Number of income taxpayers by marginal rate and proportion of total tax, 2001/02**

Band	Taxpayers with marginal rate in band (thousands)	% of total income tax
Lower (10%)	3,890 <sup>a</sup>	0.8
Standard (22%)	21,700	45.8
Higher (40%)	3,000	53.4
<b>Total</b>	<b>28,590</b>	<b>100.0</b>

Source: Calculated from Statistics on Income Distribution, Inland Revenue Table 2.1 and Table 2.6  
[www.inlandrevenue.gov.uk/stats/income\\_tax/menu.htm](http://www.inlandrevenue.gov.uk/stats/income_tax/menu.htm)

<sup>a</sup> Includes 860 thousand whose marginal rate is the “savers” rate (20% or 10%)

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.

### 1.3.b Council Tax

Council tax is a local tax that 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 (ie 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 4<sup>th</sup> 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).<sup>6</sup>

### 1.3.c Capital Taxes

**Capital gains tax** is levied on gains arising from the disposal of assets by individuals, representatives and trustees. There is an allowance (£7,500 in 2001/02<sup>7</sup>) 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. In 2001/02 there were 130,000 people paying capital gains tax.<sup>8</sup>

**Inheritance tax** 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 2001/02 no tax was charged on estates worth less than £242,000.<sup>9</sup> Certain assets such as farms and small businesses are eligible for relief. Transfers to spouses and charities are exempt.

**Stamp duty** is 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. (From March 2000 the rate was zero on properties below of £60,000; 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.<sup>10</sup>)

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<sup>6</sup> See Hills J and H Sutherland, 1991, 'The Proposed Council Tax', *Fiscal Studies*, November.

<sup>7</sup> See Capital Gains Tax, Inland Revenue Table TA.7

<sup>8</sup> See Tax receipts and tax payers, Inland Revenue Table T1.4

<sup>9</sup> See Tax Rates and Allowances for 2001/02

<sup>10</sup> See Rates of Stamp Duty, Inland Revenue, Table TA.9

[www.inlandrevenue.gov.uk/stats/stamp\\_duty/00ap\\_a9.htm](http://www.inlandrevenue.gov.uk/stats/stamp_duty/00ap_a9.htm)

## 2. Simulation of taxes and benefits in EUROMOD

### 2.1 The scope of EUROMOD

Not all the taxes and benefits mentioned in the previous section are simulated by EUROMOD. 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. Table 2.1 classifies each of the main tax-benefit instruments (and some minor ones introduced above) into one of these three groups and provides a brief explanation as to why the instrument is not fully simulated if this is the case.

#### 2.1.1 Structural changes since 1998

As well as changes in the level of taxes and benefits, the following are the main structural changes in the UK system since 1998:

- (a) Introduction of the pensioner's annual winter fuel allowance - one payment per household containing someone aged over 60.
- (b) Children's tax credit - a non-refundable tax credit replacing the Married Couples allowance (except for elderly) and Additional Personal allowance.
- (c) Tax relief on mortgage interest is abolished.
- (d) Introduction of a national minimum wage.
- (e) Income Support for the elderly (now called Minimum Income Guarantee) has higher capital limits than for other claimants.
- (f) Switch from trigger to slice structure in ERSICs. .
- (g) It is worth noting that the Working Families Tax Credit, introduced in 1999, is not actually a structural change. It has the same structure as Family Credit.

### 2.2 The order of simulations in the 2001 system

The following table shows the order in which the main elements of the UK system are simulated. This table, and others like it that are extracted from EUROMOD parameter sheets are shaded in grey. This is extracted from the sheet *spine\_uk\_2001*.

Section	Policy	Description	Main output
2.3	<b>Wages_min_UK</b>	<i>Minimum wage introduced in 1999</i>	coempy
2.4	<b>EESIC_UK</b>	<i>Employee Social Insurance Contribution</i>	co_gen_eesic
2.5	<b>ERSIC_UK</b>	<i>Employer Social Insurance Contribution</i>	co_gen_ersic
2.6	<b>iben_ue_UK</b>	<i>Job Seekers Allowance (contributory unemployment benefit)</i>	uk_iben_UE
2.7	<b>sben_heating_UK</b>	<i>Pensioner's annual heating allowance</i>	uk_sben_heating
2.8	<b>IT_UK</b>	<i>Income Tax</i>	co_nat_inctax
2.8.1	<b>IT_chTcred_UK</b>	<i>Children's tax credit</i>	co_nat_inctax
2.9	<b>SBEN_CB_UK</b>	<i>Child Benefit</i>	uk_sben_CB
2.10	<b>SBEN_FC_UK</b>	<i>Working Family Tax Credit</i>	uk_sben_FC
2.11.3	<b>SBEN_virt_IS_UK</b>	<i>Preliminary IS used for the nondependent deduction</i>	uk_IS_temp
2.11.2	<b>sben_nondep_ded_UK</b>	<i>Nondependent deduction</i>	uk_sben_nondep_ded
2.11.1	<b>SBEN_IS_UK</b>	<i>Actual Income Support</i>	uk_sben_IS
2.12	<b>sben_hb_UK</b>	<i>Housing benefits</i>	co_sben_hb
2.13.2	<b>sben_ctb_ndd_UK</b>	<i>Council Tax Benefit Nondependent deduction</i>	uk_sben_ctb_nondep_ded
2.13.1	<b>sben_ctb_UK</b>	<i>Council tax benefit</i>	uk_sben_ctb

**Table 2.1 UK 2001 tax-benefit instruments and their treatment in EUROMOD**

<b>BENEFITS</b>	<b>Treatment in EUROMOD</b>	<b>Variable name(s)</b>	<b>Why not fully simulated?</b>
Job Seeker's Allowance (contributory)	Partly simulated	uk_iben_ue (ukBENunb not used)	No data on contribution history
Incapacity Benefit	Included	ukBENinc	Inadequate data on length of sickness spell and contribution history
Retirement Pension (basic)	Included	ukBENpen	No data on contribution history or retirement date
Widow's Benefit	Included	ukBENwid	No data on deceased husband's contributions or date of widowhood
Maternity Benefit	Included	coMATERY	No data on pregnancy dates, contribution conditions, previous earnings
Child Benefit	Simulated	uk_sben_cb (ukBENchb not used)	
Attendance Allowance	Included	ukBENatt	Insufficient information on disability
Disability Living Allowance	Included	ukBENDsc+ ukBENmob	Insufficient information on disability
Severe Disablement Allowance	Included	ukBENSda	Insufficient information on disability
Invalid Care Allowance	Included	ukBENica	Insufficient information on disability
Industrial Injuries Disablement Benefit	Included	ukBENind	Insufficient information on disability
War Pension	Included	ukBENwar	Insufficient information on injury
Job Seeker's Allowance (means-tested)	Simulated	uk_sben_is (ukBENins not used)	Simulated as part of Income Support
Income Support (including Minimum Income Guarantee)	Simulated	uk_sben_is (ukBENins not used)	
Housing Benefit	Simulated	co_sben_hb (ukHB not used)	
Council Tax Benefit	Simulated	uk_sben_ctb (ukBENctb not used)	
Working Family Tax Credit	Simulated	uk_sben_fc (ukBENfcr not used)	
Disabled Persons Tax Credit	Included	ukBENDwa	Insufficient information on disability; scheme substantially modified since data year and insufficient cases in data year (2).
Social Fund	Excluded	-	No data; cannot model local discretion
Winter fuel allowance	Simulated	uk_sben_heating	

...continued

.... Table 2.1 continued

<b>TAXES</b>	<b>Treatment in EUROMOD</b>	<b>Variable name(s)</b>	<b>Why not fully simulated?</b>
Income tax	Simulated	co_nat_inctax	Some exemptions and small allowances are ignored.
Children's tax credit	Simulated	co_nat_inctax	Part of income tax
National Insurance contributions	Simulated	co_gen_eesic (coEESIC not used)	Special schemes for small groups are ignored.
Value Added Tax	Optional <sup>a</sup>	-	
Customs and Excise duties and levies	Optional <sup>a</sup>	-	
Corporation tax	Excluded	-	Not a personal tax
Business rates	Excluded	-	Not a personal tax
Council Tax	Included	ukLOCTAX	No data on property value or council tax band; no location information below standard region.
Stamp duties	Excluded	-	No suitable data; small numbers
Capital gains tax	Excluded	-	No suitable data; small numbers
Inheritance tax	Excluded	-	No suitable data; small numbers
Other taxes and royalties	Excluded	-	No suitable data; small numbers
<b>OTHER INCOME COMPONENTS</b>			
Earnings related state pension	Included	ukbenser	Contribution history unknown
Student grants and loans	Included	coEDY	Loans replaced grants since data year; grant information is used.
Statutory Sick Pay	Included	ukBENssp	No data on qualifying conditions
Statutory Maternity Pay	Included	coMATERY	No data on qualifying conditions
Childcare cost benefit/subsidy	Excluded	-	No data
Child Support	Included	coMAINTY	No data on absent parents; system changed since data year; old maintenance payment data used.
Foster allowances	Included	ukFOST	Numbers too small
Training allowances	Included	ukBENtrn	System changed too much to model between data and policy year.

**Notes:** a These taxes may be simulated from imputed expenditure data. Documentation is provided in Baldini et al (2001)



The operation of the Minimum Wage (adjusts *coempy*) potentially affects all instruments which depend on original income so this is calculated first. The four means-tested benefits (or credits), Working Family Tax Credit - WFTC (*uk\_sben\_FC*), Income Support (*uk\_sben\_IS*), Housing Benefit (*co\_sben\_hb*) and Council Tax Benefit (*uk\_sben\_ctb*) all depend on income after income tax (*co\_nat\_inctax*) and employee and self-employed contributions (*co\_gen\_eesic*) have been deducted. They are therefore simulated after the simulation of income taxes and contributions. The means-tested benefit income tests also take account of Job Seekers Allowance (JSA - contributory unemployment benefit) (*uk\_iben\_UK*) and (with the exception of WFTC), Child Benefit (*uk\_sben\_CB*). So these non-means-tested benefits must be simulated first. Housing Benefit and Council Tax Benefit include WFTC in their means-test and their calculation depends on whether or not Income Support is received. So this determines the order of calculation of means-tested benefits. Income Support, Housing Benefit and Council Tax Benefit entitlements depend on whether there are non-dependent adults living in the household. The definition of non-dependent and the associated deduction (*uk\_sben\_nondep\_ded*, *uk\_sben\_ctb\_nondep\_ded*) are calculated before the calculation of the respective benefits.

Since the definition depends on IS receipt by the non-dependent, entitlement to this (*uk\_IS\_temp*) must be calculated first. There is no interaction between contributions and income tax so these instruments could be simulated in any order. The Children's Tax Credit (*uk\_it\_chtcred*) is deducted from income tax so this is calculated straight after the main income tax calculation. JSA is taxable so must be simulated before income tax. In principle Income Support (IS) is taxable too but a person in receipt of IS all year would have an income too low to pay tax so this possibility is ignored. (Part year recipients may pay tax on their IS but these instances are not captured by the weekly micro-data - see section 3.4.)

Employer contributions (*co\_gen\_ersic*) and the winter fuel allowance (*uk\_sben\_heating*) do not interact with any other instruments and could be calculated at any point.

### 2.3 Minimum Wage (Policy *WAGES\_MIN\_UK*)

A national minimum wage was introduced in April 1999. In June 2001 it was £3.70 per hour for employees aged 22 and over and £3.20 for those aged 18-21 inclusive. No minimum wage is applied to children working in part-time jobs or to those aged 16-17 in full or part-time jobs. There are few other exemptions and these are ignored. (The main rate was increased to £4.10 in October 2001.)

The application of the minimum is modelled as follows

- Eligibility is assessed for the two age ranges using *co\_SBEN\_elig*
- Earnings taken from the data are updated to 2001 levels using indexes documented in section 3.5 of this country report.
- Hourly earnings are calculated by dividing weekly earnings by weekly hours (note that for people with more than one job this is done using total hours and earnings; ideally it would be done separately for each job). The example shows how this is done for the adult rate.
- The hourly rate is compared with the legal minimum, depending on the person's age. If it is less than the minimum, the 2001 weekly earnings are taken to be the hours given by the data multiplied by the appropriate legal minimum hourly rate.
- (*coempy*) is overwritten with the new monthly level of earnings.

The box (overleaf) shows the calculation for employees aged over 22

co_MinWage	UK_2001	Minimum Wage
must_be_elig(0/1)	1	
wage_var	coempy	
wage_il	n/a	
hours_var	cohours	
H_period(w/m/y)	w	
minHouR_wage	3.7	
NoIfInc_il	minWageY	
delta(0/1)	0	
output_var	coempy	
TAX_UNIT	individual	
SWITCH	1	

## 2.4 Employee (and self-employed) Social Insurance Contributions (policy *EESIC\_UK*)

Individuals between the ages 16 (*minage*) and 64 (*maxagm*) (men) or 59 (*maxagf*) (women) are subject to Class 1 contributions (*uk\_eesic\_nic1*) on their gross earnings (*ukNIC1\_il* = *ukNIC1*). Contributions are paid on earnings between a weekly lower limit £87 (*low\_lim*) and upper limit £575 (*top\_lim*). If earnings are less than the lower limit, nothing is paid.<sup>11</sup> Earnings above the upper limit are ignored. If the person is non-contracted out of the State Earnings Related Pension Scheme the rate is 10% (*UKNIC1\_rt*). If they are contracted out (and are paying contributions into a private scheme) then they pay a lower rate of 8.4% (*UKNIC1\_rt2*). If they are married or divorced women and have opted out, they pay a lower rate 3.85% (*UKNIC1\_rt3*). Which of the three regimes a person contributes under is information provided in the micro-data (*ukOUTPEN*).

In 2001 the upper limit for contracting out and the upper limit for any contributions were the same. An additional parameter is available (*up\_lim*), in 2001 set at the same value as (*top\_lim*) - £575 - which allows the upper limit for all contributions to be raised while retaining a limit at a lower level on reduced rate contracted out contributions. Contributions on earnings between (*up\_lim*) and (*top\_lim*) would be paid at rate (*up\_rate*). This is currently set at 10%.

uk_eesic_nic1	UK_2001	Class 1 National Insurance contributions (employees) - semi-trigger structure
<i>lfix</i>	0	rate charged below <i>low_lim</i> if earnings > <i>low_lim</i>
<i>up_lim</i>	575	upper limit to band in which contracting-out is possible
<i>low_lim</i>	87	lower earnings limit
<i>top_lim</i>	575	upper earnings limit - ceiling to contributions
<i>up_rate</i>	0.1	rate charged above <i>up_lim</i>
<i>UKNIC1_rt1</i>	0.1	rate between <i>low_lim</i> and <i>up_lim</i> if not contracted out
<i>UKNIC1_rt2</i>	0.084	rate between <i>low_lim</i> and <i>up_lim</i> if contracted out
<i>UKNIC1_rt3</i>	0.0385	rate between <i>low_lim</i> and <i>up_lim</i> if qualifying married woman
<i>minage</i>	16	min age 16
<i>maxagm</i>	65	max age for men 64
<i>maxagf</i>	60	max age for women 59
<i>ukNIC1_il</i>	<i>ukNIC1</i>	

People with self-employment income are subject to Class 2 (*uk\_eesic\_nic2*) and Class 4 (*uk\_eesic\_nic4*) contributions. In both cases age limits apply (in 2001 they are the same as

<sup>11</sup> In 1998 once the lower limit is reached, contributions were charged on all earnings but the rate on earnings below the lower threshold was lower and set by (*lfix*) which is zero in 2001.

those for Class 1). Class 2 is a flat payment £2 (`pay`) paid in each week that a person has self-employment income (`ukNIC2_il = ukNIC2`) over £76.06 (`lim`).

<code>uk_eesic_nic2</code>	<code>UK_2001</code>	<b>Class 2 National Insurance contributions (self-employed)</b>
<code>lim</code>	76.06	threshold below which no payment
<code>pay</code>	2	flat payment
<code>minage</code>	16	min age 16
<code>maxagm</code>	65	max age for men 64
<code>maxagf</code>	60	max age for women 59
<code>ukNIC2_il</code>	<code>ukNIC2</code>	

Class 4 contributions are paid on self-employment income (`ukNIC4_il = ukNIC4`) at a rate of 7% (`UKNIC4_rt1`) between a lower limit £87.21 (`low_lim`) and an upper limit £575 (`top_lim`). No contributions are paid on income below the lower limit and income above the upper limit is ignored. The limits apply to annual income but in EUROMOD are modelled on a monthly basis (and specified on a weekly basis).

There is an annual maximum payment for people who are liable for a combination of Class 1, 2 and 4 contributions. This is equal to the maximum Class 1 contribution. It is programmed to apply automatically and cannot, as things stand, be switched off using parameters. (This will be changed in future versions of EUROMOD. In the current version, users should be aware that policy changes which increase Class 4 liabilities will not necessarily have their full impact on individuals who have employment as well as self-employment income.)

<code>uk_eesic_nic4</code>	<code>UK_2001</code>	<b>Class 4 National Insurance contributions (self-employed) slice structure</b>
<code>low_lim</code>	87.21	threshold below which no payment
<code>top_lim</code>	575	upper limit (ceiling)
<code>UKNIC4_rt1</code>	0.07	rate between <code>low_lim</code> and <code>top_lim</code>
<code>minage</code>	16	min age 16
<code>maxagm</code>	65	max age for men 64
<code>maxagf</code>	60	max age for women 59
<code>ukNIC4_il</code>	<code>ukNIC4</code>	

## 2.5 Employer Social Insurance Contributions (policy `ERSIC_UK`)

The age condition for employer contributions (age 16+ with no upper limits) are set using `co_SBEN_Elig`. If earnings (`Le_incl_il = ukNIC1`) are less than the lower earnings limit (`Le_incl_lt`) then contributions are not calculated. (Note that the earnings definition is the same for employee and employer contributions.)

Using (`Base_IL = ukNIC1`) as the earnings definition (in 2001 it is the same as employee contributions), employer contributions are calculated using (`co_schedule`) which allows for the more usual “slice” schedule (rather than a “trigger” structure as in 1998). There are two versions of the schedule, one for those who are contracted out of the State Earnings Related Pension Scheme (indicated by micro-data variable `ukOUTPEN`) – this is the version illustrated below – and one for those non-contracted out. A single rate is charged on all earnings above the lower threshold for this group. For the non-contracted out group a lower rate (`rate2`) is charged between the upper (`band2`) and lower limits (`band1`) and the non-contracted out rate (`rate3`) is charged on earnings above the upper limit. There is no upper ceiling on UK employer contributions.

co_schedule	UK_2001	Not contracted out
must_be_elig	1	
nbands	3	
band1	87	
band2	575	
rate1	0	
rate2	0.089	
rate3	0.119	
output_var	co_gen_ersic	
Base_IL	ukNIC1	
TAX_UNIT	individual	
SWITCH	1	

For illustrative purposes Table 2.2 shows the employer contributions due at various levels of earnings in 2000/01.

**Table 2.2 Employer contributions by earnings level, 2001/2002<sup>a</sup>**  
**£/week**

Earnings	Not contracted out	Contracted out
=<87	0.00	0.00
97	1.19	0.89
575	58.07	43.43
1087	119.00	104.36
		=43.43+ 0.119*(1087-575)

**Notes:** 6 April 2001 to 5 April 2002

**Source:** Not Contracted Out and Contracted Out contributions for employers, Inland Revenue. Tables A and D. [www.inlandrevenue.gov.uk/pdfs/emp2001/ca38.pdf](http://www.inlandrevenue.gov.uk/pdfs/emp2001/ca38.pdf) and [www.inlandrevenue.gov.uk/pdfs/emp2001/ca39.pdf](http://www.inlandrevenue.gov.uk/pdfs/emp2001/ca39.pdf)

## 2.6 Job Seekers Allowance (contributory unemployment benefit) (policy *IBEN\_UE\_UK*)

The age conditions for receipt of contributory JSA (aged under 60 if a woman and under 65 if a man) are set using (*co\_SBEN\_Elig*).

The other main condition that is used is that the micro-data show current unemployment benefit receipt. (Unemployment benefit was the name given to the equivalent insurance benefit in the data year.) This substitutes for modelling contribution conditions. This is done by setting (*benelig=1*) and defining (*benelig\_name = ukBENunb*) which is recorded benefit receipt in the micro-data.

A third condition is that hours of work should be less than some weekly maximum (*ge\_hours\_lt*) – 16 in 2001.

The basic weekly amount of JSA is calculated using (*co\_SBEN\_Calc*). 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.

co_SBEN_Calc	UK_2001
SingPay	31.95
wdrl_rt	1
rep_rt	0
rep_prev_inc_il	0
SBEN_amt_max	0
SBEN_max	0
SBEN_amt_min	0
SBEN_min	0
cohab=spouse	1
es_age1	1
es_age1_min	0
es_age1_max	17
es_age2	1.314554
es_age2_min	18
es_age2_max	24
es_age3	1.660407
es_age3_min	25
es_age3_max	130

There are two ways in which the basic benefit can be reduced. First, benefit is reduced £ for £ with any earnings ( $disregard_{il} = earns$ ) after the first disregarded amount of £5 ( $disregard_{amt}$ ). Then any occupational or private pension ( $disregard_{il}=pen$ ) over £50 ( $disregard_{amt}$ ) causes the benefit to be reduced £ for £.

co_SBEN_Disregard	UK_2001
ge_disregard	0
le_disregard	0
disregard_amt	5
disregard_il	earns
cohab=spouse	1
es_htu	1
TAX_UNIT	individual
co_SBEN_Means	
Means_inc_il	earns
TAX_UNIT	individual
co_SBEN_Disregard	
ge_disregard	0
le_disregard	0
disregard_amt	50
disregard_il	pen
cohab=spouse	1
es_htu	1
TAX_UNIT	individual

Contributory JSA is payable for 6 months only. EUROMOD normally does not take account of this, but in calculating the equivalent of annual income, it is possible to adjust the amount using ( $co\_multiply\_output$ ) with ( $factor = 0.5$ ). SWITCH is set to zero for most applications.

co_multiply_output	UK_2001
factor	0.5
TAX_UNIT	individual
SWITCH	0

## 2.7 Winter fuel allowance (pensioner's annual heating allowance) (Policy *SBEN\_HEATING\_UK*)

This is an annual allowance paid to any household containing a person aged 60+. It is intended to cover extra heating costs for elderly people during winter months. It replaces additional payments that were made if the weather changed in specific ways (ie the temperature fell below a certain point and stayed low for a certain number of days), which were not modelled (for obvious reasons) for 1998. The amount payable in 2001 was £150, which is translated in the parameter sheets (*uk\_sben\_heating*) to £2.88 per week.

The allowance is non-taxable and is not taken into account in any other instrument. In EUROMOD the default sharing assumption is that the amount is shared equally by all those in the household aged over 59.

## 2.8 Income Tax (Policy *IT\_UK*)

The income tax schedule (*co\_it\_schedule*) consists of 3 bands (*nbands*) and is applied at the individual level to a tax base defined by ( $\text{TaxableY}_{il} = \text{TaxBase}$ ).

<i>co_it_schedule</i>	UK_2001	
<i>nbands</i>	3	number of bands
<i>tax_band1</i>	1880	upper limit of first band
<i>tax_band2</i>	29400	upper limit of second band
<i>tax_rate1</i>	0.1	
<i>tax_rate2</i>	0.22	
<i>tax_rate3</i>	0.4	
<i>TaxableY_il</i>	TaxBase	
<i>TAX_UNIT</i>	individual	

Investment income ( $\text{red\_rate}_{il} = \text{invrent}$ ) which falls within the standard rate band is taxed at the reduced rate of 20% (*red\_rate*). The “standard rate” is defined by setting (*red\_rateno*) to the relevant band number (=1 in 2001) with the lowest band numbered zero. (Note that rate only applies in the relevant band, not to bands below it regardless of the level of the rates in relation to the special rate.) It is assumed that investment income forms the “top slice” of taxable income. The tax schedule for 2001/02 is shown in Table 2.3.

<i>uk_it_inctax_red</i>	UK_2001	
<i>red_rate</i>	0.2	rate on investment income ( $\text{TaxableY}_{il}$ )
<i>red_rateno</i>	1	
<i>red_rate_il</i>	invrent	
<i>TaxableY_il</i>	TaxBase	
<i>TAX_UNIT</i>	individual	
<i>SWITCH</i>	1	

**Table 2.3 Income tax schedule in 2001/02**

Upper limit of total taxable income after personal tax- free allowance and other exemptions (£/year)	Marginal rate on taxable	
	earned income (%)	investment savings (%)
1,800	10	20
29,400	22	20
> 29,400	40	40

The main personal allowances and credits are summarised in Table 2.4.

**Table 2.4 Personal tax allowances and credits in 2001**

Allowance/credit	Amount per year £	Value £/year
Single personal allowance all individuals ( <i>co_it_main_tfa</i> )	£4,535	Depends on marginal rate of tax: min 0; max £1,814
Age allowance Age 65-74 ( <i>uk_age_it_tfa1</i> )	£5,990 reduced to £4,535 (50% of income over £17,600)	Depends on taxable income and marginal rate: min 0; max £1,814
Age allowance Age 65-74 ( <i>uk_age_it_tfa2</i> )	£6,260 reduced to £4,353 (50% of income over £17,600)	Depends on taxable income and marginal rate: min 0; max £1,814
Married couples age allowance: Age 65-74 ( <i>uk_marr_age_it_tfa1</i> )	£5,365 reduced to £0 (50% of income over £17,600, less any reduction to personal age allowance)	Up to £536.5 per couple
Married couples age allowance: Age 75+ ( <i>uk_marr_age_it_tfa2</i> )	£5,435 reduced to £0 (50% of income over £17,600, less any reduction to personal age allowance)	Up to £543.5 per couple

The basic tax free- personal allowance is defined in (*co\_it\_main\_tfa*). It (*tfa*) applies to people of working age and younger. Higher allowances apply to people in two older age groups, defined in (*uk\_age\_it\_tfa1*) and (*uk\_age\_it\_tfa2*). The additional amounts are tapered away (*ageallow\_taper*) with income (*TaxableY\_il*) over a limit (*ageallow\_inc*). Once the allowance has been reduced to the basic level (*ageallow*) there is no more reduction.

<b>co_it_main_tfa</b>	<b>UK_2001</b>	
tfa	4535	allowance
age_limit1	0	lower age limit
age_limit2	64	upper age limit
TAX_UNIT	individual	
<b>uk_age_it_tfa1</b>	<b>UK_2001</b>	
age_limit1	65	lower age limit
age_limit2	74	upper age limit
ageallow_inc	17600	income limit ( <i>TaxableY_il</i> ) above which age-related addition to personal allowance is tapered away
ageallow_taper	0.5	taper
ageallow	4535	regular personal allowance
ageallow_limit	5990	maximum age-related allowance
TaxableY_il	IT_TaxableY	
TAX_UNIT	individual	
<b>uk_age_it_tfa2</b>	<b>UK_2001</b>	
age_limit1	75	lower age limit
age_limit2	120	upper age limit
ageallow_inc	17600	income limit ( <i>TaxableY_il</i> ) above which age-related addition to personal allowance is tapered away
ageallow_taper	0.5	taper

ageallow	4535	regular personal allowance
ageallow_limit	6260	maximum age-related allowance
TaxableY_il	IT_TaxableY	
TAX_UNIT	individual	

Although the married Couples' and Additional Personal Allowances were abolished by 2001 (and replaced by the Childrens' tax Credit – see below) for taxpayer couples where one or both is aged over 65 a residual allowance (in fact, a credit) is retained (and further enhanced if aged 75+). These married age allowance additions are defined in (`uk_marr_age_it_tfa1`) and (`uk_marr_age_it_tfa2`) and work similarly to the personal age allowance. The higher allowance (`mageallow_limit`) is tapered away (`ageallow_taper`) according to the individual's taxable income in excess of (`ageallow_inc`) until it is reduced to the level of the ordinary allowance (`mageallow`) which is zero in 2001. However, account is taken of reductions in the personal age allowance (`ageallow_limit`) due to this excess of income so that the income at which the extra allowance is exhausted is higher for married people than for single people. The married age allowance tends to be claimed by the husband, but unused parts can be transferred to the wife.

<code>uk_marr_age_it_tfa1</code>	UK 2001	
<code>age_limit1</code>	65	lower age limit
<code>age_limit2</code>	74	upper age limit
<code>ageallow_inc</code>	17600	income limit ( <code>TaxableY_il</code> ) above which age-related additions to personal allowance + married credit is tapered away
<code>ageallow_taper</code>	0.5	taper
<code>ageallow</code>	4535	regular personal allowance
<code>ageallow_limit</code>	5990	maximum age-related allowance
<code>mageallow</code>	0	regular married tax credit
<code>mageallow_limit</code>	5365	maximum age-related married credit
<code>tc_rate</code>	0.1	rate at which credit allowed
<code>TaxableY_il</code>	IT_TaxableY	
<code>TAX_UNIT</code>	marrcouple	
<code>uk_marr_age_it_tfa2</code>		
<code>age_limit1</code>	75	lower age limit
<code>age_limit2</code>	120	upper age limit
<code>ageallow_inc</code>	17600	income limit ( <code>TaxableY_il</code> ) above which age-related additions to personal allowance + married credit is tapered away
<code>ageallow_taper</code>	0.5	taper
<code>ageallow</code>	4535	regular personal allowance
<code>ageallow_limit</code>	6260	maximum age-related allowance
<code>mageallow</code>	0	regular married tax credit
<code>mageallow_limit</code>	5435	maximum age-related married credit
<code>tc_rate</code>	0.1	rate at which credit allowed
<code>TaxableY_il</code>	IT_TaxableY	
<code>TAX_UNIT</code>	marrcouple	

### 2.8.1 Children's tax credit (Policy *IT\_CHTCRED\_UK*)

The children's tax credit is a "true" tax credit and is not refundable. It is allowed to families who have (a) at least one child aged under 16 and (b) at least one parent who pays income tax. The "family" has the same definition as in most other UK policy (couple or single plus dependent children) but the child definition for the credit itself is more restrictive than the family definition of a dependent child. The credit only applies if there are children aged under 16.



The maximum value of the credit in June 2001 is £10 per week per family. It can be less than this if (a) pre-credit tax liability is less than this or (b) one or both parents are higher rate taxpayers (ie have a marginal rate of 40%), in which case the credit is tapered away so that parents with high incomes receive no credit at all (known as “affluence testing”).

The UK income tax system is an individual system which means that, in two-parent families there is an issue about which parent receives the credit (if they are both income tax payers) and how the credit is tapered away if one or both are higher-rate taxpayers. Effectively, the credit goes to the parent with the higher tax liability. However, it is transferable for couples where neither pays tax of £10 or more, but both pay some tax (eg a couple where each had a pre-credit liability of £5 would pay nothing after the credit; where one pays £8 and the other £5, the latter will be left with £3 liability).

At the top end, the credit is reduced by £1 per week for each £15 of taxable income above the top threshold. So if the top threshold is £29,400 per year (as in 2001) and one partner has taxed income (after all other deductions etc) of £35,000 then they get a credit of just £2.82 per week [ $£10 - ((35,000 - 29,400)/(52*15))$ ].

## 2.9 Child Benefit (Policy *SBEN\_CB\_UK*)

Child benefit is paid to all families with dependent children ( $TAX\_UNIT = SBEN\_family$ ) in (*co\_SBEN\_Elig*). There is flat rate amount per child of £10.35 per week (*SingPay*) and an addition for the first or only child of £5.15 (*es\_ch\_parity1*). There is no longer any addition for lone parent families (*es\_ch\_parity1*).

<i>co_SBEN_Calc</i>	UK_2001	
<i>SingPay</i>	10.35	amount per child
<i>wdrl_rt</i>	0	
<i>rep_rt</i>	0	
<i>rep_prev_inc_il</i>	0	
<i>SBEN_amt_max</i>	0	
<i>SBEN_max</i>	0	
<i>SBEN_amt_min</i>	0	
<i>SBEN_min</i>	0	
<i>es_ch_parity1</i>	1.49758	extra for first child
<i>es_ch_parity1_lt</i>	1	
<i>es_ch_parity2</i>	1	
<i>es_ch_parity2_lt</i>	20	
<i>es_ch_parity1</i>	0	extra per lone parent family
<i>TAX_UNIT</i>	<i>SBEN_family</i>	

## 2.10 Working Families’ Tax Credit (Policy *SBEN\_fc\_UK*)

Working Families’ Tax Credit has the same structure as its predecessor, Family Credit, but is more generous and is administered differently. To qualify a couple or single person must have at least one dependent child and at least one parent must be in employment or self-employment for 16 hours or more a week. These conditions are set using (*co\_SBEN\_Elig*) and with ( $TAX\_UNIT = SBEN\_family$ ). A further condition is that the family should have less than

£8000 worth of capital. The capital rule is set using (**uk\_sbem\_capital\_test**) with capital defined as (`capital_il = SBEN_capital`) and (`gemax_capital_lt`) as the capital cut-off.

<b>uk_sbem_capital_test</b>	<b>UK_2001</b>	
capital_il	SBEN_capital	
gemax_capital_lt	8000	capital limit – capital over this disqualifies family
TAX_UNIT	SBEN_family	

Working Family Tax Credit (WFTC) entitlement is calculated using the formula:  
**WFTC = MAX - (INCOME - THRESHOLD) \* TAPER**

Maximum entitlement to WFTC (MAX) depends on the number and ages of children (not on the number of parents). This is calculated in (**co\_sbem\_calc**). An extra amount of £11.45 (`es_ge_hrs`) is added if one parent works 30 (`es_ge_hrs_lt`) or more hours per week. This maximum amount is reduced at a rate of 55% (`wdr1_rt`) for any income that the family has over the “starting amount”. EUROMOD treats this starting amount (£92.9 per week in 2001) as a disregard using (**co\_sbem\_disregard**).

<b>co_sbem_calc</b>	<b>UK_2001</b>	
SingPay	54	max amount for family, before adding child amounts
wdr1_rt	0.55	withdrawal taper on incomes above disregarded amount
rep_rt	0	
rep_prev_inc_il	0	
SBEN_amt_max	0	
SBEN_max	0	
SBEN_amt_min	0.5	min payment
SBEN_min	1	
cohab=spouse	1	
es_ch_age1	0.48148	max addition per child in age band 1
es_ch_age2	0.48148	max addition per child in age band 2
es_ch_age3	0.49537	max addition per child in age band 3
es_ch_age4	0.49537	max addition per child in age band 4
es_family	1	
es_ge_hrs	0.21204	max addition for working at least <code>es_ge_hrs_lt</code>
es_ge_hrs_lt	30	qualifying min hours for extra payment
es_ch_age1_min	0	
es_ch_age1_max	10	
es_ch_age2_min	11	
es_ch_age2_max	15	
es_ch_age3_min	16	
es_ch_age3_max	17	
es_ch_age4_min	18	
es_ch_age4_max	18	
TAX_UNIT	SBEN_family	
<b>co_sbem_disregard</b>	<b>UK_2001</b>	
ge_disregard	0	
le_disregard	0	
disregard_amt	92.9	income at or below which maximum is paid
disregard_il	fc	
es_htu	1	
TAX_UNIT	SBEN_family	

In assessing family income, all main sources are included and income tax and contributions are deducted ( $\text{Means\_inc\_il} = \text{fc\_means}$ ) in ( $\text{co\_SBEN\_Means}$ ). The assessment is based on weekly income, averaged over a few weeks. The income assessment calculation is the same as for Income Support (see section 2.11.1) except that Child Benefit, Maternity Benefit and Statutory Maternity Pay are not included. The first parts of maintenance payments (£15) ( $\text{fc\_waindis}$ ) war pension (£10) ( $\text{fc\_wardis}$ ) is disregarded in ( $\text{uk\_sben\_fc\_disregard}$ ); and income from capital is imputed using ( $\text{co\_SBEN\_CapMeans}$ ). The first £3000 of capital is disregarded using ( $\text{co\_SBEN\_CapDisregard}$ ). Then a tariff income of £1 per week is imputed for every £250 (or part) of capital. Thus a family with capital of £5001 would have £9 imputed and added to income. In EUROMOD this is done using an effective interest rate on capital above the disregard of 0.04% ( $\text{CapitalRate1}$ ) in ( $\text{co\_SBEN\_CapMeans}$ ) which gives approximately but not exactly the same result (in fact, £8 in this example).

<b>co_SBEN_CapDisregard</b>	<b>UK_2001</b>	
ge_disregard	0	
le_disregard	0	
disregard_amt	3000	
disregard_il	sben_capital	
es_htu	1	
TAX_UNIT	SBEN_family	
<b>co_SBEN_CapMeans</b>	<b>UK_2001</b>	
CapitalThreshold	0	
CapitalRate1	0.004	effective interest rate on capital after disregard
CapitalRate2	0.004	
Addition	0	
Period	0	
capital_il	sben_capital_means	
TAX_UNIT	SBEN_family	

There is a minimum weekly payment of 50p ( $\text{SBEN\_amt\_min}$ ) in ( $\text{co\_SBEN\_Calc}$ ). WFTC is payable for 26 weeks once a claim is granted. It is paid regardless of changes in circumstance, including stopping work, children leaving home or income increasing due to promotion etc. EUROMOD does not take account of this “overhang” in entitlement.

Enhancements for disability and child care costs are not modelled.

## 2.11 Income Support (including non-contributory Job Seekers Allowance and Minimum Income Guarantee)

Income Support (IS) is the main safety-net social assistance benefit. For those eligible, it is calculated according to the formula:

$$\text{IS} = \max(0, (\text{NEEDS} - \text{INCOME}))$$

NEEDS is the amount of weekly income that is calculated to be necessary for the family unit. For owner-occupiers it includes the cost of ground rent and mortgage interest payments. In cases where there are other people living in the household who are not members of the family unit (“non-dependants”) fixed deductions are made from the additions to NEEDS for mortgage interest. These deductions do not depend on actual contributions to payment mortgage interest, but depend only on the characteristics of the non-dependent. One of these characteristics is receipt of IS. So before the calculation of IS entitlement for the main family

unit assumed to be paying housing costs, IS entitlement must be calculated to determine the potential non-dependent deduction level for each person in the household. Section 2.11.2 describes the determination of the non-dependent status and section 2.11.3 describes the calculation of IS receipt for this purpose. The following section, 2.11.1 describes the main calculation of IS.

### 2.11.1 Actual Income Support (Policy *SBEN\_IS\_UK*)

Eligibility is defined by (*co\_SBEN\_Elig*). The unit of entitlement and income assessment is the family unit (*SBEN\_family*) 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. In EUROMOD, entitlement to means-tested Job Seeker’s Allowance for the unemployed is calculated as part of the IS calculations (the rules are the same). Employment or self-employment for 16+ hours per week disqualifies the family.

Families with no more than £8000 (*gemax\_capital\_lt*) capital (*capital\_il = SBEN\_capital*) are eligible for IS. If anyone is aged 60 or more the limit is £12,000 (*gemax\_capital\_lt*). The modules for those in the upper age group are shown.

<b>co_SBEN_Elig</b>	<b>UK_2001</b>	
first_cond	0	
ge_Age1	1	
end_cond	0	
ge_Age1_Lt	59	
SBEN_elig_type	3	
TAX_UNIT	SBEN_family	
SWITCH	1	
<b>uk_sben_capital_test</b>		
must_be_elig(0/1)	1	
capital_il	SBEN_capital	
gemax_capital_lt	12000	capital limit – capital over this disqualifies family
TAX_UNIT	SBEN_family	
SWITCH	1	

Table 2.5 summarises the amounts payable (“applicable amounts”) for each type of individual or family. To give some idea of scale, average full-time gross weekly earnings in April 2001 were £353.<sup>12</sup>

<sup>12</sup> *New Earnings Survey 2001*, Table 1, [www.statistics.gov.uk/pdffdir/nes0102.pdf](http://www.statistics.gov.uk/pdffdir/nes0102.pdf)

**Table 2.5 Income support applicable amounts April 2001 £/week**

	Single, no children	Lone parent	Couple
<b>Personal Allowances</b>			
Aged under 18	31.95 <sup>b</sup>	31.95	63.35 max
Aged 18-24	42.00	50.35	83.25
Aged 25-	53.05	53.05	83.25
Per child aged 0-15	31.45		
Per child aged 16-18	32.25		
<b>Premiums</b>			
Family with children	-	14.50	
Lone parent family <sup>a</sup>	-	1.40	
Disabled child	-	30.00	
Age 60+	39.10	-	57.30 <sup>c</sup>
Disability	30.00	22.60	32.25
Severe disability	41.55	41.55	41.55 <sup>d</sup>
Carer	24.40 <sup>e</sup>		

**Notes:** a The additional lone parent premium is only payable to those claiming and qualifying before April 1998. EUROMOD no longer models the premium.

b Discretionary in special cases: EUROMOD does not model this.

c Either or both spouses over age threshold. Only one premium may be received.

d Per spouse who qualifies as severely disabled.

e Per person cared for.

Family needs are defined in (co\_SBEN\_Calc) and (uk\_sben\_is\_disab\_needs).

co_SBEN_Calc	UK_2001	
SingPay	50.35	single
wdr1_rt	1	Withdrawal Rate = 100%
cohab=spouse	1	Cohabiting couples are treated as a couple
es_ch_age1_min	0	
es_ch_age1_max	10	
es_ch_age1	0.592837	children 0-10
es_ch_age2_min	11	
es_ch_age2_max	15	
es_ch_age2	0.592837	children 11-15
es_ch_age3_min	16	
es_ch_age3_max	17	
es_ch_age3	0.607917	children 16-17
es_ch_age4_min	18	
es_ch_age4_max	18	
es_ch_age4	0.607917	children 18
es_both_age1	1.194156	couple if both aged under 18 (but at least 16)
es_both_age1_min	16	NB: currently people under 18 are not eligible in the model
es_both_age1_max	17	
es_couple_age1	1.569274	couple if one or both aged over 18
es_couple_age1_oldmin	18	
es_couple_age1_oldmax	200	
es_couple_age1_youngmin	16	

es_couple_age1_youngmax	200	
es_AdNoPartner_age1	0.791706	single aged 18-24
es_AdNoPartner_age1_min	18	
es_AdNoPartner_age1_max	24	
es_AdNoPartner_age2	1	single aged 25+
es_AdNoPartner_age2_min	25	
es_AdNoPartner_age2_max	200	
es_ch_parity1	0.273327	family premium
es_ch_parity1_lt	1	
es_lp	0	lone parent premium
es_lp_age1	0.2085402	This is because lone parents get a higher amount when aged 18-24 than non lone parents
es_lp_age1_min	18	
es_lp_age1_max	24	
es_lp_age2	0.607917	This is because lone parents can get income support aged under 18
es_lp_age2_min	0	
es_lp_age2_max	17	
es_need1	1	
es_need1_tu	SBEN_family	
es_need1_il	mortint	
es_need2	1	
es_need2_tu	SBEN_family	
es_need2_il	needs2	
TAX_UNIT	SBEN_family	

Disability is defined according to receipt of certain disability benefits in (**uk\_sben\_is\_disab\_needs**) using (**disaby1\_il = is\_disaby1**). These are: Attendance Allowance, Disability Living Allowance, Incapacity Benefit, Severe Disablement Allowance and Industrial Injuries Disablement Benefit In addition, mortgage interest is added to needs in (**co\_SBEN\_Calc**).

One claim for IS is made per family, and entitlement depends on the income of the whole family unit. The income of other people in the household is not taken into account except via the non-dependent deduction (see section 2.11.2). Income is defined by (**Means\_inc\_il = is\_means**) in (**co\_SBEN\_Means**). It includes gross income from employment and self-employment and all other main current income sources **except** investment income (see below) and certain benefits (Housing Benefit and Council Tax Benefit, Attendance Allowance and Disability Living Allowance); half the value of private pension contributions and all of employee and self employed contributions and income tax are deducted.

Some earnings (**disregard\_il = earns**) are disregarded in (**uk\_sben\_is\_disregard**): £10 for a lone parent (**is\_erndis1**); £20 for a disabled person (**is\_erndis2**) where disability is signalled by receipt of certain benefits (see above on entitlement to disability premia) within the family unit (**disab\_il = disab\_is**); £10 for couples not qualifying on disability grounds and £5 for others. In addition, small amounts of war pension and maintenance payments are disregarded in the same way as for WFTC (see section 2.10) using (**uk\_sben\_fc\_disregard**).

<b>uk_sben_is_disregard</b>		
is_erndis1	10	earnings disregard for a lone parent
is_erndis2	20	earnings disregard for disabled person
is_erndis3	0	earnings disregard for a couple
is_erndis4	5	earnings disregard for single person and each person in couple
disregard_il	earns	
disab_il	disab_is	INCOME LIST OF DISABILITY INCOMES

es_htu	1
TAX_UNIT	SBEN_family

Income from investment income is not included directly in the IS family income assessment. Instead, a tariff income is calculated on financial capital ( $disregard_{il} = sben_{capital}$ ) between £3,000 ( $disregard_{amt}$ ) and the upper threshold £8,000 ( $gemax_{capital_{lt}}$ ). The limits for tariff income for family units containing a person aged 60+ are £6000-£12000. This works in exactly the same way as the tariff income calculation in WFTC (see section 2.10).

### 2.11.2 Income Support non-dependent deductions (Policy *sben\_nondep\_ded\_UK*)

Deductions are made from the housing cost element of the Income Support Applicable Amount (“needs”) if there are non-dependent adults in the household in addition to the householder’s family unit. The “householder” in the UK is the person responsible for the rent or mortgage interest. 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\_sbennondepded*). No deduction is made where the person is aged under 18 ( $hb\_ndd\_minag$ ) or where they are aged under 25 ( $hb\_ndd\_isag$ ) and themselves in receipt of Income Support (IS). To establish this latter condition, IS must be simulated for each non-dependent. (See section 2.11.3.). Other exemptions from deduction apply when the person is a full-time student, where they are blind, or where they are in receipt of Attendance Allowance or the middle or higher rate of the care component of Disability Allowance. None of these cases are modelled. (Note that the first and third of these will be modelled in future versions; the second is not possible because blindness is not identified in the FES data.)

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):

Not in work, or in work and with gross income less than £84 per week ( $hb\_ndd\_inc1$ )	£7.40 ( $ndd\_ded3$ )
Gross income £84 up to £125 ( $hb\_ndd\_inc1, hb\_ndd\_inc2$ )	£17.00 ( $ndd\_ded1a$ )
Gross income £125 up to £163 ( $hb\_ndd\_inc2, hb\_ndd\_inc3$ )	£23.35 ( $ndd\_ded1b$ )
Gross income £163 up to £215 ( $hb\_ndd\_inc3, hb\_ndd\_inc4$ )	£38.20 ( $ndd\_ded1c$ )
Gross income £215 up to £269 ( $hb\_ndd\_inc4, hb\_ndd\_inc5$ )	£43.50 ( $ndd\_ded1d$ )
Gross income £269 or more ( $hb\_ndd\_inc5$ )	£47.74 ( $ndd\_ded1e$ )

“Work” means full time work for at least 16 hours ( $hb\_ndd\_hrs$ ) and gross income is defined by ( $non\_dep_{il} = non\_dep$ ) which is similar to the income definition used for IS assessment but is before the deduction of income tax and contributions.

<i>uk_sbennondepded</i>	
<i>first_cond</i>	0
<i>hb_ndd_minag</i>	18 min age to count as a non-dependent
<i>hb_ndd_hrs</i>	16 min work hours to count as full-time
<i>hb_ndd_inc1</i>	84 for non-deps in full-time work: individual gross income threshold - above this deduction ded1a is made
<i>hb_ndd_inc2</i>	125 for non-deps in full-time work: individual gross income threshold - above this deduction ded1b is made
<i>hb_ndd_inc3</i>	163 for non-deps in full-time work: individual gross income threshold - above this deduction ded1c is made

hb_ndd_inc4	215	for non-deps in full-time work: individual gross income threshold - above this deduction ded1d is made
hb_ndd_inc5	269	for non-deps in full-time work: individual gross income threshold - above this deduction ded1e is made
ndd_ded1a	17.00	deductions for those in full-time work
ndd_ded1b	23.35	deductions for those in full-time work
ndd_ded1c	38.20	deductions for those in full-time work
ndd_ded1d	43.50	deductions for those in full-time work
ndd_ded1e	47.75	deductions for those in full-time work
ndd_ded2	7.40	deduction for person on IS above age ndd_isag
ndd_ded3	7.40	deductions for those not in work, or in work and with gross income less than hb_ndd_inc1 per week
hb_ndd_isag	25	minimum age for IS recipient to count as non-dependent
non_dep_il	Non_dep	
TAX_UNIT	SBEN_family	

### 2.11.3 Preliminary IS used for the nondependent deduction (Policy *SBEN\_virt\_IS\_UK*)

This policy module calculates IS entitlement for all family units (`TAX_UNIT = SBEN_family`) in the household except the householder-unit. It does so in exactly the same way as in the actual IS calculation (see section 2.11.1) 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).

### 2.12 Housing benefit (Policy *SBEN\_hb\_uk*)

Housing benefit (HB) covers or contributes to the cost of rent for low income families. There are no conditions regarding working hours: the benefit covers those in work, pensioners, the unemployed, the disabled and the unoccupied. It is assumed that the householder-family pays the rent and claims the benefit.

For families in receipt of Income Support (see section 2.11) housing benefit covers 100% of rent, less non-dependent deductions. These non-dependent deductions are the same as those operating in Income Support (IS) for housing needs (see section 2.11.2). For those with higher incomes (or not in receipt of IS for some reason), the amount of rent (less non-dependent deductions) that is covered by the benefit is tapered away at the rate of 65% (`wdr1_rt`).

A similar disqualification applies in HB as in IS if the family has more than a certain amount of financial capital. In the case of HB the limit is higher: £16,000 (`gemax_capital_lt`).

The income assessment that is used is very similar to that for Income Support (see section 2.11). It also includes WFTC and the Disabled Persons Tax Credit in the income assessment, and also adds in additions in these benefits for working 30 or more hours per week. The earnings disregard for lone parents is higher (£25 instead of £10). Since the upper limit on capital (`gemax_capital_lt`) is higher, the amount of tariff income that may be included in total means is higher also.

The needs calculation is also the same, with the following exceptions:  
- the applicable amount for single people aged 16-24 is £42



- the applicable amount for single parents aged under 18 is £42
- the applicable amount for couples both aged under 18 is £63.35

However, the parameter sheets are independently specified. When making policy changes, the user should consider whether the IS and HB calculations should remain based on (largely) identical income and needs assessments.

## 2.13 Council Tax benefit (Policy *SBEN\_ctb\_uk*)

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 certain people including people with some types of disability
- a reduction of 25% if the dwelling is occupied by a single adult

There are really two alternative forms of CTB. One is the HB-type benefit. 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.

### 2.13.1 Council Tax Benefit

In the “main” CTB, benefit is calculated in the same way as HB except:

- the taper is 20% (*wdr1\_rt*) in (*co\_SBEN\_Calc*)
- personal allowances are the same as IS
- although non-dependants are defined in the same way, the amounts of the deductions are different. These are specified in section 2.13.2.

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.

### 2.13.2 Council Tax Benefit non-dependant deductions (Policy *SBEN\_CTB\_NDD\_uk*)

Not in work, or in work and with gross income less than £84 per week ( <i>hb_ndd_inc1</i> )	£2.3 ( <i>ndd_ded3</i> )
Gross income £84 up to £125 ( <i>hb_ndd_inc1</i> , <i>hb_ndd_inc2</i> )	£2.3 ( <i>ndd_ded1a</i> )
Gross income £125 up to £163 ( <i>hb_ndd_inc2</i> , <i>hb_ndd_inc3</i> )	£2.3 ( <i>ndd_ded1b</i> )
Gross income £163 up to £215 ( <i>hb_ndd_inc3</i> , <i>hb_ndd_inc4</i> )	£4.6 ( <i>ndd_ded1c</i> )
Gross income £215 up to £269 ( <i>hb_ndd_inc4</i> , <i>hb_ndd_inc5</i> )	£5.8 ( <i>ndd_ded1d</i> )
Gross income £269 or more ( <i>hb_ndd_inc5</i> )	£6.95 ( <i>ndd_ded1e</i> )

### 3. Data

#### 3.1 General description

The UK database is drawn from the Family Expenditure Survey (FES). This is a continuous household survey based on a random sample and collected throughout the year (April-March). Its original purpose was to collect expenditure data for weights for the (consumer) retail price index and for National Accounts estimates of consumers' expenditure. Income data are used to identify "Index households" for the retail price index. The survey is now regarded as a multi-purpose source.<sup>13</sup> Data have been used for many official and unofficial income distribution analyses and for tax/benefit modelling.<sup>14</sup> A new income survey, the Family Resources Survey (FRS) has come to be used in its place for income analysis, mainly because of its larger sample size. FES remains the chosen database for EUROMOD because (a) it includes households from Northern Ireland, whereas FRS does not, and (b) it includes information on expenditures, permitting the simulation of indirect taxes. In the future, the FRS will be considered as an alternative database for EUROMOD.

In Great Britain, the sampling frame for FES is the Post Office's Postcode Address File (PAF), small users sub-file (i.e. addresses receiving fewer than 25 items of mail a day; intended to exclude business addresses), using multi-stage stratified random sample with clustering at the final stage. The sampling fraction is about 1 in 2,100 eligible households. In Northern Ireland, a simple random sample is drawn from the Valuation and Land Agency Lists (these are local government property registers). (Northern Ireland makes up 2% of the achieved sample of UK households.)

The sample is of households living at private residential addresses. Of these, in Great Britain 96.6% are estimated to be covered by the frame, with no strong biases in the characteristics of households covered by the PAF.<sup>15</sup> The main exclusions are people not living at private addresses such as those in student accommodation, the homeless, those in nursing homes or hospital (for more than 1 month) or other types of residential care, prisoners and people living in military or police institutions.<sup>16</sup> This limitation on the sample will mean that taxes and benefits and other income components will be under-represented to the extent that they are received (or paid) by people living in institutions.

There are two databases that may be used with EUROMOD. These date from 1995/96 and 2000/01. Generally the later data will be used as the basis for modelling the 2001 system and reforms to it, but both versions are documented here.

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<sup>13</sup> For more information, see Office for National Statistics, 1996 *Family Spending: A report on the 1995/6 Family Expenditure Survey*, TSO:London

<sup>14</sup> For example, (1) Office for National Statistics, 1997, "The Effects of Taxes and Benefits on Household Income 1995-1996", *Economic Trends*, March, TSO:London.

(2) Department of Social Security, 1998, *Households Below Average Income, 1979-1996/7*. London: TSO

<sup>15</sup> See Foster (1994) 'The coverage of the PAF as a sampling frame', *Survey Methodology Bulletin*, No. 34.

<sup>16</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.

*(i) 1995/96*

The 1995/6 FES achieved sample was 16,586 individuals in 6,797 households. The response rate was 66% in Great Britain and 61% in Northern Ireland, calculated as a percentage of private households at the sample addresses.<sup>17</sup>

*(ii) 2000/01*

The 2000/01 FES achieved sample was 15,925 individuals in 6,637 households. The response rate is 59% in Great Britain and 56% in Northern Ireland, calculated as a percentage of private households at the sample addresses.<sup>18</sup> Three households are excluded, including 13 individuals, because the internal structure of the household was not consistent. Re-weighting (see below) did not adjust for these exclusions.

A 1995/96 FES household comprised one person living alone or a group of people living at the same address sharing living space **and** having meals prepared together and with common housekeeping. The definition was changed in 2000-01 to be people at the same address sharing living space **or** having meals prepared together and with common housekeeping. Thus the definition has been made slightly less restrictive and some people in 2000/01 households would have been excluded under the 1995/6 definition. In practice the impact of the changed definition is small.<sup>19</sup> Resident domestic servants are included. Members of the household are not necessarily related by blood or marriage. A household will consist of one or more benefit units (or "families"). A benefit unit is a single adult or a couple together with any dependent children.

## **3.2 Sample quality and weights**

### *3.2.1 Non-response*

Non-response bias has been studied through information from the decennial Census of Population and Housing on the drawn/eligible FES sample. The most recent study is for FES data in January-June 1991 (Census in April 1991). The main conclusions were that response was lower in Greater London and higher in non-metropolitan areas. Non-response tended to increase with age of the head of household up to age 65. Households with 3 or more adults, or where the head was born outside the UK or was classified to an ethnic minority group were also more likely than other households to be non-responding.

Separate analyses, using a geo-demographic coding system, have indicated similar results. The main problems appear to be lower response rates for older council flat accommodation in inner city areas; and for younger people in houses which have been sub-divided into separate accommodation units or blocks of flats. Non-response by these groups appears to be mainly because of problems in contacting these households; refusal levels appear to be about normal. Response by higher income households seems to be at normal levels.<sup>20</sup>

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<sup>17</sup> Office for National Statistics, 1996 *Family Spending: A report on the 1995/6 Family Expenditure Survey*, TSO:London

<sup>18</sup> See Office for National Statistics (ONS), Family Spending 2000-01, [www.statistics.gov.uk/downloads/theme\\_social/Family\\_Spending\\_2000-01/Family\\_Spending\\_2000-01.pdf](http://www.statistics.gov.uk/downloads/theme_social/Family_Spending_2000-01/Family_Spending_2000-01.pdf)

<sup>19</sup> See ONS, Family Spending 2000-01, Appendix A.

<sup>20</sup> This information is taken from Harris G., (1998), "Income Distribution Data for the United Kingdom: Robustness Assessment Report", Papers and Final Report of the Second Meeting on Household Income Statistics, Voorburg, The Netherlands, March 9-11th, Canberra Group: Expert Group on Household Income Statistics.

### 3.2.2 Weights: 1995/96 FES

No “official” weights are provided with 1995/96 FES micro-data. Weights have been specially calculated to adjust for differential response by family type, at the same time as grossing up to population level (58.6 million people in 1995). The Department for Work and Pensions (DWP) provides two sets of population estimates for seventeen different types of family, one set for Great Britain and one for Northern Ireland. These population estimates by family type are divided by the number of FES families of each type. The calculations are shown in Table 3.1. The resulting family unit weights are then combined for multi-family households in such a way that the aggregate results achieved at the family-level of analysis and at the household-level of analysis are identical.<sup>21</sup> The control totals are also used by DWP in their own use of FES data. They make no attempt to adjust for the non-household population.

No attempt is made to adjust for differential non-response in other dimensions than family type. The sample size is too small to support a very detailed exercise of this nature without creating weights that are very large or very small. As things stand, the minimum weight is 2810.3 and the maximum is 5281.8 (the ratio of maximum to minimum is 1.88). The (unweighted) household mean is 3679.2.

**Table 3.1 Calculating weights for family units in 1995/6 FES**

Category	Great Britain			Northern Ireland		
	1. Population estimate ('000 families) Source: DWP	2. FES sample count	Weight col.1/col.2	4. Population estimate ('000 families) Source: DWP	5. FES sample count	Weight col.4/col.5
Couple, 1 child	2072	659	3.1442	60	13	4.6154
Couple, 2 children	2279	751	3.0346	68	9	7.5556
Couple, 3+ children	978	348	2.8103	56	14	4.0000
Single male with children	123	31	3.9677	42	11	3.8182
Single female with children	1512	462	3.2727			
Couple, 0 children	5818	1575	3.6940	119	27	4.4074
Single male age 0-29	3389	679	4.9912			
Single male age 30-54	2324	440	5.2818	172	19	9.0526
Single male age 55-64	491	124	3.9597			
Single female age 0-19	578	147	3.9320			
Single female age 20-39	1827	453	4.0331	107	29	3.6897
Single female age 40-59	1085	332	3.2681			
Pensioner couple age 65-74	1776	526	3.3764	53	13	4.0769
Pensioner couple age 75+	867	254	3.4134			
Single male age 65+	908.7	286	3.1773	26	5	5.2000
Single female age 60-74	1647.4	478	3.4464	90	25	3.6000
Single female age 75+	1724.9	431	4.0021			
<b>Total family units</b>	<b>29400.0</b>	<b>7976</b>		<b>793</b>	<b>165</b>	

<sup>21</sup> The method is described in Gomulka, J. (1994), *Grossing up: a note on calculating household weights from family composition totals*, Microsimulation Unit Research Note MU/RN/4, Department of Applied Economics, University of Cambridge.

### 3.2.3 Weights: 2000/01 FES

Weights are provided by ONS for use with the 2000/01 FES. These are calculated in a two-stage process using a “calibration method”. Starting household weights are calculated based on membership of groups with very different response rates from the Census comparison study of 1991 (Foster, 1994). Then these are adjusted so that population control totals for 2000/01 are matched for region, age and sex on a quarterly basis.

One potential problem with weights calculated in this way is that they may not produce accurate numbers by family type. For example, using the weights calculated for 1995/6 in Table 3.1 we can see that controlling for age and sex would not necessarily result in the right number of male lone parents (single males aged up to 54 are under-represented and would be given high weights; this would over-estimate the number of lone fathers since these are over-estimated). Similarly, while single women over 75 are under-represented, couples with one aged over 75 are over-represented. Controlling for age and sex alone would not necessarily result in the right numbers of older women by marital status. This could have an impact on, for example, conclusions drawn about pension income and the scale of poverty among older women.

As an alternative we have constructed our own weights based on a number of dimensions using the official ONS weights as the starting weights. Also included are control totals given by the weighted sample totals taken from the Family Resources Survey (FRS), which is weighted to correct for non-response by dimensions important for tax-benefit simulation results (age-sex-marital status categories; families with children; Council Tax band (an indicator of size and quality of dwelling); housing tenure and location in London).<sup>22</sup> This exercise is limited to Great Britain (because this is the area covered by the FRS): Weights for Northern Ireland remain as calculated by ONS.

Table 3.2 shows the categories used and the control totals using weighted FRS. It also shows the numbers in these categories using the official weights in the GB part of the FES. The minimum official weight is 680 and the maximum is 11,296 (the ratio of maximum to minimum is 17:1). Using the alternative weights the minimum is 680 and the maximum is 13361 (the ratio of maximum to minimum is 20:1).

Not all numbers shown in Table 3.2 are close, so for much of the remainder of this report we present results based on 2000/01 FES using both sets of weights.

It is difficult to judge which set is preferable on *a priori* grounds. The official weights have the significant advantage of being acceptable to ONS and are used with the National Statistics stamp of approval. However, they may not be adequate for our purpose if family type is not controlled for. At the same time, the use of starting weights based on historical propensity for non-response may correct adequately for such difficulties. Using a more detailed set of weights introduces a large range of values and is in no sense guaranteed to improve the representativeness of the sample in any dimension not controlled for (as in Table 3.2).

**However, for most types of analysis we recommend using the official weights.**

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<sup>22</sup> See DWP, Family Resources Survey, 2000-1, [www.dss.gov.uk/asd/frs/2000\\_01/pdfonly/frs\\_2000\\_01\\_report.pdf](http://www.dss.gov.uk/asd/frs/2000_01/pdfonly/frs_2000_01_report.pdf)

The official weights are provided as the default. For information how to use the alternative weights (stored in a file called `ukweight.txt`) see the document "Producing Output in EUROMOD."

**Table 3.2 Calculating alternative weights for the 2000/01 FES (GB only)**

		Control totals for "alternative" weights	FES sample numbers using ONS "official" weights
Persons	Single men <35	4,171	4,047
	Single men 35-64	2,324	2,305
	Single men 65+	1,254	957
	Single women <35	3,233	2,884
	Single women 35-59	2,539	2,311
	Single women 60+	2,770	3,093
	Couples <65	11,246	11,629
	Couples 65+	2,661	2,706
	Individuals	57,227	57,227
	Male lone parents	138	165
	Female lone parents	1,645	1,399
Families	Number of Families with children	5,206	5,491
Households	CT Band A	6,556	6,294
	CT Band B	4,849	4,791
	CT Band C-D	8,540	8,808
	CT Band E-H	4,440	4,377
	LA renters	3,626	3,657
	Private renters	3,919	4,005
	Owner occupiers	16,840	16,609
	Households in London	3,172	3,037
	Households in other regions	21,214	21,233

**Source** of control totals for FRS grossing: personal communication with DWP analysts.

### 3.2.4 Representativeness

In order to assess the representativeness of weighted results comparisons can be made with other sources of information on key aspects that are not controlled for in the re-weighting procedures. Harris (1998) carries out a comparison of employment status data from FES with LFS data for the same year. This finds that patterns of individuals employed, "ILO unemployed" and inactive in the age groups 16-64/59 are broadly comparable. (E.g. ILO unemployed for 16- 64/59 is 6.3 per cent from LFS and 6.5 per cent from FES.) The proportions of those in employment with second jobs is slightly higher in the FES (5.9 per cent compared with 4.4 per cent from the LFS), though the sample size is smaller and the numbers reported are fairly small.

Table 3.3 compares the numbers in employment and self-employment from the weighted 2000/01 FES with similar information from the Labour Force Survey (LFS) for 2000/01.

**Table 3.3 Employment in UK in 2000/01**

'000	Employment (LFS) <sup>1</sup>	FES: Employment status		FES: with employment income	
		official weights	alternative weights	official weights	alternative weights
Employees	24,621	24,655	24,523	22,801	22,676
Self-employed	3,169	2,814	2,770	3,099	3,054

Source: Labour Market Trends October 2001 Table B1:

[www.statistics.gov.uk/downloads/theme\\_labour/LMT\\_October01.pdf](http://www.statistics.gov.uk/downloads/theme_labour/LMT_October01.pdf)

<sup>1</sup> Average of 2000/01 3-monthly averages; employment is defined as any work in the last week,

Employment totals from LFS are based on counts of people who did any work the previous week. The FES employment status variable depends on what respondents claim to be their status. For employment, the FES total is very close to that from LFS. For self-employment it is lower, probably because people who combine employment with self-employment define themselves as employed in the FES. Using the alternative definition of having any income from employment (in the last pay period) or self-employment (in the last year) the FES counts are lower for employment (some of the employed were not paid in the last pay period) but are closer to the LFS figures for the self-employed. Using the alternative weights lowers the FES estimates somewhat. Generally, the two sources compare well.

### 3.2.5 Item non-response and under-reporting

Income and household composition data are collected by interviews with all household members aged 16 or over. The FES response rules require detailed information on all income components to be provided by direct reporting: proxy answers are not allowed. If this information is not provided by all household members aged 16 and over, then the entire household is treated as non-responding. Consequently, no major components of income have item non-response. However, some missing information is imputed by ONS and it is not possible to assess the effect of this nor whether the method used is appropriate for the use we make of the data.

Comparisons can be made of weighted income components from FES with other sources. Comparing with income tax records, it is found that overall, FES underestimates slightly the amount of tax paid (by 3% in 1995/96) and overestimates the number of tax payers (by 5% in 1995/96). The distribution of tax payers and tax paid in the FES is similar to the distribution from administrative sources except at the very top of the income range. The proportion of tax payers paying in excess of £10,000 income tax in 1995/96 is similar, but the amount of tax paid is 25% lower in the FES.

Comparisons with administrative records of benefit receipt can be difficult to interpret, because there are several possible explanations for the differences, including: inaccurate recording of benefit receipt in the FES (particularly where one benefit may be confused with another); administrative counts including those not in private households (see section 3.1 above); or being affected by fraudulent receipt including multiple identity fraud. But it appears that low-income non-pensioners without children - particularly young, single adults - and low-income families in private rented accommodation, are under-represented in the FES. But there is not strong evidence that the low income population as a whole is under-represented.

Comparisons can also be made with National Accounts (NA) aggregates, although it is not always straightforward to make adjustments to make the two sources strictly comparable. Two particular sources of income appear to be problematic: income from self-employment and income from capital. According to Harris (1998) the weighted FES aggregate for the first of these is 67% of the NA estimate and the figure for investment income is 52%. These comparisons are not able to fully take account of differences in timing and coverage in the two

sources. While there are reasons to believe that a "true" comparison would not show such large discrepancies,<sup>23</sup> it remains the case that there does appear to be a problem of under-reporting of these incomes, perhaps particularly by high income people. It is also possible that there is under-representation of the self-employed. (The number reporting income from self-employment in FES 1995/96 is 80% of an Inland Revenue figure.)

### **3.3 Adjustments to variables**

The FES data are obtained from the UK Data Archive at Essex University.<sup>24</sup> Adjustments to variables are kept to a minimum. There is some minor data cleaning that is done to make sure that the households and relationships of individuals within households, are coherent (for example, that young children are not living alone). So the information on frequency of family types shown in Table 3.1 does not correspond exactly with the information that would be obtained from the original data.

In the 1995/6 FES self-employment income that is reported to refer to some previous year is updated to 1995/6 using an index of average earnings. The reported self-employment income in the FES 2000/01 includes income obtained in the period between October 1996 and March 2001. The income that refers to previous years is updated to October 2000, the midpoint of the survey, using the monthly Average Earnings Index (AEI) index. The AEI is based on information obtained from ONS' Monthly Wages and Salary Survey (MWSS).

### **3.4 Imputations and assumptions**

#### *3.4.1 Time period*

Information on earnings refers to the last pay period (week, 4-week, month, etc.). Similarly, information about pensions and benefits refers to receipts in 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 figures are available; in some cases this may be several years prior to the interview. Investment income is also based on a 12-month receipt period.

All monetary amounts in the FES 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 simulated income tax (based on annual income) does 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.

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<sup>23</sup> Estimates fluctuate year by year (e.g. in the last 6 years 66%-87% (self-employment); 49%-63% (investment income)); NA self-employment income is inflated by 16% for under-reporting; NA investment income includes private trusts which are not likely to be included in FES; NA personal sector investment income is a residual and hence subject to a relatively wide margin of error.

<sup>24</sup> Data from the Family Expenditure 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.



### 3.4.2 Gross Income

Gross incomes are imputed using the simple formula:

Gross income = net income + tax + other deductions

FES 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 investment income is paid net of standard rate tax (in 1995/6) or the “savings rate” of tax (in 2000/01). 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 are likely to make lump sum tax payments or receive tax refunds. This information is collected in the FES. 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.

### 3.4.3 Other imputed variables

Other 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).
- The regime under which individuals pay National Insurance contributions (Not contracted out, Contracted out or “Married Woman’s rate”) is imputed from information on (imputed) gross earnings and the contribution payment, as well as other information about the individual (age, sex, marital status, whether contributing to a private scheme).
- FES 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). 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.

For more information about the transformation of FES variables into EUROMOD database variables see the UK Data Requirements Document (DRD).<sup>25</sup>

## 3.6 Updating to 2001/2

The factors that are used to update monetary variables from the mid-point of the data year (October 1995 or 2000) to June 2001 are shown in Table 3.4. Where an income source is not listed explicitly the price index is used for updating. (The control file in EUROMOD also

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<sup>25</sup> Also see Mitton, L. “EUROMOD: UK Database Documentation”, September 1999 (mimeo) and Gutierrez, R. “EUROMOD: UK 2001 Update Database Documentation”, December 2003 (mimeo).

allows for the backdating of 2000/01 data to 1998. The backdating factors are derived from those in Table 3.4 and the corresponding table in the 1998 Country Report.

**Table 3.4 Updating factors mid-1995/6 and mid-2000/1 to June 2001**

Income source/index type	name	95/6-01/2	00/1 -01/2	notes
Price index	<i>P_ind</i>	1.1593	1.0128	
Earned income	<i>E_ind</i>	1.2735	1.0473	
Self employed	<i>E_ind<sub>1</sub></i>	1.2735	1.0473	= <i>E_ind</i>
Employed: manual male	<i>E_ind<sub>3</sub></i>	1.2136	1.0351	
female	<i>E_ind<sub>4</sub></i>	1.2619	1.0445	
Employed: non-man male	<i>E_ind<sub>5</sub></i>	1.2834	1.0454	
female	<i>E_ind<sub>6</sub></i>	1.3163	1.0522	
Investment income	<i>I_ind</i>	1.1587	1.0122	
Rent	<i>R_ind</i>	1.2134	1.0313	
Mortgage interest	<i>M_ind</i>	1.2501	1.1442	
Benefits ukBENatt	<i>B_ind<sub>i</sub></i>	1.184	1.033	
ukBENDsc	<i>B_ind<sub>i</sub></i>	1.079	1.034	
ukBENDwa	<i>B_ind<sub>i</sub></i>	1.203	1.107	
ukBENica	<i>B_ind<sub>i</sub></i>	1.184	1.033	
ukBENinc	<i>B_ind<sub>i</sub></i>	1.185	1.033	
ukBENind	<i>B_ind<sub>i</sub></i>	1.185	1.033	
ukBENmob	<i>B_ind<sub>i</sub></i>	1.184	1.033	
ukBENpen	<i>B_ind<sub>i</sub></i>	1.232	1.074	
ukBENSda	<i>B_ind<sub>i</sub></i>	1.186	1.033	
ukBENssp	<i>B_ind<sub>i</sub></i>	1.185	1.033	
ukBENtrn	<i>B_ind<sub>i</sub></i>	1.178	1.069	
ukBENunb	<i>B_ind<sub>i</sub></i>	1.142	1.016	
ukBENwar	<i>B_ind<sub>i</sub></i>	1.257	1.033	
ukBENwid	<i>B_ind<sub>i</sub></i>	1.232	1.074	
council tax by region:				
1 North	<i>T_ind<sub>i</sub></i>	1.465	1.0495	
2 Yorks&Humberside	<i>T_ind<sub>i</sub></i>	1.431	1.0642	
3 North West	<i>T_ind<sub>i</sub></i>	1.419	1.0516	
4 East Midlands	<i>T_ind<sub>i</sub></i>	1.488	1.0587	
5 West Midlands	<i>T_ind<sub>i</sub></i>	1.488	1.0707	
6 East Anglia	<i>T_ind<sub>i</sub></i>	1.539	1.0700	
7 Greater London	<i>T_ind<sub>i</sub></i>	1.433	1.0809	
8 South East (not GL)	<i>T_ind<sub>i</sub></i>	1.525	1.0651	
9 South West	<i>T_ind<sub>i</sub></i>	1.486	1.0592	
10 Wales	<i>T_ind<sub>i</sub></i>	1.810	1.0601	
11 Scotland	<i>T_ind<sub>i</sub></i>	1.568	1.0016	
12 N. Ireland	<i>T_ind<sub>i</sub></i>	1.1593	1.0128	= <i>P_ind</i>

**Sources:** *P\_ind*: RPI all items weighted mean of 1995 and 1996 annual averages (3/4 of 1995 and 1/4 of 1996) to 1998 or 2001 annual average (as of 11/01 2001 takes average of April-Sept). *Labour Market Trends* table H14.

*E\_ind*: Average earnings index weighted mean of 1995 and 1996 annual average to 1998 or 2001 annual average (as of 11/01 average of May-August 2001). *Labour Market Trends* table E1. *E\_ind<sub>3</sub>* to *E\_ind<sub>6</sub>*: Mean of April 1995 and April 1996 *New Earnings Survey* 2000 Table A28; projected NES estimates (to July 1998 and April 2001) from *Labour Market Trends* table E11; increase from April to June 2001 main index = 1.0031.

*E\_ind<sub>7</sub>* and *E\_ind<sub>8</sub>*: statistics changed in 2002- no longer produced using manual-non-manual classification.

*R\_ind*: RPI element for rent October 1995 to June 1998 or June 2001. *Labour Market Trends* table H12 (Sept 1998 and Aug 2001) and 6.2 (Dec 1995).

*M\_ind*: RPI element for mortgage interest October 1995 to June 1998 or June 2001. *Labour Market Trends* table H12 (Sept 1998 and Aug 2001) and 6.2 (Dec 1995). [www.statistics.gov.uk/STATBASE/Product.asp?vlnk=868](http://www.statistics.gov.uk/STATBASE/Product.asp?vlnk=868)

*B\_ind<sub>1</sub>* to *B\_ind<sub>3</sub>*: actual uprating of main benefit components (various sources).

*T\_ind*: Regional updating factors calculated from average band D payments from relevant year using data from CIPFA.

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 the data year 1995/6 or 2000/1.

## **4. Validation**

### **4.1 Aggregate Validation**

#### *4.1.1 Method*

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 4.1 compares aggregate earnings in EUROMOD with estimates from non-FES sources. The distribution of earnings is compared with that from the New Earnings Survey for 2001.

Then, in Table 4.2 statistics on benefits and taxes that are not simulated by EUROMOD are compared with external sources. This provides an assessment of the quality of the database and 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.

Validation of simulated elements of income is carried out both in relation to independent external sources and in relation to output from the national UK tax-benefit model POLIMOD.<sup>26</sup> The POLIMOD estimates are based on 1995/6 FES and are thus comparable with one set of EUROMOD results. Updating factors to 2001 are slightly different. (In particular POLIMOD updates employment earnings by differential factors depending on sex and earnings level; EUROMOD distinguishes by sex and manual/non-manual occupations.)

Comparisons with POLIMOD provide a check on the tax-benefit routines in EUROMOD. Comparisons of both model outputs with external sources provide a check on the model database and on the method as a whole. Comparisons between EUROMOD estimates based on the two databases shows the extent to which using more up-to-date sources brings the EUROMOD estimates closer to the external information. The EUROMOD estimates using the two sets of weights for the 2000/1 database allow us to judge whether the choice of weighting system has any important effect.

POLIMOD usually assumes some degree of non-take-up of simulated means-tested benefits (Working Families' Tax Credit, Income Support, Housing Benefit and Council Tax Benefit). EUROMOD currently assumes 100% take-up. POLIMOD results for these benefits are provided both ways, so that comparisons can be made.

Table 4.3 shows comparisons of the number of benefit recipients and tax and contribution payers. Table 4.4 shows the aggregate annual expenditure or revenue from each instrument.

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<sup>26</sup> See Redmond G, H Sutherland and M Wilson, 1998, *The arithmetic of tax and social security reform: a user's guide to microsimulation methods and analysis*, Cambridge University Press.

### 4.1.2 Earnings

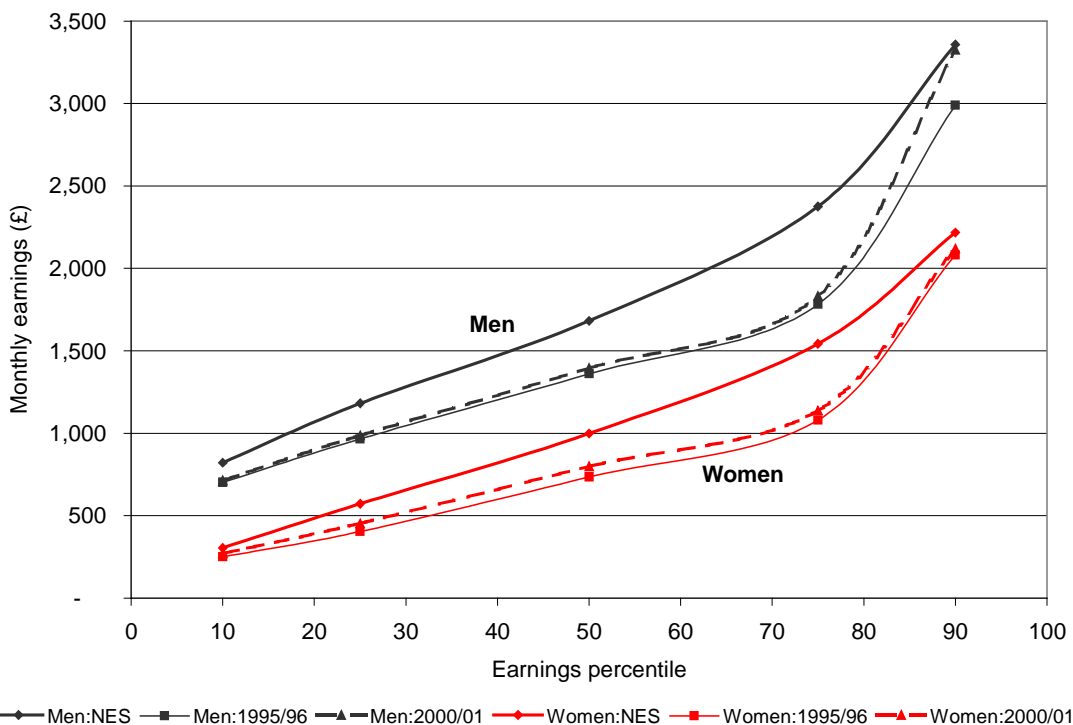
**Table 4.1 Average earnings in 2001**

£ monthly	NES (a)	EUROMOD						
		1995/6 data (b)		2000/1 data		b/a	c/a	d/a
				official weights (c)	alternative weights (d)			
All	1,606	1,421	1,513	1,513	0.88	0.94	0.94	
Working 38 hours or more <sup>1</sup>	1,925	1,739	1,777	1,773	0.91	0.92	0.92	

Source: New Earnings Survey (NES) April 2001, taken from Table 2, Labour Market Trends, March 2002. Monthly earnings estimates relate to full time employees whose pay was unaffected by absence during the survey period. The New Earnings Survey is based largely on a 1 per cent sample of employees who are members of Pay-As-You-Earn (PAYE) income tax schemes. <sup>1</sup> Monthly earnings of employees that worked more than 37 hours a week and have a positive income from employment. NES is GB; EUROMOD is UK.

Table 4.1 shows that average earnings across all those with positive earnings in the EUROMOD database is somewhat lower than the average value from NES, across all employees whose pay is not affected by absence. NES is known to under-represent those with low earnings. A second comparison, of full time workers only, shows that the 2000/01 EUROMOD database underestimates earnings for this group by slightly more than for all employees. There is very little difference between the estimates using the official and alternative sets of weights. Figure 4.1 shows the distribution of earnings for all employees by sex, comparing NES with the 1995/6 and 2000/01 (official weights) databases.<sup>27</sup>

**Figure 4.1: Earnings distribution by sex (full time employees): comparing EUROMOD databases with New Earnings Survey**



<sup>27</sup> NES data from Labour Market Trends, March 2002, Table 3.

This shows that, compared with NES, there are more people (particularly men) with low levels of earnings but that the largest shortfall is in people – both men and women – with earnings in the upper-middle range. There does not seem to be a particular under-representation of high earners (at least as indicated by the 90<sup>th</sup> percentile) compared with NES, however. Use of the later FES data slightly improves the fit with NES, across the whole distribution for both sexes compared with the older FES data, and particularly improves on male high earnings.

#### 4.1.3 Taxes and benefits in FES data

Table 4.2 calculates the ratio of EUROMOD (updated FES using official weights) expenditures and numbers of recipients to estimates drawn from administrative statistics for some of the main social security benefits that are not simulated by the model, as well as Council Tax. Table A1 in the appendix compares results for 2000/01 FES using the alternative weights.

Expenditure on most benefits is under-estimated, as is the number of recipients. This is in spite of comparing a UK dataset with statistics for Great Britain (i.e. excluding the N. Ireland population which makes up about 2.8% of the UK). The exception is *contributory JSA* (unemployment benefit): the data appear to contain too many recipients. One possible explanation is that respondents confuse contributory JSA with income-tested JSA. Another factor is falling unemployment. This is illustrated by the reduction in numbers of recipients between 1995/6 and 2000/01 and a further reduction may have occurred by the following year.

In nearly every case estimates based on 2000/01 data perform better than those based on 1995/96 data. This is not surprising. *Basic Retirement Pension* is quite well captured – 97% is included after allowing for the payments made to pensioners living abroad in the administrative total. No allowance has been made for pensioners living in institutions (and also not covered by the FES) and so there might be a slight overestimation of basic pension in EUROMOD.

Many of the disability benefits are under-estimated. In the case of *Severe Disability Allowance* (SDA) this is thought to be explained by respondent confusion between SDA and the disability premia in the Minimum Income Guarantee. Many claimants of one of these receive both and may not report the actual situation accurately when asked in the survey. *Attendance Allowance and Disability Allowance* were in the process of reform in 1995 and had become more generous and with a wider coverage in 2000/01. Thus the figures based on the later data are better. There is no obvious explanation for the shortfall in *War Pension*, although it is quite likely that recipients may be in residential care rather than living in households.

Comparable statistics on *Council Tax* are not easy to find. The numbers of households paying Council Tax correspond well to the numbers of dwellings for which charges are liable (once households from N. Ireland are deduced from the EUROMOD estimate). However, these include second homes and empty properties which are not captured by the FES data, suggesting that EUROMOD slightly over-estimates the number of payers.

**Table 4.2 Tax-benefit instruments that are included but not simulated by EUROMOD: comparison of aggregates with external statistics for 2001**

BENEFIT	Recipients/payers (thousand)					Expenditure/revenue £m / year				
	External source (1)	EUROMOD		Ratio		External source (4)	EUROMOD		Ratio	
		FES 1995/96 (2)	FES 2000/01 (3)	(2)/(1)	(3)/(1)		FES 95/96 (5)	FES 2000/01 (6)	(5)/(4)	(6)/(4)
Incapacity Benefit	1,520	1,708	1,532	1.12	1.01	6,749	8,319	6,236	1.23	0.92
Retirement Pension (basic)	10,214 <sup>a</sup>	9,388	9,927	0.92	0.97	33,773 <sup>b</sup>	30,686	32,788	0.91	0.97
Widow's Benefit	256	281	287	1.10	1.12	1,099	1,006	885	0.92	0.81
Contributory JSA	165	360	246	2.18	1.49	470	975	700	2.07	1.49
Attendance Allowance	1,290	759	950	0.59	0.74	3,124	1,772	2,156	0.57	0.69
Disability Living Allowance	2,240	1,273	1,941	0.57	0.87	6,580	3,089	5,055	0.47	0.77
Severe Disablement Allowance	367	251	304	0.68	0.83	1,040	738	873	0.71	0.84
Invalid Care Allowance	406	346	403	0.85	0.99	932	788	835	0.85	0.90
Industrial Injuries Disablement Benefit	280	258	212	0.92	0.76	778	641	443	0.82	0.57
War Pension	273	193	197	0.71	0.72	1,231	593	672	0.48	0.55
Disabled Persons Tax Credit	31	9	13	0.29	0.42	50	65	40	1.30	0.80
Council Tax (out-turn)		23,010 <sup>c</sup>	24,098 <sup>d</sup>	0.96	1.00	15,300 <sup>e</sup>	17,285 <sup>f</sup>	18,326 <sup>g</sup>	1.13	1.20
Council Tax (chargeable)	24,050 <sup>h</sup>					16,932 <sup>i</sup>			1.02	1.08

**Sources:** See notes to Table 1.1 unless otherwise specified. EUROMOD: version 21A

**Notes:** EUROMOD figures are for UK and use official weights; External figures are all for GB not UK, with the exception of Council Tax which is for GB only;

<sup>a</sup> Excludes 853 thousand recipients living overseas (March 2002). <sup>b</sup> Expenditure reduced proportionately to account for pensioners living overseas.

<sup>c</sup> Total local tax excluding 636K paying rates from N. Ireland; <sup>d</sup> Excludes 640K an estimate of number of N. Ireland rate payers; <sup>e</sup> *Budget Report March 2003*, HM Treasury, [www.hm-treasury.gov.uk/budget/bud\\_bud03/budget\\_report/bud\\_bud03\\_repb.cfm](http://www.hm-treasury.gov.uk/budget/bud_bud03/budget_report/bud_bud03_repb.cfm). <sup>f</sup> Excludes N. Ireland rates (about £230K); <sup>g</sup> Excludes N. Ireland rates (estimated as £230K); <sup>h</sup> Chargeable dwellings England, Wales and Scotland CIPFA [www.cipfastats.net/general/counciltax/commentary.asp?year=2001-02#s02](http://www.cipfastats.net/general/counciltax/commentary.asp?year=2001-02#s02) Tables 5 and 9; <sup>i</sup> Chargeable dwellings x average charge (weighted average of England and Wales and Scotland).

The external estimates for the revenue associated with Council Tax are shown in Table 4.2 on two different bases. The first (“out-turn”) is the revenue actually collected. This allows for discounts and exemptions (in the same way as the EUROMOD estimate does) but also captures the effect of evasion or arrears or payment, which EUROMOD does not. The EUROMOD figure using 2000/01 data is 20% higher than the out-turn, It is also higher (by 8% after allowing for N. Ireland) than the other revenue estimate, based on the number of chargeable dwellings multiplied by the average charge. This takes no account of discounts and exemptions and hence one would expect the EUROMOD figure to be smaller, not larger. Generally we can conclude that EUROMOD over-estimates Council Tax to some extent.

#### *4.1.4 Simulated Income tax*

POLIMOD and EUROMOD estimates compare well (Table 4.3 and 4.4), with differences within the range that can be explained by different updating factors.

Compared with tax statistics, the number of income tax payers is under-estimated but the extent of this is relatively small when using the 2000/01 data (3 per cent). The later data capture the increase in numbers of people with income above the tax threshold. However, the amount of income tax collected is much more seriously under-estimated: by 15% using the later data. Possible explanations for this are that the data contain too few people with high tax liabilities or that people under-report high incomes.

Table 1.4 showed that there were 3.00 million taxpayers paying tax at the highest marginal rate in 2001/02. Using 1995/96 data POLIMOD estimates the number to be 2.01 million. It estimates that the amount of tax collected from these people was £14.5 billion, with the remainder (£60.8 billion) being collected from taxpayers with the standard rate (or lower) as their marginal rate. The official estimates from tax statistics for these amounts are £56.4 billion (higher rate taxpayers) and £50.6 billion (the rest).<sup>28</sup> Thus using 1995/96 data updated to 2001/02 the shortfall in total income tax revenue is more than accounted for by the shortfall amongst higher-rate taxpayers: tax collected from standard-rate taxpayers is in fact over-estimated. This confirms that there is an under-estimate of people with high incomes but also suggests that there is some under-reporting of incomes of people who are estimated by the models to not be liable for tax at the higher marginal rate.

Using 2000/01 data in EUROMOD the number of higher-rate taxpayers nearly matches the administrative statistic for 2001/02: 2.87 million. The amount of tax collected from them is £24 billion with £67 billion being collected from those with lower marginal rates. So although the representation of higher rate payers is better using later data, the size of their incomes is still under-represented and there are still some problems with the distribution of tax collected from lower-rate taxpayers (too much is collected: this could have a number of explanations).

#### *4.1.5 Simulated National Insurance Contributions (NICs)*

Both EUROMOD and POLIMOD contain too few employees paying NICs (the shortfall is about 20% using 2000/01 data). At least part of the explanation lies in the basis for calculation of the external total: this is the number of people making any contribution in the year. The estimates based on survey data pick up those paying contributions at any one point in time: a number that is bound to be less than (or equal to) the annual figure. Table 3.3 showed that the EUROMOD data do not under-represent the number of people in employment, compared with LFS estimates although the numbers with current earnings are

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<sup>28</sup> Inland Revenue, Income Tax Liabilities 2001-02, Table 3.4  
[www.inlandrevenue.gov.uk/stats/income\\_distribution/menu-by-year.htm#34](http://www.inlandrevenue.gov.uk/stats/income_distribution/menu-by-year.htm#34)

about 10% lower than this figure. Thus the mis-match of time period between the NIC administrative figures and the FES reporting period seems to be the main explanation for the apparent shortfall in contributors. Indeed, the total amount of contributions from all sources is estimated quite well (a 3% shortfall using 2000/01 data) although the balance between the types of contributions may not correspond so precisely with the allocation shown by the official statistics. .

#### *4.1.6 Simulated Child Benefit*

Both POLIMOD and EUROMOD produce estimates very close to the administrative figures. Given the universal nature of the benefit and the fact that the weights control for families with children (in 1995/96 data), this is not surprising. Any discrepancy is partly due to the exclusion of Northern Ireland from the administrative statistic. (N. Ireland makes up approximately 2.8% of the UK population.) It is not due to demographic changes between the 1995/96 or 2000/01 and 2001/02: the administrative figure for the number of families in receipt in all three years is very similar.

#### *4.1.7 Simulated Working Families' Tax Credit*

The estimate based on 1995/96 data of the number of recipients corresponds well to the external estimate for 2001/02 when take-up is assumed to be 100%. However, it is well-known that the take-up rate is less than 100% and is estimated by the Inland Revenue to be between 71% and 74% on a caseload basis in 2001/02.<sup>29</sup> When these proportions are applied on a random basis in POLIMOD, the number of recipients becomes 64% of the administrative figure. There is no conclusive explanation for this shortfall. One possible contribution to the under-estimate is the fact that once entitled, families received WFTC for 6 months regardless of change in circumstances. We cannot model this “overhang” because we do not have information on the previous 6 months nor on the timing of the claim. However, in calculating their take-up estimates the Inland Revenue account for the overhang by inflating the numbers they estimate to be entitled non-recipients. They use the proportion of claimants who do not successfully renew their claim at the end of the six month period as a measure of the proportions of claimants who become non-entitled while in receipt. The factors they apply are 1.135 for couples and 1.0978 for lone parents (see Inland Revenue, 2003; page 15). Deflating the administrative total of WFTC recipients by a simple average of these two factors<sup>30</sup> brings it closer to the POLIMOD partial take-up estimate in Table 4.3 but does not fully account for the shortfall. Thus the overhang partially accounts for the modelled shortfall in recipients but does not fully explain it.

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<sup>29</sup> Inland Revenue, 2002, *Working Families' Tax Credit: Estimates of Take-Up rates in 2001-02*. London: Inland Revenue Analysis and Research; Table 1. [www.inlandrevenue.gov.uk/stats/wftc/wftc-take-up-2001-02.pdf](http://www.inlandrevenue.gov.uk/stats/wftc/wftc-take-up-2001-02.pdf)

<sup>30</sup> The numbers of couple and lone parent recipients of WFTC are roughly equal.



**Table 4.3: Numbers of recipients/payers of benefits/taxes in 2001/02: EUROMOD simulations compared with external statistics**

<i>Thousands</i>	Unit	External source <sup>a</sup> (a)	POLIMOD FES 1995/96		EUROMOD full take-up		Ratio (b)/(a)	Ratio (c)/(a)
			Partial take-up	Full take-up	FES 1995/96 (b)	FES 2000/01 (c)		
Income tax	Individuals	28,600	24,840	24,840	25,641	27,766	0.90	0.97
	Households			16,705	17,193	18,344		
SIC employers	Individuals	25,620 <sup>b</sup>	18,118	18,118	18,389	20,568	0.72	0.80
SIC employees	Individuals	25,620 <sup>b</sup>	18,118	18,118	18,389	20,568	0.72	0.80
SIC self employed <sup>c</sup>	Individuals	2,630 <sup>b</sup>	2,434	2,434	2,594	2,454	0.99	0.93
Child benefit	Children	12,744	12,776	12,776	12,776	13,058	1.00	1.02
	Families	7,066	7,246	7,246	7,256	7,341	1.03	1.04
	Households				7,227	7,292		
Working Families' Tax Credit	Families	1,258	804	1,178	1,006	1,380	0.80	1.10
Income Support (IS) including means-tested JSA and MIG	Families	4,629	5,427	6,656	6,736	6,124	1.46	1.32
	Households			6,165	6,240	5,689		
Housing benefit: on IS	Households	2,588 <sup>d</sup>	3,099	3,873	5,232	4,383	1.35	1.13
Housing benefit: not on IS	Households	1,275 <sup>d</sup>	1,862	1,328				
Council tax benefit	Households	4,686	6,483	7,413	7,416	6,610	1.58	1.41
Winter Fuel Payment	Households	11,202 <sup>e</sup>	8,294	8,294	8,295	8,480	0.74	0.76

**Notes:** <sup>a</sup> Sources: Tables 1.1 and 1.4 unless otherwise specified;

<sup>b</sup> *Annual Abstract of Statistics* 2001/02, Table 10.2 [www.statistics.gov.uk/downloads/theme\\_compensia/Aa2004/AA2004.pdf](http://www.statistics.gov.uk/downloads/theme_compensia/Aa2004/AA2004.pdf);

<sup>c</sup> External and POLIMOD figures include people with employee as well as self-employed contributions; EUROMOD figures show people with self-employed contributions only. <sup>d</sup> Split between those on and off IS (67:33) is taken from DWP, *Statistical Summary* September 2001: [www.dwp.gov.uk/asd/asd1/Stats\\_Summary\\_Sept2001.pdf](http://www.dwp.gov.uk/asd/asd1/Stats_Summary_Sept2001.pdf)

<sup>e</sup> *Work and Pension Statistics* 2001/02, page 96, table 5, [www.dwp.gov.uk/asd/asd1/workandpens/2002/WPS\\_2002.pdf](http://www.dwp.gov.uk/asd/asd1/workandpens/2002/WPS_2002.pdf). This is the figure for recipients. Payments may be split among qualifying people within households. The number of recipients is somewhere between the number of households and number of individuals benefiting; also includes back-dated payments to men aged 60-64 for previous years, following EU ruling.

EUROMOD: version 21A

**Table 4.4: Revenue/cost of taxes/benefits that are simulated in EUROMOD: a comparison with external statistics for 2000/01**

<i>£ million / year</i>	External source <sup>a</sup> (a)	POLIMOD FES 1995/96		EUROMOD full take-up		Ratio (b)/(a)	Ratio (c)/(a)
		Partial take-up	Full take-up	FES 1995/96 (b)	FES 2000/01 (c)		
Income tax	108,100	75,257	75,257	74,980	92,127	0.69	0.85
SIC employers <sup>b</sup>	53,786	27,486	27,486	27,639	31,878		
SIC employees <sup>b</sup>		21,262	23,553	23,655	26,321		
SIC self employed <sup>b</sup>		1,891					
Total SIC	55,677	51,039	51,039	51,620	54,265	0.93	0.97
Child benefit	8,795	9,071	9,071	9,092	9,075	1.03	1.03
Working Families' Tax Credit	4,927 <sup>c</sup>	2,277	3,352	3,272	3,564	0.66	0.72
Income Support (IS) including means-tested JSA and MIG	16,237	18,068	20,423	20,738	18,941	1.28	1.17
Housing benefit: passported	11,589	8,365	10,224	13,207	11,393	1.14	0.98
Housing benefit: tapered		3,693	2,286				
Council tax benefit	2,686	3,407	3,763	3,696	3,263	1.38	1.21
Winter Fuel Payment	1,681 <sup>d</sup>	1,242	1,242	1,244	1,272	0.74	0.76

**Notes:** <sup>a</sup> Sources: Tables 1.1 and 1.4 unless otherwise specified; <sup>b</sup> 2001/02, National Insurance Fund Account 2001/2, Table 2, [www.nao.org.uk/publications/nao\\_reports/02-03/0203658.pdf](http://www.nao.org.uk/publications/nao_reports/02-03/0203658.pdf); <sup>c</sup> £278 million for childcare credit deducted; <sup>d</sup> Includes back-dated payments to men aged 60-64 for previous years, following EU ruling.  
EUROMOD: version 21A

Another possibility is that FES under-represents likely WFTC recipients. It is quite reasonable to suspect that low-income families combining paid work with responsibility for children would be less likely to be available to complete survey interviews than parents in general. We have no direct evidence about non-response patterns of WFTC recipients. However, the weighted number of recipients in the survey data that Inland Revenue use for take-up estimation in 2001/02 - 973 thousand<sup>31</sup> - is lower than the administrative figure for 2001/02: 1,258 thousand.

Ideally, both the overhang and non-takeup should be modelled. Simply assuming 100% take-up and getting roughly the right number of recipients is not adequate. It would not capture two important features of WFTC: that there are families who are entitled but do not receive it; and that there are families who receive it whose current income or circumstances would make them ineligible. Both these groups are relatively large and should be identified if possible.

Take-up rates on an expenditure basis (Table 4.4) are not so low: between 80% and 85% (Inland Revenue, 2003; Table 2). This implies that families with large WFTC entitlements are more likely to claim than those with small entitlements. No account of this is taken in the POLIMOD incomplete take-up results. One would therefore expect the expenditure shortfall to be greater than the recipient shortfall and this is certainly the case - the POLIMOD ratio is 64% compared with a recipient ratio of 68%. However, the shortfall in expenditure is also large if take-up is assumed to be 100% - the ratio is 68% using 1995/96 data and POLIMOD and 72% using 2000/01 data and EUROMOD. This again suggests that to simply assume 100% take-up, thereby achieving a recipient count fairly close to the administrative figure, is not the right approach. Even accounting for the shortfall in recipients, simulated entitlements are too small, on average by a factor of nearly one third. The families simulated to receive WFTC must have earnings that are too large, too few children or too much other income or capital compared with actual WFTC recipients. This suggests under-representation of the WFTC population. *Over-reporting* of incomes to FES seems unlikely, although *under-reporting* to benefit authorities, or careful timing of benefit claims are both possibilities.

#### 4.1.8 Simulated Income Support

Comparing both 100% take-up estimates with the external figure we find too much Income Support (IS) in both models using 1995/6 data (by 26-28% on an expenditure basis and 44-46% on a recipient basis). This is due to three factors. First, clearly, non-takeup should be accounted for in some way. DWP (2003; page 11) estimates IS caseload take-up rates for 2001/02 to be between 86% and 95% for non-pensioners and between 63% and 73% for pensioners.<sup>32</sup> POLIMOD estimates using these take-up proportions remain too high. This is partly explained by the second factor – the fact that the proportion of people qualifying for IS has fallen since the 1995/96 data were collected.<sup>33</sup> Using 2000/01 data gives rise to lower estimates of IS entitlement, closer to the 2000/01 administrative statistics for receipt (there is a 17% over-estimate on an expenditure basis and 32% on a claimant basis). This indicates that combining the use of recent data with the modelling of non-takeup would give rise to estimates close to those provided by administrative data. However, a third factor may also be

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<sup>31</sup> Family Resources Survey – see Inland Revenue (2003; page 16)

<sup>32</sup> DWP, 2003, *Income Related Benefits: Estimates of Take-up in 2001/2002*: [www.dwp.gov.uk/asd/income\\_analysis/V2pubfinal0102.pdf](http://www.dwp.gov.uk/asd/income_analysis/V2pubfinal0102.pdf)

<sup>33</sup> In fact it rises again after 2000 but this is because of increased generosity – a factor which is captured in the modelled estimates. See DWP, *Statistical Summary* September 2001: [www.dwp.gov.uk/asd/asd1/Stats\\_Summary\\_Sept2001.pdf](http://www.dwp.gov.uk/asd/asd1/Stats_Summary_Sept2001.pdf)

important. Table 4.1 showed an under-estimate of some benefits that EUROMOD does not simulate. To the extent that this under-estimation is due to under-reporting then this could be an explanation of the inflated level of IS entitlement: IS is a general safety-net top-up benefit that fills the gap left by the absence of other benefit income.

#### *4.1.9 Simulated Housing Benefit*

The number of Housing Benefit (HB) recipients is over-estimated by about the same proportion as with Income Support if full take-up is assumed. If DWP take-up rates are applied using 1995/96 data (as in the POLIMOD estimates) then the numbers of families on IS receiving full HB match exceed the administrative figure by 20% but the numbers on “tapered” HB remain even higher (46% too high). Using the full take up assumption the number of households simulated to receive tapered HB actually *falls* to a level not too far from the administrative figure. This is because, using the partial take-up assumption some households not taking up their entitlement to IS are simulated to claim tapered HB instead. This is of course something that happens in reality. The extent of it is unknown.

The EUROMOD estimates based on the later data but full-take-up over-estimate the number of recipients of both types of HB (combined) by 13%. Again, this suggests that modelling non-take-up of HB would improve the results. However, this would need to be carried out in conjunction with a take-up model for IS.<sup>34</sup>

The expenditure estimates for HB are too low if partial take-up is modelled (84%) and slightly too high if 100% take-up is assumed (by 3%) using 1995/96 data. This suggests that the EUROMOD average HB payment is too low. This is consistent with lower entitlements being subject to a greater degree of non-take-up. Using later data and assuming full take-up results in a slight under-estimate on expenditure grounds (2%).

#### *4.1.10 Simulated Council Tax Benefit*

Comparisons for Council Tax Benefit (CTB) are similar to those for HB except more extreme. Using 1995/96 data the number of recipients is over-estimated by 58% on a 100% take-up basis and still over-estimated by 38% if DWP non-takeup estimates are used in modelling. The over-estimation of expenditure is somewhat less - 38% using 100% take-up and 27% using incomplete take-up. Average payments are again under-estimated. Using later data the results improve because numbers entitled to CTB have been falling over the period. However, expenditure is still over-estimated by 21% and recipients by 41%.

#### *4.1.11 Simulated Winter Fuel Payment*

There are no comparable external sources for the amount of Winter Fuel payment or the number of recipients. Official statistics include amounts paid in arrears after a European Court ruling which allowed retrospective claims by men aged 60-64 not in receipt of MIG. These payments and (all) their recipients are not counted by EUROMOD which simply assumes that all households containing anyone currently aged 60 or more are entitled.

## **4.2 Income distribution and poverty estimates**

There are two main official published sources of UK income distribution estimates. The first is the annual article published by the Office for National Statistics in *Economic Trends* “The

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<sup>34</sup> However, this is not at all straightforward. See Hancock R., S. Pudney, G. Barker, M. Hernandez and H. Sutherland, 2004, “The Take-Up of Multiple Means-Tested Benefits by British Pensioners: Evidence from the Family Resources Surveys” *Fiscal Studies* (forthcoming).

Effect of Taxes and Benefits on Household Income” (TETBHI). The second is the annual Households Below Average Income (HBAI) statistics, published by DWP. Comparisons with statistics from 2001/02 from both sources are made with EUROMOD output for 2001/02, based on 1995/06 and 2000/01 data.

TETBHI is based on a later survey of the same data source as EUROMOD (the Family Expenditure Survey is re-named as the Expenditure and Food Survey – EFS – in 2001/02). HBAI is based on a different survey – the Family Resources Survey.

The HBAI (before housing costs) income definition is similar to that used on a regular basis in EUROMOD outputs, although differs in some minor details. TETBHI incomes have been annualised approximately and the statistics refer to households, not to individuals within households. Both UK sources normally use the McClements equivalence scale whereas the EUROMOD estimates use the modified OECD equivalence scale. These are compared in Table 4.6. The McClements scale uses the couple as the base and weights a single person by 0.61. Equivalised incomes have been multiplied by 0.61 in Table 4.5 to put them on the same basis as those using the OECD scale (which uses the single person as base). This adjustment does not alter the fact that use of the McClements scale will cause households to be ranked differently than if the OECD scale were used. In particular, families with young children are given a relatively small weight in the McClements scale and will appear higher up the distribution than under the OECD scale.

Thus most of the statistics shown in the two parts of Table 4.5 are not fully comparable. One would not expect the results to be the same and the comparisons are provided simply to give a preliminary and basic assessment. However, HBAI now provide some limited relative poverty statistics using the modified OECD scale. Comparisons of these with EUROMOD statistics are also shown.

Most differences in results could be explained by the differences in the calculations or underlying data. The Gini coefficient (Table 4.5a) is lower in EUROMOD - one part of the explanation could be the 100% take-up assumption for means-tested benefits reducing the number of EUROMOD households with very low incomes. However, experience also shows that the Gini tends to be 1-2 percentage points lower when incomes are simulated, even when non-take-up is modelled, compared with incomes taken directly from survey responses. The lower measured inequality is consistent with somewhat lower poverty headcounts using EUROMOD (Table 4.5b). Mean unequivalised household incomes (in 2001/02 prices) are higher using the 2000/01 survey than the 1995/96 survey. This would be consistent with EUROMOD updating procedures not capturing in full the growth in some (or all) incomes, combined with the fact that employment has grown over the period.

**Table 4.5 Income distribution and poverty comparisons using EUROMOD and official UK sources for 2001/02 (a) household level comparisons**

<i>Equivalised £ per year unless otherwise stated</i>		<b>EUROMOD 2001/02</b>		<b>TETBHI</b>
		<b>FES 1995/96</b>	<b>FES 2000/01</b>	<b>EFS 2001/02</b>
Gini coefficient		0.30	0.31	0.36
Decile points	1 <sup>st</sup>	5,375	5,611	5,011
	2 <sup>nd</sup>	6,415	6,790	6,317
	3 <sup>rd</sup>	7,372	7,837	7,540
	4 <sup>th</sup>	8,468	9,181	8,949
	5 <sup>th</sup>	10,074	10,822	10,479
	6 <sup>th</sup>	11,716	12,588	12,145
	7 <sup>th</sup>	13,678	14,818	14,452
	8 <sup>th</sup>	16,391	17,654	17,366
	9 <sup>th</sup>	21,045	22,652	22,628
Decile group means	1 <sup>st</sup>	4,518	4,544	3,559
	2 <sup>nd</sup>	5,904	6,218	5,683
	3 <sup>rd</sup>	6,901	7,299	6,933
	4 <sup>th</sup>	7,904	8,499	8,223
	5 <sup>th</sup>	9,246	9,998	9,716
	6 <sup>th</sup>	10,897	11,675	11,270
	7 <sup>th</sup>	12,693	13,695	13,211
	8 <sup>th</sup>	14,948	16,199	15,794
	9 <sup>th</sup>	18,313	19,783	19,640
	10 <sup>th</sup>	28,921	31,831	36,814
Mean: Unequivalised		19,165	20,777	22,925
Mean: Equivalised		12,022	12,971	13,085

**Notes and sources:**

**TETBHI** (The Effect of Taxes and Benefits on Household Income) for 2001/02 is published by the Office for National Statistics in *Economic Trends*, May 2003.

[www.statistics.gov.uk/articles/economic\\_trends/effects\\_taxes\\_benefits\\_household\\_income\\_01-02/revised/Lakin\\_revised\\_final.pdf](http://www.statistics.gov.uk/articles/economic_trends/effects_taxes_benefits_household_income_01-02/revised/Lakin_revised_final.pdf)

It uses Expenditure and Food Survey (EFS) data for 2001/02 which have been annualised, approximately. (EFS has replaced FES.) All calculations are on a household basis (not weighted by household size) and use the McClements equivalence scale. Equivalised incomes have been multiplied by 0.61 to put them on the same basis as those using the OECD scale. Data are taken from Table 14 and Table 27 (Appendix 1).

**EUROMOD** estimates are based in 1995/96 and 2000/01 FES data updated to 2001/02. Household Disposable Income (HDI) is equivalised using the modified OECD scale (1, 0.5, 0.3) and is calculated on a per-household basis (ie the same basis as the TETBHI estimate). EUROMOD monthly income output has been multiplied by 12. EUROMOD version 21A

**(b) individual level comparisons**

<i>Equivalised £ per year</i>		EUROMOD (OECD scale)		HBAI (FRS 2001/02)	
		FES 1995/96	FES 2000/01	McClement's scale	OECD scale
Gini coefficient		0.30	0.31	0.35 <sup>a</sup>	0.35 <sup>b</sup>
Decile group medians	1 <sup>st</sup>	4,953	4,980	4,060	
	2 <sup>nd</sup>	5,964	6,282	5,678	
	3 <sup>rd</sup>	6,985	7,384	6,820	
	4 <sup>th</sup>	8,048	8,644	7,993	
	5 <sup>th</sup>	9,432	10,147	9,262	
	6 <sup>th</sup>	10,977	11,749	10,594	
	7 <sup>th</sup>	12,707	13,744	12,149	
	8 <sup>th</sup>	14,752	16,099	14,211	
	9 <sup>th</sup>	17,811	19,250	17,573	
	10 <sup>th</sup>	25,041	27,644	25,535	
Mean		11,986	12,971	12,180	
Median		10,217	10,891	9,864	
% below 50% mean		15.8	17.2	19.0	19.0
% below 60% median		17.2	17.8	17.0	19.0
% below 50% median		6.9	8.2	9.0	10.0
% children below 60% median		23.1	21.0	21.0	23.0
% children below 50% median		7.4	8.4	10.0	11.0

**Notes and sources:**

**HBAI** Households Below Average Income for 2001/02 is published by the Department for Work and Pensions, [www.dfw.gov.uk/asd/hbai/hbai2002/contents.asp](http://www.dfw.gov.uk/asd/hbai/hbai2002/contents.asp) It uses data from the 2001/02 Family Resources Survey. The calculations use the McClements scale and weight household incomes by household size. Top incomes are inflated using information from the Survey of Personal Incomes. The same adjustment by 0.61 as in TETBHI has been made to re-scale equivalised incomes to the same basis as the OECD scale. HBAI incomes are published in weekly terms and here have been multiplied by 52. Children are defined as aged under 16 or aged under 19 if in full-time non-advanced education. Data are taken from The Income Distribution Chapter, Table 2. [www.dfw.gov.uk/asd/hbai/hbai2002/pdfs/Chapter\\_2.pdf](http://www.dfw.gov.uk/asd/hbai/hbai2002/pdfs/Chapter_2.pdf). **HBAI** also published figures using the modified OECD scale. Data taken from table 5.2 in Appendix 5 [www.dfw.gov.uk/asd/hbai/hbai2002/pdfs/Appx5.pdf](http://www.dfw.gov.uk/asd/hbai/hbai2002/pdfs/Appx5.pdf)

**EUROMOD** estimates are based in 1995/96 and 2000/01 FES data updated to 2001/02. Household Disposable Income (HDI) is equivalised using the modified OECD scale (1, 0.5, 0.3) and households are weighted by their size. Poverty headcounts are of individuals in households with equivalised income below the poverty line. EUROMOD monthly income output has been multiplied by 12. Children are defined as aged under 18. EUROMOD version 21A.

a. This figure is calculated by the Institute for Fiscal Studies. See Brewer et al (2004; Figure 2.4).<sup>35</sup>

b. This figure is kindly supplied by Andrew Shephard of the Institute for Fiscal Studies (see footnote 17 in Brewer et al (2004)).

<sup>35</sup> Brewer M., A. Goodman, M. Myck, J. Shaw and A. Shephard, 2004, *Poverty and Inequality in Britain: 2004*, IFS Commentary 96.

**Table 4.6: Equivalence scale relativities: McClements and modified OECD**

	McClements (BHC)	McClements adjusted to single=1	Modified OECD
First adult	0.61	1	1
Spouse of first adult	0.39	0.64	0.5
Other second adult	0.46	0.75	0.5
Third adult	0.42	0.69	0.5
Fourth + adults	0.36	0.59	0.5
Child aged 0-1	0.09	0.15	0.3
Child aged 2-4	0.18	0.30	0.3
Child aged 5-7	0.21	0.34	0.3
Child aged 8-10	0.23	0.38	0.3
Child aged 11-12	0.25	0.41	0.3
Child aged 13	0.27	0.44	0.3
Child aged 14-15	0.27	0.44	0.5
Child aged 16-18	0.36	0.59	0.5

### 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.

- The sample is relatively small. Care should be taken in interpreting results for small sub-groups.
- The weights do not control for differential non-response according to any dimension except family type (1995/96 data) or age, sex and region (2000/01 data). No adjustments are made for structural changes in the characteristics of the population between the data years and the simulation year (2001).

There are many instances where 2000/01 data perform better in representing 2001/01 than do data from 1995/96, in spite of updating procedures. Thus *it is recommended to use the 2000/01 database unless there are good reasons to do otherwise.*

- There is a shortfall in people with higher incomes and in self-employment income and investment income. It is likely that the main problem is a shortfall of high income people with these sources of income or an under-recording of these sources for high income people.
- The model contains too few families entitled to Working Families Tax Credit. It is possible that there are too few people with *low* earnings.
- Neither non-takeup nor receipt of benefits based on past circumstances are modelled. It is effectively assumed that entitlement is based on current circumstances and that entitlement leads to receipt. This has the effect of (a) inflating the incomes of families who do not receive these benefits and reducing the number of people in very poor families, (b) inflating the cost of these benefits and the cost of making them more generous, (c) diminishing the relative impact of benefits that do not have problems of non-takeup.



## Appendix

**Table A1 Comparison with external statistics for 2001/02: using FES 2000/01 and official and alternative weights**

BENEFIT/TAX	Recipients/payers (thousand)					Expenditure/revenue £m / year				
	External source (1)	EUROMOD		Ratio		External source (4)	EUROMOD		Ratio	
		Official wts (2)	Alternative wts (3)	(2)/(1)	(3)/(1)		Official wts (5)	Alternative wts (6)	(5)/(4)	(6)/(4)
Incapacity Benefit	1,520	1,532	1,525	1.01	1.00	6,749	6,236	6,190	0.92	0.92
Retirement Pension (basic)	10,214	9,927	9,795	0.97	0.96	33,773	32,788	32,240	0.97	0.95
Widow's Benefit	256	287	312	1.12	1.22	1,099	885	967	0.81	0.88
Contributory JSA	165	246	247	1.49	1.50	470	700	695	1.49	1.48
Attendance Allowance	1,290	950	903	0.74	0.70	3,124	2,156	2,055	0.69	0.66
Disability Living Allowance	2,240	1,941	1,941	0.87	0.87	6,580	5,055	5,065	0.77	0.77
Severe Disablement Allowance	367	304	299	0.83	0.81	1,040	873	857	0.84	0.82
Invalid Care Allowance	406	403	404	0.99	1.00	932	835	845	0.90	0.91
Industrial Injuries Disablement Benefit	280	212	208	0.76	0.74	778	443	428	0.57	0.55
War Pension	273	197	196	0.72	0.72	1,231	672	661	0.55	0.54
Disabled Persons Tax Credit	31	13	14	0.42	0.45	50	40	41	0.80	0.82
Council Tax	24,050	24,098	24,841	1.00	1.03	16,932	18,326	18,537	1.08	1.09
Income tax	28,600	27,766	27,648	0.97	0.97	108,100	91,127	91,959	0.84	0.85
SIC (total)	28,250	22,465	22,339	0.80	0.79	55,677	52,642	52,324	0.95	0.94
Child benefit (children)	12,744	13,058	12,688	1.02	1.00	8,795	9,075	9,332	1.03	1.06
WFTC (families)	1,258	1,380	1,413	1.10	1.12	4,927	3,564	3,727	0.72	0.76
Income Support (households)	4,629 <sup>a</sup>	5,689	5,750	1.23	1.24	16,237	18,941	19,708	1.17	1.21
Housing benefit (households)	3,863	4,383	4,392	1.13	1.14	11,589	11,393	11,563	0.98	1.00
Council tax benefit (households)	4,686	6,610	6,660	1.41	1.42	2,686	3,263	3,276	1.21	1.22
Winter Fuel Payment (hholds)	11,202	8,480	8,383	0.76	0.75	1,681	1,272	1,257	0.76	0.75

**Sources:** See notes to Tables 1.1, 4.2, 4.3 and 4.4.

<sup>a</sup>Families