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1990

No 439
May 1990

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THE EFFECTS OF TAXES AND BENEFITS ON HOUSEHOLD INCOME, 1987

The main points are:

(1) The effect of government expenditure and taxation is to reduce the differences in income amongst households. In 1987 taxes and benefits (including NI pensions) increased the share of total income of the bottom fifth of households from 2.1 per cent of original income to 7.6 per cent of post-tax income. Cash benefits play the largest part in reducing income differences.

(2) The joint impact of taxes and benefits is greatest for retired households and for those non-retired households containing no economically active people.

(3) Equivalisation of income (ie adjusting income for household size and composition) is used extensively in ranking the households for the first time this year. The main effect is that small households are no longer concentrated at the bottom of the income distribution, nor are larger households concentrated at the top.

Introduction

The aim of this analysis is to examine how the distribution of income amongst households in the UK is modified as a result of Government expenditure and taxation. During 1987 the Government raised and spent £168 billion; most of this revenue was raised, directly or indirectly, from UK households who also benefited, directly or indirectly, from the associated Government expenditure. Although greater equality of incomes is not necessarily a primary aim of this process, it is nevertheless one of its consequences. The article is the latest in an annual series published in *Economic Trends* since the early 1960s. Each year the article covers the same main ground but also has a special topic.

This year we have made some fundamental changes to the article after reviewing the methodology behind the analysis - the first such review for over 10 years. As part of this review, we have decided to produce the article on an equivalised basis ie adjusting income to take account of household size and composition. Equivalisation is used in the ranking process, for percentage shares and when calculating Gini coefficients: but the tables show incomes and taxes in ordinary £ a year not equivalised £ a year. The effects of equivalisation form this year's special topic.

Equivalisation

Equivalisation means adjusting household income to allow for household size and composition (to recognise different needs). A household of five adults needs a higher income than a single person living alone to achieve the same 'standard of living'. A distribution of equivalised income, where all households are put on an equal footing regardless of size or composition, thus provides a more meaningful way of comparing the income of households. For example: consider two married couples, the Jones with no children and the Smiths with two children (aged 3 and 5), both earning £15,000 a year. The Jones have an equivalence factor of 1.00 whereas the Smiths have a factor of 1.39 (where the 0.39 accounts for the children). The Smiths have a lower equivalised income at £10,791 (= £15,000/1.39) than the Jones at £15,000 (= £15,000/1.00).

The contents are as follows:

- | | |
|------------|--|
| Part I | Detailed description of results for 1987 for all households, and for retired and non-retired households separately. |
| Part II | The effects of equivalisation. |
| Appendix 1 | Detailed tables with fine breakdown of income components for quintile and decile groups, and results for different types of household. |
| Appendix 2 | Methodology and definitions. |
| Appendix 3 | Changes in the methodology this year. |
| Appendix 4 | Selection of tables on the old basis. |

The main data source is the annual Family Expenditure Survey (FES). Since this article is based on a sample survey, its results are subject to sampling errors. These are generally larger for the smaller household groups (further details on sampling errors and reliability are given in Appendix 2). The unit of analysis is the household, rather than the person or tax unit. This analysis gives a snapshot of households at various stages in their lifecycles: nearly everyone has less income when elderly than at their peak earning age. The monetary values in the tables in the main body of the article are rounded to the nearest £10.

The figures in each year's article are free standing and are not intended to be used as part of a time series with figures from earlier articles. The FES changes slightly each year, and no special effort has been made in the past to ensure a fully-consistent time series. The major changes to the methodology this year mean that the 1987 figures are completely incompatible with those for earlier years. As a special exercise, we intend to produce a consistent time series (as consistent as the changing FES will allow) for a small number of tables in the next article. This series will be calculated retrospectively and on the new basis, not a further continuation of the old series.

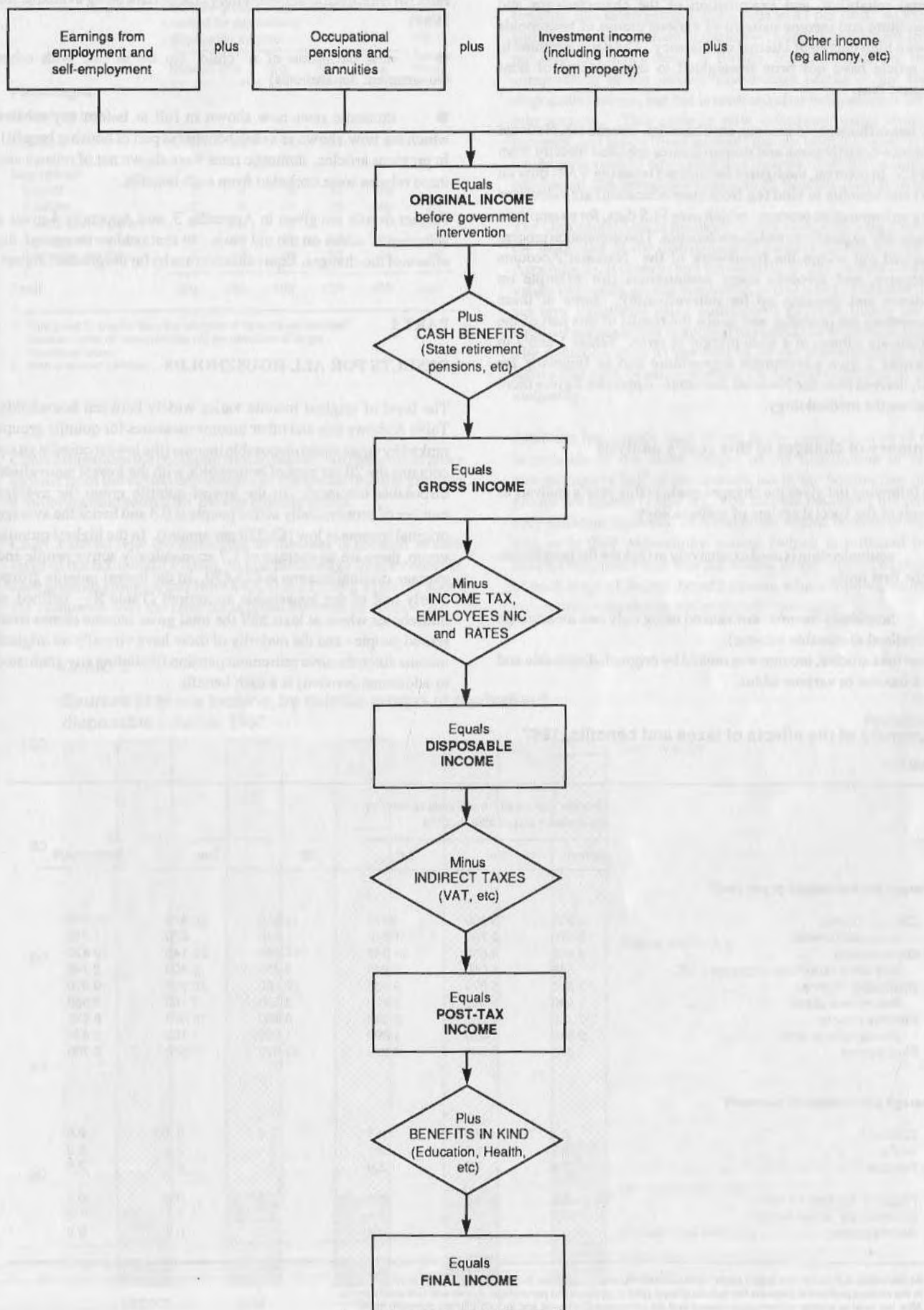
Summary of methodology and sources

Chart 1 illustrates the stages of redistribution which form the structure of this analysis. Initially, households receive income from various non-governmental sources: from their employment (wages and salaries; self-employment income); from occupational pensions; from their investments and from other households (eg alimony payments). Total income from these sources constitutes original income. The flow chart shows the various ways in which Government then raises revenue from households and distributes benefits to them both in cash and in kind.

The main source of data for this analysis is the Family Expenditure Survey (FES) 1987. This is a continuous household survey which collects information on the income, expenditure and direct tax payments of each household member aged 16 years and over, and on household composition and other characteristics such as tenure. In 1987 some 7,400 households participated in the UK - about 1 in every 3,000 households. The response rate was 72 per cent in Great Britain: the FES in Northern Ireland is a separate exercise to the rest of UK, with a much larger sampling fraction, and only a proportion

CHART 1

Stages of redistribution



the FES suffers from some non-response bias, for example through under-representation of the very top of the income distribution, the elderly and the self-employed. However, in general, comparisons of survey results over successive years justify confidence in their general reliability, and examination of the characteristics and expenditure and income patterns of various groups of households shows a high degree of internal consistency. The data presented in this article have not been reweighted to take account of non-response bias.

The data on household income, cash benefits, income tax, National Insurance contributions and domestic rates are used directly from the FES. In contrast, the figures for indirect taxes (eg VAT, duty on beer) and benefits in kind (eg from state education) are calculated using an imputation process - which uses FES data, for example on households' expenditure and characteristics. This imputation process is carried out within the framework of the National Accounts aggregates, and involves many assumptions (for example on incidence and grossing up for non-response). Some of these assumptions are doubtful, and hence the results of this part of the analysis are subject to a wide margin of error. Tables 1 and 2 in Appendix 1 give government expenditure and its financing for 1987, derived from the National Accounts. Appendix 2 gives more detail on the methodology.

Summary of changes to this year's analysis

The following list gives the changes made to this year's analysis as a result of the special review of methodology:

- equivalisation is used extensively in ranking the households for the first time.
- household income now ranked using only one measure (ie **equivalised disposable income**). In previous articles, income was ranked by original, disposable and gross income in various tables.

Summary of the effects of taxes and benefits, 1987

TABLE A

						Quintile groups of households ranked by equivalised disposable income					All households
						Bottom	2nd	3rd	4th	Top	
Average per household (£ per year)¹											
Original income						1 220	3 850	9 470	14 510	25 470	10 900
<i>plus</i> cash benefits						3 170	2 780	1 870	1 070	670	1 910
Gross income						4 400	6 630	11 340	15 580	26 140	12 820
<i>less</i> direct taxes ² and employees' NIC						580	1 060	2 240	3 430	6 400	2 740
Disposable income						3 810	5 570	9 100	12 150	19 740	10 070
<i>less</i> indirect taxes						1 040	1 300	2 120	2 590	3 180	2 050
Post-tax income						2 780	4 260	6 980	9 550	16 560	8 030
<i>plus</i> benefits in kind						2 040	1 820	1 890	1 520	1 100	1 670
Final income						4 820	6 080	8 870	11 070	17 660	9 700
Average per household (number)											
Children ³						0.7	0.6	0.8	0.6	0.4	0.6
Adults						1.7	1.7	2.1	2.1	2.0	1.9
Persons						2.4	2.3	2.9	2.7	2.3	2.5
People in full-time education						0.6	0.5	0.6	0.5	0.3	0.5
Economically active people						0.3	0.7	1.4	1.7	1.7	1.2
Retired people						0.7	0.7	0.4	0.2	0.2	0.4

1 All the tables in Part I of this article show unequivalised income: equivalised income has only been used in the ranking process to produce the quintile groups (and to produce the percentage shares and Gini coefficients).
2 After tax relief at source on mortgage interest and life assurance premiums and including gross domestic rates.
3 Children are defined as persons aged under 16 or aged between 16 and 18, unmarried and receiving non-advanced further education.

- original income no longer includes free meals and food from employer.
- disposable income re-defined to be exclusive of domestic rates (in anticipation of community charge data being available for 1989)
- new definition of a 'child' (to be in line with other Government departments)
- domestic rates now shown in full ie. before any rebates which are now shown as a cash benefit (as part of housing benefit). In previous articles, domestic rates were shown net of rebates and these rebates were excluded from cash benefits.

Further details are given in Appendix 3, and Appendix 4 gives a selection of tables on the old basis - so that readers can gauge the effects of the changes. Equivalisation has by far the greatest impact.

PART I

RESULTS FOR ALL HOUSEHOLDS

The level of original income varies widely between households. Table A shows this and other income measures for quintile groups ranked by equivalised disposable income (the lowest quintile group contains the 20 per cent of households with the lowest equivalised disposable incomes). In the lowest quintile group the average number of economically active people is 0.3 and hence the average original income is low (£1,220 per annum). In the highest quintile group, there are an average of 1.7 economically active people and average original income is £25,470. In the lowest quintile group, nearly half of the households are retired (Table B) - defined as households where at least half the total gross income comes from retired people - and the majority of these have virtually no original income since the state retirement pension (including any graduated or additional pension) is a cash benefit.

The composition of each quintile group of households, 1987

TABLE B

Percentages	Quintile groups of households ranked by equivalised disposable income					All households
	Bottom	2nd	3rd	4th	Top	
Household type						
Retired	48	46	18	11	8	26
Non-retired						
1 adult	7	8	9	12	18	11
2 adults	8	9	18	25	40	20
1 adult with children ¹	9	6	2	1	-	4
2 adults with children	19	21	33	29	20	24
3 or more adults ²	8	10	20	22	14	15
Total	100	100	100	100	100	100

1 This group is smaller than the category of "one parent families" because some of these families will be contained in larger household types.

2 With or without children.

Chart 2 illustrates the declining importance of cash benefits in gross income from the virtual dependence of the lowest quintile group to a minor income source for the top quintile group.

Chart 3 shows how the dispersion of incomes is reduced at each stage of the tax-benefit system, so that the average final income for each quintile group ranges from £4,820 to £17,660, a ratio of about 1:4 compared with the ratio for original incomes of about 1:20.

An alternative way to illustrate the extent of income redistribution is to examine how income shares are modified by the tax-benefit system (Table C). For example, households in the highest quintile group (when ranked by equivalised disposable income) receive 50 per cent of all original income. After taking into account cash benefits, this same group's share falls to 43 per cent. At the other end of the scale, the share of the lowest quintile group rises from 2.1 per cent to 7.5 per cent. A further, but comparatively smaller, compression of the income distribution occurs at the stage of disposable income, but this is reversed after indirect taxes are taken into account. This table is now calculated using equivalised incomes, and hence 'final income' has not been included; it would be inappropriate to equalise this income measure because of its substantial non-spendable elements eg benefits from education.

The Gini coefficient is the most widely used summary measure of the inequality of the distribution of income (see paragraph 37 of Appendix 2). It takes values between 0 and 100 per cent - the higher values indicating greater inequality. In this article, Gini coefficients are now calculated using equivalised incomes (using the same equivalence scale that is applied to equalise disposable income). The reduction from 51 per cent to 36 per cent shown in Table C shows that cash benefits produce the largest reduction in income inequality.

Attention has already been drawn to the preponderance of retired households in the lower ranges of the distribution of original income; nearly half of the households in the bottom two quintile groups are retired (Table B). The income pattern of the retired is very different from that of households whose head is of working age, as is their expenditure pattern (which is reflected in their indirect tax payments). For this reason in the detailed examination of each stage of the tax-benefit system which follows, retired and non-retired households are analysed separately.

CHART 2

Sources of gross income, by quintile groups of equivalised disposable income, 1987

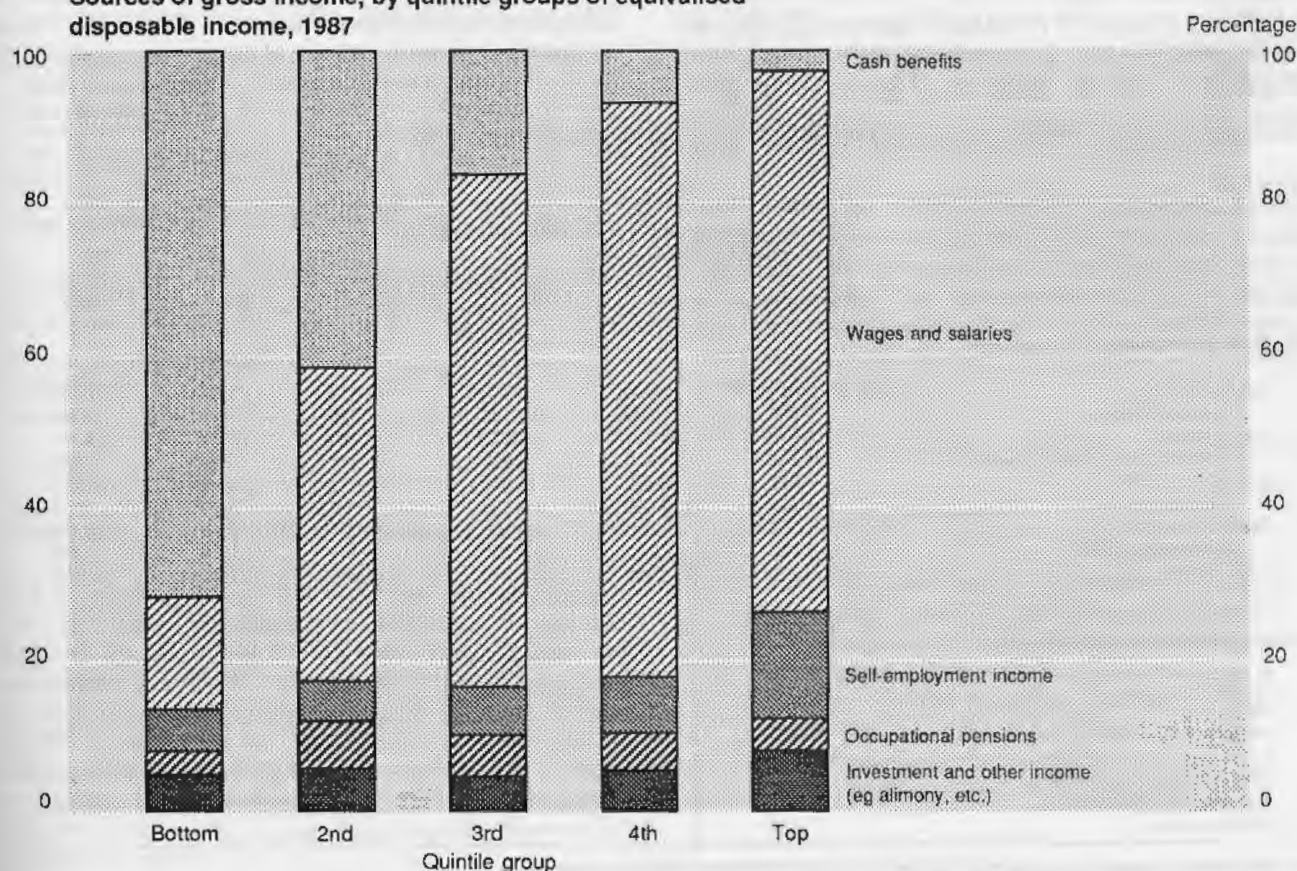
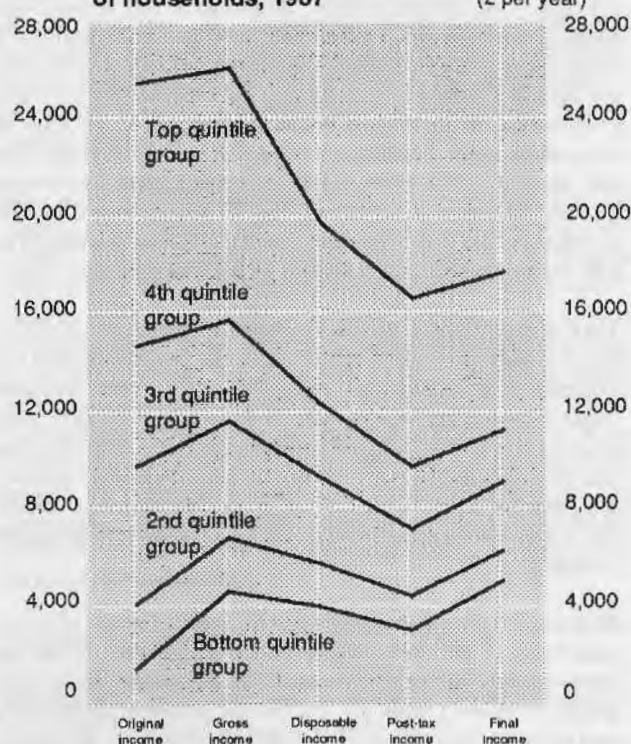


CHART 3

The effects of taxes and benefits on quintile groups¹ of households, 1987

Average income per household (£ per year)



1. Households are ranked throughout by their equivalised disposable incomes

Percentage shares of total household income and Gini coefficients¹, 1987

TABLE C

	Percentage shares of total equivalised income for households ranked by equivalised disposable income			
	Original income	Gross income	Disposable income	Post-tax income
Quintile group				
Bottom ..	2.1	7.5	8.2	7.6
2nd ..	7	11	12	12
3rd ..	16	16	16	16
4th ..	25	23	23	22
Top ..	50	43	41	43
All households	100	100	100	100
Decile group				
Bottom ..	0.8	3.3	3.5	3.1
Top ..	32	27	26	27
Gini coefficient (percent) ..	51	36	33	36

1 This is a measure of the dispersion of each definition of income. Unlike the percentage shares analysis where the household incomes are ranked only once, the Gini coefficient calculation needs a separate ranking for each income definition. For example, the coefficient for original income is produced by first equivalising the original income of all the households, then this distribution is ranked and this ranked distribution is used to calculate the coefficient.

RESULTS FOR NON-RETIRED HOUSEHOLDS

Original income

The distribution of original income amongst non-retired households is more equal than amongst all households, ranging from an average of £2,760 per annum in the lowest quintile group to £27,700 in the highest (Table D), a ratio of 1:10 compared to the ratio of 1:20 for the distribution over all households. There is a fairly strong

relationship between the original income of a household and the number of economically active people it contains and Table K (at the end of this section) gives a breakdown by the number of economically active people per household. There is also a strong relationship between the number of children per household and income: the number of children falls steadily as income rises.

Summary of the effects of taxes and benefits on non-retired households, 1987

TABLE D

							Quintile groups of non-retired households ranked by equivalised disposable income					All house- holds
							Bottom	2nd	3rd	4th	Top	
Average per household (£ per year)												
Original income	..	..	..	..	..	..	2 760	8 400	12 670	17 070	27 700	13 720
plus cash benefits	..	..	..	..	..	..	3 050	1 840	1 180	720	480	1450
Gross income	..	..	..	..	..	..	5 810	10 240	13 850	17 790	28 180	15 170
less direct taxes ¹ & employees' NIC	..	..	..	..	..	..	840	1 970	2 920	4 040	6 890	3330
Disposable income	..	..	..	..	..	..	4 970	8 270	10 930	13 740	21 290	11 840
less indirect taxes	..	..	..	..	..	..	1 400	2 060	2 430	2 810	3 350	2410
Post-tax income	..	..	..	..	..	..	3 560	6 210	8 500	10 930	17 940	9 430
plus benefits in kind	..	..	..	..	..	..	2 680	2 040	1 850	1 450	1 040	1 810
Final income	..	..	..	..	..	..	6 250	8 250	10 350	12 380	18 980	11 240
Average per household (number)												
Children ²	..	..	..	..	..	..	1.3	1.1	0.8	0.6	0.4	0.8
Adults	..	..	..	..	..	..	1.9	2.1	2.2	2.2	2.0	2.1
Persons	..	..	..	..	..	..	3.2	3.2	3.0	2.8	2.3	2.9
People in full-time education	..	..	..	..	..	..	1.1	0.8	0.7	0.5	0.3	0.7
Economically active people	..	..	..	..	..	..	0.7	1.5	1.8	2.0	1.8	1.6
Retired people	..	..	..	..	..	..	0.1	0.1	0.1	0.1	0.1	0.1

1 After tax relief at source on mortgage interest and life assurance premiums and including gross domestic rates.

2 Children are defined as persons aged under 16 or aged between 16 and 18, unmarried and receiving non-advanced further education.

Cash benefits

Cash benefits are of two types: contributory, paid from the National Insurance Fund to which individuals and their employers make contributions while working, and non-contributory (Table E). For non-retired households, non-contributory benefits form the most important source of cash benefit income. An important item, child benefit, is biased towards the bottom of the income distribution, in proportion to the number of children per household (Table D). The other non-contributory benefits are mainly income-related, in particular Supplementary Benefit (now Income Support), and so payments are concentrated in the lowest quintile group, although the presence of some individuals with low incomes in high income households means that some payments are recorded further up the income distribution. Most contributory benefits, for which contribution records rather than income are the criteria for payment, are highest for the second quintile group. On average, cash benefits formed 10 per cent of the gross income of non-retired households: their payment resulted in a significant reduction in income inequality.

Average value of cash benefits for each quintile group of non-retired households, 1987

TABLE E

				Quintile groups of households ranked by equivalised disposable income					All households
				Bottom	2nd	3rd	4th	Top	
Average per household (£ a year)									
Contributory									
Retirement pension ..	..			120	270	260	110	110	180
Sickness/ injury related ..	..			180	230	120	100	60	140
Unemployment benefit ..	..			150	90	70	60	40	80
Other .. .. .	..			60	70	50	50	40	60
Total contributory ..	..			510	660	500	330	250	450
Non-contributory									
Supplementary benefit ..	..			1 170	320	110	40	30	330
Child benefit .. .. .	..			490	410	320	230	140	320
Housing benefit .. .. .	..			610	180	70	10	20	180
Sickness/ disablement related	..			100	160	100	50	20	90
Other .. .. .	..			160	120	90	60	20	90
Total non-contributory ..	..			2 540	1 190	680	390	230	1 000
Total cash benefits				3 050	1 840	1 180	720	480	1 450
Cash benefits as a percentage of gross income									
				53	18	8	4	2	10

Income tax, NI contributions and domestic rates

Both income tax payments and employees' National Insurance contributions are closely related to the size of original income. The payments by households of employees' National Insurance contributions in particular vary with the number of persons in employment and with their earnings. However, since National Insurance contributions are only calculated on the first £295 of weekly earnings (the ceiling in operation during most of 1987), households in the top quintile group pay rather less in contributions as a percentage of gross income than the middle 60 per cent of households (Table F).

Income tax, employees' NIC and domestic rates as percentages of gross income for each quintile group of non-retired households, 1987

TABLE F

	Quintile groups of non-retired households ranked by equivalised disposable income					All households
	Bottom	2nd	3rd	4th	Top	
Percentages						
Income tax ¹	4.3	9.6	11.8	14.0	17.7	13.7
Employees' NIC	2.5	5.2	5.7	5.8	4.5	5.0
Domestic rates	7.6	4.4	3.5	3.0	2.2	3.3
Total	14.4	19.2	21.1	22.7	24.5	22.0

¹ After tax relief at source on mortgage interest and life assurance premiums.

In 1987 over one-third of working age individuals had insufficient income to pay income tax, and marginal tax rates for taxpayers ranged from 27 per cent to 60 per cent. The analysis of households when ranked by equivalised disposable income shows a much less progressive tax system. Average rates are 4.3 per cent in the lowest quintile, rising steadily to 17.7 per cent in the highest quintile. This results from grouping individuals in the same households, from ranking households by equivalised disposable income, and from calculating average income tax rates on gross income (instead of taxable income).

For domestic rates, before the deduction of rate rebates (which are treated as a cash benefit), the level of payments is quite regressive - the average percentage falling steadily as income rises.

Indirect taxes

In total, indirect taxes expressed as a proportion of disposable income fall as disposable income rises (Table G), ranging from 28 per cent in the bottom quintile group to 16 per cent in the highest, though the highest quintile pay most in indirect taxes in absolute terms. However, individual taxes have divergent effects.

VAT, tobacco duty, beer duty and intermediate taxes (see box below) all fall as a percentage of disposable income as income rises. The fall in tobacco duty payments as a percentage of income is particularly marked. For expenditure items relating to motoring (ie car tax and duty on hydrocarbon oils), the tax as a proportion of income is similar for the bottom four quintile groups but much lower for the top group.

INTERMEDIATE TAXES

Some indirect taxes, such as VAT and excise duties on petrol, alcohol, tobacco, etc have a direct effect on the final price of goods and services. However, the producers of these goods and services also incur costs such as employers' National Insurance contributions, non-domestic rates, and duty on hydrocarbon oils, part of which they may pass on to households in the price of their products. These are called intermediate taxes.

Indirect taxes as a percentage of disposable income for each quintile group of non-retired households, 1987

TABLE G

							Quintile groups of non-retired households ranked by equivalised disposable income					All house- holds
							Bottom	2nd	3rd	4th	Top	
Percentages												
VAT							8.8	8.5	7.9	7.6	6.2	7.4
Duty on beer							1.2	1.1	1.0	1.0	0.6	0.9
Duty on wines and spirits							0.7	0.8	0.9	0.9	0.9	0.9
Duty on tobacco							5.5	3.7	2.4	1.7	0.8	2.1
Duty on hydrocarbon oils							1.7	1.9	1.8	1.8	1.3	1.6
Car tax and vehicle excise duty							1.0	1.0	1.1	1.1	0.8	1.0
Other taxes on final goods and services							2.1	1.8	1.5	1.3	1.1	1.4
Intermediate taxes							7.2	6.1	5.5	5.1	4.1	5.1
Total ¹							28.3	24.9	22.2	20.4	15.7	20.4

1 The corresponding figures using total expenditure as the denominator are: 20.9, 22.9, 22.2, 21.9, 19.8 (top group) and 21.4 per cent.

Although some indirect taxes are less regressive than others, Table G shows that the impact of virtually all the indirect taxes declines for the top quintile group compared with the fourth quintile group. This is so partly because it is likely that higher income households spend a smaller proportion of their income than households with smaller incomes. If the incidence of indirect taxes, were to be expressed in terms of expenditure rather than income, they can be shown to be rather less regressive.

Benefits in kind

Government current expenditure in providing certain goods and services to households either free at the time of use or at subsidised prices is converted by imputation into the equivalent of an income flow to individual households in order to arrive at final income. The largest two items for which such imputations are made are the health and education services, which together accounted for 21.6 per cent of total general government expenditure in 1987. Other items for

which imputations are made are school meals and welfare milk, the housing subsidy and travel subsidies, together accounting for a further 1.9 per cent of general government expenditure.

Education benefit to individual households is imputed by reference to the number of pupils and students in the households (students living away from home are not included as part of their parents' household), and to the type of education they are receiving, though no allowance is made for differing costs between local authorities. The bottom quintile group contains the highest number of children and consequently the highest number of those in full-time education (Table D). This is the main reason for this quintile group being allocated the highest average imputed benefit (Table H). Another important factor is the presence of the majority of student-only households, for whom the costs of education are greatest. Similarly the impact of expenditure on school meals and welfare milk is greatest in the lower income groups where children are more likely to take school meals and have them provided free of charge.

Data are available on the average cost to the Exchequer of providing the various types of health care - hospital inpatient/outpatient care, GP consultations, dental services etc - and it is possible to estimate the use made of each service on average by individuals of different age and sex. Using this information, an imputed benefit from the health service can be allocated to each individual in the FES sample. These benefits are then aggregated for members of the household to yield figures on a household basis, so that not only the sex and age composition but also the size of the household determines the attribution of health service benefits.

Age and sex are by no means the only possible determinants on which to base the allocation, but age is certainly a very important factor. Data availability also limits the choice of determinants - the FES collects little information on health or use of health services. Table H indicates that these benefits decline steadily with income.

Housing subsidy is the sum of Exchequer subsidy and local authority determined rate fund contributions to the housing revenue account. Thus housing subsidy as defined here has been spread between public sector tenants, and since such households tend to be concentrated in the lower half of the income distribution this is where the subsidy is highest. In these articles, tax relief on mortgage interest is treated as an adjustment to income tax, not as part of the housing subsidy analysed in Table H.

Average value of benefits in kind for each quintile group of non-retired households, 1987

TABLE H

	Quintile groups of non-retired households ranked by equivalised disposable income					All households
	Bottom	2nd	3rd	4th	Top	
Average per household (£ a year)						
Education	1 510	1 040	910	620	330	880
National health service	880	860	820	720	590	770
Housing subsidy	130	70	40	30	10	60
Travel subsidies	30	40	50	60	90	50
School meals and welfare milk	130	30	20	10	10	40
Total	2 680	2 040	1 850	1 450	1 040	1 810
Benefits in kind as a percentage of post-tax income						
	75	33	22	13	6	19

Travel subsidies cover the passenger element of the grants made to various public transport operations covering both buses and railways. The use of public transport by non-retired households is partly related to the need to travel to work and thus to the number of economically active people in a household and so the combined effect of these travel subsidies increases over the income distribution. The heavy use of railways by households in the top quintile group, particularly commuters, means that their imputed benefit is nearly twice the average of all households.

Table H shows that taken together the absolute values of these benefits in kind clearly decline as household income increases. As a proportion of post-tax income, benefits decrease from 75 per cent in the lowest quintile group to 6 per cent in the highest quintile group, indicating that this expenditure contributes to the reduction in income inequality.

Summary

The overall effect of the various stages of the tax-benefit system on non-retired households is summarised in Table J. Households in the highest quintile group (when ranked by equivalised disposable income) receive 44 per cent of all (equivalised) original income, compared with 4 per cent received by the lowest quintile group. However after direct taxes and benefits are taken into account, the share of the lowest quintile group rises to 8 per cent and that of the highest falls to 39 per cent. Cash benefits are the major factor underlying these changes, causing the Gini coefficient to fall from 42 per cent based on original income to 34 per cent based on gross income. Income tax, employees' National Insurance contributions and rates produced a further reduction in inequality, but payment of indirect taxes increases inequality.

Economic activity

As already mentioned, the size of original income is largely determined by the number of economically active people in the

Percentage shares of total household income and Gini coefficients¹ for non-retired households, 1987

TABLE J

Percentage shares of total equivalised income for non-retired households ranked by equivalised disposable income				
	Original income	Gross income	Disposable income	Post-tax income
Quintile group				
Bottom ..	3.5	7.3	8.0	7.2
2nd ..	11	12	13	12
3rd ..	17	17	17	17
4th ..	24	23	23	23
Top ..	44	41	39	42
All households	100	100	100	100
Decile group				
Bottom ..	1.0	3.0	3.3	2.8
Top ..	28	25	25	26
Gini coefficient (percent) ..	42	34	31	35

¹ This is a measure of the dispersion of each definition of income. Unlike the percentage shares analysis where the household incomes are ranked only once, the Gini coefficient calculation needs a separate ranking for each income definition. For example, the coefficient for original income is produced by first equivalising the original income of all the households, then this distribution is ranked and this ranked distribution is used to calculate the coefficient.

household - even though someone may be defined as economically active if they have been out of work for up to a year as long as they are seeking work. This relationship between income and economic activity amongst non-retired households is explored further in

Average incomes, taxes and benefits by the number of economically active people per non-retired household, 1987

TABLE K

	Number of economically active people ¹ per household				All households
	None	One	Two	Three or more	
Number of households in the sample	607	2 024	2 196	632	5 459
Average per household (£ per year)					
Original income	890	10 880	17 200	23 060	13 720
plus cash benefit	4 180	1 460	860	880	1 450
Gross income	5 070	12 340	18 060	23 940	15 170
less direct taxes ² & employees' NIC	450	2 790	4 100	5 180	3 330
Disposable income	4 620	9 550	13 950	18 760	11 840
less indirect taxes	1 120	1 930	2 750	4 020	2 410
Post-tax income	3 500	7 620	11 210	14 750	9 430
plus benefits in kind	2 460	1 550	1 760	2 220	1 810
Final income	5 950	9 170	12 970	16 960	11 240
Gini coefficients (percent)					
Equivalised original income	87	43	31	25	42
Equivalised gross income	21	36	28	23	34
Equivalised disposable income	21	33	27	22	31
Equivalised post-tax income	27	37	30	26	35

¹ Economically active people comprise employees, the self employed and others not in employment but who are seeking or intending, when able, to seek work.

² After tax relief at source on mortgage interest and life assurance premiums and including gross domestic rates.

Table K, in which households are classified according to the number of economically active people they contain.

Original income ranges from an average of £890 per annum in households where there are no economically active people to an average of £23,060 in households where there are three or more. Cash benefits are concentrated in households where no-one is economically active and here they form 82 per cent of gross income; but they remain important, at 12 per cent of gross income, for those where one household member is economically active. This latter group will contain a number of households where no-one is currently in work.

Not only does average original income differ widely between these four household groups but they also differ considerably in the degree of variation of income within the groups. As measured by the Gini coefficient, variability in original income is very high amongst households where no-one is economically active but where two or more persons are economically active the variability is considerably less. Equally, the tax-benefit system has the effect of substantially reducing inequality between the different types of households within the economically inactive group. This results largely from the diverse nature of the economically inactive group, which ranges from single parents with young children, single full-time students, the disabled, and households where no member has been able to find work during the 12 months prior to interview, to a small number of households where income from other sources such as investments means that they have no need to work.

RESULTS FOR RETIRED HOUSEHOLDS

Retired households have quite distinct income and expenditure patterns and so the tax-benefit system affects them in a different way to non-retired households (Table L). Few retired households have substantial original income; those who do are concentrated in the top two quintile groups and are receiving occupational pensions. The majority of retired households are dependent on cash benefits, in the form of state retirement pensions and income-related benefits such as Housing Benefits and Supplementary Pension.

Thus cash benefits form a very high proportion of gross income for all but the better-off retired households. However, unlike non-retired households, the bulk of these cash benefits are paid from the National Insurance Fund into which the recipients will have made contributions throughout their working lives.

People over pensionable age do not pay National Insurance contributions so the small payments recorded are made by non-retired people living in households defined as retired (see Appendix 2 paragraph 7 for details of definition). All households except those in the highest quintile group of retired households pay very little income tax, because their income is unlikely to exceed their tax allowances unless they have significant income from investments or occupational pensions in addition to their state retirement pension. The largest indirect tax payment made by retired households is VAT, and the top quintile group pays more than twice as much as the average for all households.

Effects of taxes and benefits on retired households, 1987

TABLE L

					Quintile groups of retired households ranked by equivalised disposable income					All house- holds
					Bottom	2nd	3rd	4th	Top	
Average per household (£ per year)										
Original income					380	560	920	2 390	10 600	2 970
plus cash benefits										
Contributory										
Retirement pension					2 320	2 610	2 440	2 580	2 410	2 470
Sickness/ injury related					60	40	50	170	150	90
Unemployment benefit					10	-	10	20	20	10
Other					30	20	30	40	50	30
Non-contributory										
Supplementary benefit.. .. .					130	110	60	70	30	80
Child benefit					10	-	-	-	-	-
Housing benefit					190	520	640	340	40	350
Sickness/ disablement related					10	40	70	260	190	110
Other					20	30	40	100	60	50
Gross income					3 170	3 920	4 260	5 960	13 560	6 170
less income tax ¹					40	50	110	340	2 500	610
less employees' NIC					-	-	-	10	30	10
less domestic rates (gross)					420	420	420	460	600	460
Disposable income					2 710	3 460	3 730	5 160	10 420	5 090
less indirect taxes										
VAT					210	200	200	350	770	350
Tobacco duty					90	100	80	110	100	100
Other taxes on final goods & services					200	190	180	310	580	290
Intermediate taxes					230	200	210	290	540	290
Post-tax income					1 980	2 770	3 060	4 100	8 440	4 070
plus benefits in kind										
Education					30	-	10	20	20	20
National health service					1 170	1 190	1 090	1 160	1 090	1 140
Housing subsidy					40	100	120	90	20	80
Travel subsidies.. .. .					50	60	60	60	70	60
Final income					3 270	4 120	4 330	5 430	9 640	5 360

¹ After tax relief at source on mortgage interest and life assurance premiums.

Retired households derive significant benefits from health services and, to a lesser extent, the housing subsidy and travel subsidies, though of course virtually none from the education service. Health benefit is spread fairly evenly within the group of retired households, as a result primarily of the attribution method used, but housing subsidy is substantially higher for the middle three quintile groups since they have the highest concentration of public sector tenants. The benefits received by retired households from travel subsidies are mainly for bus travel, particularly in the form of concessionary fares, passes, etc, for senior citizens, and since these are not usually means-tested but depend instead on what sort of scheme is being operated by their local authority, there is no particular relationship with income.

Table M shows the extent to which income inequality amongst retired households is reduced by the tax-benefit system. Cash benefits play by far the largest part in bringing about this reduction and income tax payments make a further, though much smaller, contribution. Payments of indirect taxes result in an increase in dispersion.

A comparison of Table M with Table J shows that although the distribution of original income amongst retired households is much more unequal than that within the non-retired household group, the distribution of post-tax income is more equal amongst the retired than amongst the non-retired. Chart 4 illustrates the different impact which the tax-benefit system has on retired and non-retired households.

Percentage shares of total household income and Gini coefficients¹ for retired households, 1987

TABLE M

Percentage shares of total equivalised income for retired households ranked by equivalised disposable income				
	Original income	Gross income	Disposable income	Post-tax income
Quintile group				
Bottom ..	2.6	10.7	11.0	10.2
2nd ..	4	13	14	14
3rd ..	7	15	16	17
4th ..	16	19	20	20
Top ..	71	42	39	39
All households	100	100	100	100
Decile group				
Bottom ..	1.2	5.0	4.9	4.4
Top ..	52	28	26	26
Gini coefficient (percent) ..	71	30	27	32

¹ This is a measure of the dispersion of each definition of income. Unlike the percentage shares analysis where the household incomes are ranked only once, the Gini coefficient calculation needs a separate ranking for each income definition. For example, the coefficient for original income is produced by first equivalising the original income of all the households, then this distribution is ranked and this ranked distribution is used to calculate the coefficient.

PART II

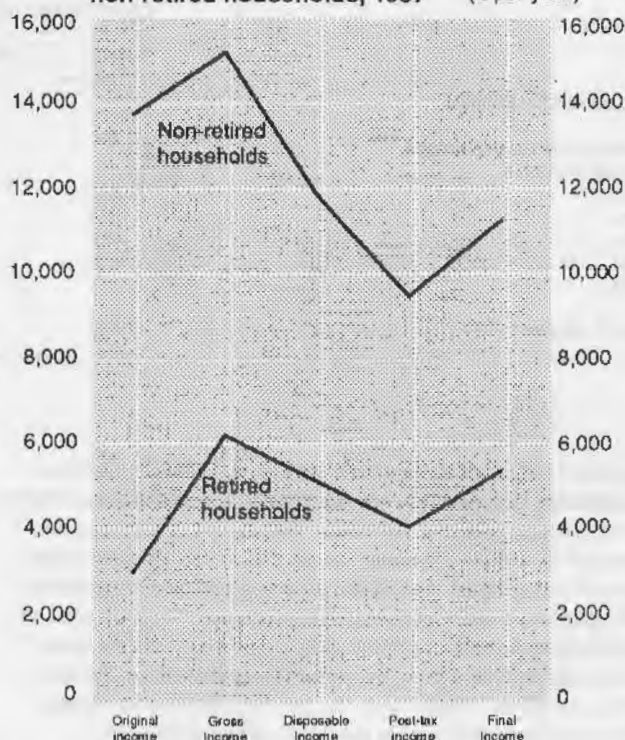
THE EFFECTS OF EQUIVALISING INCOME

Equivalising household incomes is a method of adjusting for household size and composition to allow for their different needs. A household of five adults needs a higher income than a single person living alone to achieve the same 'standard of living'. On the other hand they do not require five times as much income—partly because some costs, such as heating and lighting do not rise in line with the

CHART 4

The effects of taxes and benefits on retired and non-retired households, 1987

Average income per household (£ per year)



number of people sharing a house. Equivalisation allows for such factors and thus produces a more meaningful ranking of households by income. The scale used in this analysis is the McClements scale (before housing costs): this uses a married couple as the standard for comparisons and assigns them a value of one. See paragraph 35 of Appendix 2 for further details.

The question of equivalisation was addressed in the 1985 article (in July 1987 *Economic Trends*) where the effects of three different scales were assessed. The conclusion of the article was that the application of equivalence scales has a substantial impact on the composition of each quintile group and on the distribution of income between households, but there is little difference in effect between the three scales examined. Small households are no longer concentrated at the bottom of the income distribution, nor are large households concentrated at the top. The impact of the tax benefit system is greater, resulting in a more equal distribution of income after taxes and benefits. The 1985 article suggested that equivalence scale adjustments might be used extensively in future articles. It was difficult to introduce equivalisation in the 1986 article because the 1986 FES data were very late, without further delaying the article by a major change in methodology.

Table N gives a cross-tabulation of households, ranked by quintile groups, of unadjusted disposable income and equivalised disposable income. The effect of equivalisation is that the majority of households either stay in the same quintile group, or move only to the next group. For example, of the 1,479 households in the second quintile group of unadjusted disposable income, 519 moved to the bottom quintile of equivalised disposable income, 496 stayed in the second quintile and 290 moved to the third quintile (only 174 moved to the fourth quintile group).

The percentage shares of disposable income of each quintile group are also modified by equivalence scale adjustments, particularly at

Cross tabulation of quintile groups of households ranked by disposable income, unadjusted and equivalised, 1987

TABLE N

							Quintile groups of equivalised disposable income					All households
							Bottom	2nd	3rd	4th	Top	
Numbers of households												
Quintile groups of unadjusted disposable income												
Bottom	..	..	..	..	..	..	870	565	44	-	-	1 479
2nd	..	..	..	..	..	..	519	496	290	174	-	1 479
3rd	..	..	..	..	..	..	84	338	622	278	158	1 480
4th	..	..	..	..	..	..	6	77	442	644	310	1 479
Top	..	..	..	..	..	..	-	3	82	383	1 011	1 479
All households	..	..	..	..	..	..	1 479	1 479	1 480	1 479	1 479	7 396

the top and bottom of the income distribution (Table O). The share of disposable income of the bottom quintile group is increased by some 2 percentage points, whilst the share of the top quintile group is reduced by a similar amount—so the distribution of equivalised income is less unequal. The reason for this is that, on an unadjusted basis, there are a disproportionately high number of single person households in the bottom quintile group—and these have the lowest incomes in absolute terms, but not after equivalisation. In other words, the effect results from the positive correlation between income and household size in the unadjusted distribution.

Table P shows the effect of equivalisation on the Gini coefficient. All the coefficients for equivalisation income are lower than the unadjusted versions, indicating that the distribution of all measures of equivalised income is more equal than without this adjustment—this is the same point as in the previous paragraph. A separate point is that the effects that taxes and benefits (particularly benefits) have in reducing income inequality is greater for equivalised income than for unadjusted income.

Table Q shows the average household size by quintile groups of households ranked by disposable income, on an unadjusted and equivalised basis. On the unadjusted basis the average household size rises steadily from 1.3 in the bottom quintile group to 3.2 in the top quintile group. After equivalisation, the average household size is much more evenly spread: but the number of economically active people is still much higher in the higher income households. This table illustrates another important point, namely that throughout this article monetary amounts in equivalised £ a year are shown in *italics*. All other monetary values are ordinary (ie unequivalised) £ a year eg the disposable income of £3,810 a year for the bottom quintile group in the lower half of this table is the average of the unadjusted disposable income values for the 1,479 households in the bottom quintile of the distribution of equivalised disposable incomes (ranked in ascending order). In this article, equivalisation is only used for ranking purposes, and virtually all monetary amounts in the tables are unequivalised £ a year. We have chosen to use equivalisation only in the ranking process because we feel that to present all the tables in terms of equivalised income would be confusing and difficult to understand. Equivalised income is a theoretical concept, rather removed from the real money that households actually receive and spend.

The point and purpose of equivalisation is evident from Table Q, which indicates the two criteria for assigning households to the quintile groups of the income distribution. For example, without equivalisation, households with the smallest monetary incomes are in the bottom group—but it is clear that in most of these cases the

Percentage shares of total household disposable income, unadjusted and equivalised, 1987

TABLE O

Quintile group	Percentage in each quintile group of households ranked by disposable income	
	Unadjusted	Equivalised
Bottom	6	8
2nd	11	12
3rd	17	16
4th	24	23
Top	43	41
All households	100	100

Gini coefficients for the distribution of income at each stage of the tax-benefit system, unadjusted and equivalised, 1987

TABLE P

			Unadjusted	Equivalised
Gini coefficients (percent)				
Original income	..	..	52	51
Gross income	..	..	40	36
Disposable income	..	..	37	33
Post-tax income	..	..	40	36
Final income	..	..	36	30 ¹

¹ This is given for illustrative purposes only. Strictly speaking, it is not appropriate to equiva­lise final income because it contains notional money income for benefits in kind (eg from state education) that are not available for spending in cash.

small incomes have only to provide for a single household member. After equivalisation, however, the lowest quintile group contains those households whose income is smallest **relative** to their size and composition. This group therefore has a higher absolute average income (£3,810 compared to £2,930), but this amount has to contribute to the living standards of many more people—as shown by the average household size.

Average household size for quintile groups of disposable income, unadjusted and equivalised, 1987

TABLE Q

						Quintile groups of households ranked by disposable income					All households
						Bottom	2nd	3rd	4th	Top	
Unadjusted											
Average per household (£ per year)											
Quintile points	..	..	..	..	..	4 053	6 780	10 105	14 483		
Disposable income	..	..	..	..	..	2 930	5 300	8 420	12 150	21 570	10 070
Average per household (number)											
Persons	..	..	..	..	..	1.3	2.3	2.8	3.1	3.2	2.5
Economically active people	..	..	..	..	..	0.1	0.5	1.2	1.8	2.1	1.2
Children	..	..	..	..	..	0.1	0.5	0.8	0.8	0.8	0.6
Retired people	..	..	..	..	..	0.8	0.7	0.4	0.2	0.1	0.4
Equivalised											
Average per household (£ per year)											
Quintile points (equivalised £ per year)						4 603	6 344	8 606	12 274		
Disposable income	..	..	..	..	..	3 810	5 570	9 100	12 150	19 740	10 070
Average per household (number)											
Persons	..	..	..	..	..	2.4	2.3	2.9	2.7	2.4	2.5
Economically active people	..	..	..	..	..	0.3	0.7	1.4	1.7	1.7	1.2
Children	..	..	..	..	..	0.7	0.6	0.8	0.6	0.4	0.6
Retired people	..	..	..	..	..	0.7	0.7	0.4	0.2	0.2	0.4

Summary statistics for the distribution of disposable income, unadjusted and equivalised, 1987

TABLE R

						Unadjusted disposable income			Equivalised disposable income		
						All households	Non-retired	Retired	All households	Non-retired	Retired
Amount per household (£ per year)											
Mean	..	..	..	..	..	10 070	11 840	5 090	9 060	10 070	6 230
Median	..	..	..	..	..	8 370	10 330	3 940	7 420	8 530	5 010
Standard deviation	..	..	..	..	..	92	110	103	78	93	121

Summary statistics for the distribution of equivalence factors, 1987

TABLE S

	Statistics for the distribution of equivalence factors:		
	All households	Non-retired	Retired
Number of households	7 396	5 459	1 937
Mean equivalence value	1.11	1.22	0.81
Minimum equivalence value	0.61	0.61	0.61
Maximum equivalence value	3.85	3.85	1.99

The comparison between ordinary £ a year and equivalised £ a year is given in Table R. The average (unadjusted) disposable income for all households is £10,070 compared with £9,060 after equivalisation. The variation of disposable income (as measured by its

standard deviation) is reduced by equivalisation from £92 to £78 a year. Table S gives some summary statistics for the distribution of the equivalence factors themselves. The average equivalence value for all households is 1.11 (compared with the standard value of 1.00 for a married couple).

Table T shows the results of equivalising on the composition of the top and bottom quintile groups of disposable income. The proportion of retired households in the bottom quintile group is reduced from over two-thirds to under a half and there is also a large drop in single person (non-retired) households. In contrast, the proportion of 2 adults with children households rises from 2 to 19 per cent. At the top of the income distribution, the proportion of large households (3 or more adults) falls markedly as does the 2 adults with children group, whereas 1 adult and 2 adult households increase substantially. A more detailed version of the distribution of households is given in Table U. This gives the number of households in each quintile group of disposable income, for unadjusted and equivalised measures.

Composition of the top and bottom quintile groups of households, ranked by disposable income, unadjusted and equivalised, 1987

TABLE T

Household type	Average equivalence value	Bottom quintile group		Top quintile group	
		Unadjusted	Equivalised	Unadjusted	Equivalised
		(percent)	(percent)	(percent)	(percent)
Retired	0.81	68	48	4	8
Non-retired					
1 adult	0.61	17	7	3	18
2 adults	1.02	5	8	28	40
1 adult with children ¹	1.00	7	9	-	-
2 adults with children	1.41	2	19	30	20
3 or more adults ²	1.70	1	8	35	14
All household types	1.11	100	100	100	100

1 This group is smaller than the category of "one parent families" because some of these families will be contained in larger household types.

2 With or without children

Number of households in the survey by quintile groups, ranked by disposable income, unadjusted and equivalised, 1987

TABLE U

					Household type						
					Retired	Non-retired				All house- hold types	
						1 adult	2 adults	1 adult with children ¹	2 adults with children		3 or more adults
Quintile groups of unadjusted disposable income											
Bottom	..	..	..	..	1 006	246	74	108	36	9	1 479
2nd	..	..	..	..	578	230	217	131	264	59	1 479
3rd	..	..	..	..	206	189	371	33	521	160	1 480
4th	..	..	..	..	87	87	417	8	543	337	1 479
Top	..	..	..	..	60	47	411	4	442	515	1 479
All households	..	..	..	..	1 937	799	1 490	284	1 806	1 080	7 396
Quintile groups of equivalised disposable income											
Bottom	..	..	..	..	712	109	119	137	280	115	1 479
2nd	..	..	..	..	690	112	136	86	300	147	1 478
3rd	..	..	..	..	259	132	260	36	489	291	1 481
4th	..	..	..	..	164	172	372	18	442	321	1 479
Top	..	..	..	..	112	274	603	7	295	206	1 479
All households	..	..	..	..	1 937	799	1 490	284	1 806	1 080	7 396

1 This group is smaller than the category of "one parent families" because some of these families will be contained in larger household types.

APPENDIX 1

Detailed tables with fine breakdown of income components for quintile and decile groups, and results for different types of household

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General government expenditure in 1987

TABLE 1

	£ million	Percentage of total expenditure
Allocated expenditure¹		
Allocated cash benefits		
Contributory (National Insurance, etc.)		
Retirement	18 510	11.0
Widows and guardians	840	0.5
Unemployment	1 600	1.0
Sickness/ Statutory sick pay	940	0.6
Invalidity	3 010	1.8
Maternity	270	0.2
Disablement	460	0.3
Other	160	0.1
Non-contributory		
Family benefits	5 080	3.0
Supplementary benefits	8 250	4.9
War pensions	550	0.3
Other	2 140	1.3
Student maintenance grants ²	750	0.4
Rent rebates and rent allowances	3 520	2.1
Allocated benefits in kind		
Health services	20 110	12.0
Education	16 160	9.6
School meals and welfare milk	670	0.4
Housing subsidy	1 380	0.8
Travel subsidies ³	1 260	0.7
	85 680	51.0
Unallocated expenditure		
Other current expenditure	58 890	35.0
Capital expenditure	3 080	1.8
Debt interest	17 670	10.5
Non-trading capital consumption	2 730	1.6
Total expenditure	168 050	100.0

1 Including benefits to people not living in private households.

2 Estimated

3 Including concessionary fares expenditure.

Source: United Kingdom National Accounts, 1988 Edition, Table 9.4

Financing of general government expenditure in 1987

TABLE 2

	£ million	Percentage of total financing
Allocated financing¹		
Income tax ²	40 300	24.0
Employees' and self-employed NI contributions	13 790	8.2
Indirect taxes		
Domestic rates (net of rebates)	7 750	4.6
Taxes on final goods and services		
VAT	17 870	10.6
Duty on beer and cider	1 890	1.1
Duty on wines and spirits	1 970	1.2
Duty on tobacco	4 670	2.8
Duty on hydrocarbon oils	3 540	2.1
Car tax and vehicle excise duty	2 290	1.4
Other	2 690	1.6
Taxes and NI contributions on intermediate goods and services		
Employers' NI contributions	4 830	2.9
Commercial and industrial rates	4 160	2.5
Duty on hydrocarbon oils	2 050	1.2
VAT	1 200	0.7
Vehicle excise duty	530	0.3
Other	930	0.5
	110 460	65.7
Unallocated financing		
Employers' NI contributions not allocated	9 830	5.9
Indirect taxes		
Commercial and industrial rates not allocated	4 880	2.9
Other taxes on expenditure not allocated		
VAT	5 500	3.3
Duty on hydrocarbon oils	1 840	1.1
Other	4 220	2.5
Other taxes		
Corporation tax	13 470	8.0
Petroleum revenue tax	1 750	1.0
Taxes on capital	3 360	2.0
Other receipts ³	10 540	6.3
Non-trading capital consumption	2 730	1.6
Government borrowing requirement	-530	-0.3
Total financing	168 050	100.0

1 Including taxes paid by people not living in private households.

2 Net of tax relief at source on mortgage interest and life assurance premiums.

3 Receipts of rent, royalties and licence fees on oil and gas production, interest, dividends, trading income and miscellaneous transactions (net).

Source: United Kingdom National Accounts, 1988 Edition, Table 9.1

Average incomes, taxes and benefits, 1987

By quintile groups of households

TABLE 3

Quintile groups of households ranked by equivalised disposable income							All house- holds
Bottom	2nd	3rd	4th	Top			
Average per household (£ a year)							
Quintile points (<i>equivalised</i> £)	4 604	6 349	8 610	12 276			
Number of households in the sample	1 479	1 479	1 480	1 479	7 396		
Original income							
Earnings of main earner	781	2 653	6 627	9 384	16 896	7 268	
Other earnings	95	425	1 695	3 537	5 385	2 227	
Occupational pensions, annuities ..	135	406	623	778	1 144	617	
Investment income	135	259	403	631	1 807	647	
Other income	77	106	124	177	237	144	
Total	1 223	3 851	9 473	14 506	25 469	10 904	
Direct benefits in cash							
Contributory							
Retirement pension	1 234	1 274	696	392	290	777	
Unemployment benefit	84	68	69	65	35	64	
Invalidity pension and allowance ..	98	126	105	50	22	80	
Statutory sick pay	8	14	29	44	30	25	
Industrial injury disablement benefit ..	2	19	19	11	6	12	
Sickness, industrial injury benefit ..	15	5	10	6	7	9	
Widows' benefit	27	38	41	38	27	34	
Statutory maternity pay/allowance ..	4	5	13	22	9	11	
Miscellaneous contributory benefits ..	7	8	5	3	2	5	
Non-contributory							
Supplementary benefit	767	320	160	56	30	267	
Child benefit	270	232	304	226	144	235	
Housing benefit	505	444	120	29	13	223	
Attendance allowance	10	42	54	19	9	27	
Mobility allowance	10	21	38	22	5	19	
War pensions	3	10	17	12	7	10	
Severe disablement allowance	31	64	64	20	7	37	
Student maintenance awards	38	32	40	21	4	27	
Government training schemes	28	28	37	19	9	24	
Family income supplement	17	6	6	1	1	6	
Other non-contributory benefits	16	21	43	16	11	21	
Total cash benefits	3 173	2 776	1 870	1 072	668	1 912	
Gross income	4 396	6 627	11 343	15 578	26 136	12 816	
Direct taxes and Employees' NIC							
Income tax	140	489	1 401	2 377	5 106	1 903	
less: Tax relief at source ¹	40	65	190	294	483	214	
Employees' national insurance contributions ..	51	199	551	836	1 151	558	
Domestic rates (gross)	431	438	479	512	622	496	
Total	581	1 061	2 241	3 431	6 396	2 742	
Disposable income	3 815	5 566	9 102	12 146	19 740	10 074	
Equivalised disposable income	3725	5 372	7 446	10 228	18 539	9 062	
Taxes on final goods and services							
VAT	310	430	737	957	1 236	734	
Duty on tobacco	186	199	259	230	169	209	
Duty on beer and cider	38	52	95	115	121	84	
Duty on wines	7	10	20	31	70	27	
Duty on spirits	24	34	66	79	111	63	
Duty on hydrocarbon oils	61	81	165	217	256	156	
Car tax	7	14	25	49	59	31	
Vehicle excise duty	30	41	75	98	111	71	
Television licences	43	45	51	52	54	49	
Stamp duty on house purchase	4	6	14	22	42	18	
Customs' duties	14	18	28	35	40	27	
Betting taxes	17	22	42	40	56	35	
Other.. ..	15	14	20	22	23	19	
Intermediate taxes							
Commercial and industrial rates	88	105	165	201	262	164	
Employers' NI contributions	97	116	183	226	296	184	
Duty on hydrocarbon oils	44	51	77	94	119	77	
Vehicle excise duty	10	12	19	23	30	19	
Other	44	53	82	100	128	82	
Total indirect taxes	1 038	1 303	2 122	2 592	3 183	2 048	
Post-tax income	2 776	4 263	6 980	9 555	16 557	8 026	
Benefits in kind							
Education	798	656	837	628	360	656	
National health service	1 029	976	922	790	833	870	
Housing subsidy	99	105	56	32	15	61	
Rail travel subsidy	11	12	26	37	66	30	
Bus travel subsidy	32	35	24	19	16	26	
School meals and welfare milk	78	31	24	14	8	31	
Total	2 045	1 815	1 890	1 520	1 101	1 674	
Final income	4 821	6 078	8 871	11 075	17 658	9 700	

¹ On mortgage interest and life assurance premiums.

Average Incomes, taxes and benefits, 1987

By decile groups of households

TABLE 4

		Decile groups of households ranked by equivalised disposable income										All households
		Bottom	2nd	3rd	4th	5th	6th	7th	8th	9th	Top	
Average per household (£ a year)												
Decile points (equivalised £)	..	3 876	4 603	5 330	6 344	7 419	8 606	10 114	12 274	15 843		
Number of households in the sample	..	740	739	740	739	740	740	739	740	739	740	7 396
Original income												
Earnings of main earner	..	600	961	1 680	3 628	5 652	7 603	8 408	10 359	13 009	20 777	7 268
Other earnings	..	79	111	256	595	1 214	2 177	2 955	4 118	5 035	5 733	2 227
Occupational pensions, annuities	..	87	184	337	476	614	631	792	763	777	1 511	617
Investment income	..	119	151	208	310	365	442	566	695	982	2 631	647
Other income	..	72	81	92	121	99	149	143	210	171	303	144
Total	..	958	1 489	2 573	5 131	7 944	11 002	12 865	16 145	19 975	30 955	10 904
Direct benefits in cash												
Contributory												
Retirement pension	..	1 006	1 463	1 429	1 119	806	587	476	308	275	304	777
Unemployment benefit	..	102	65	67	70	74	64	65	85	39	31	64
Invalidity pension and allowance	..	100	96	73	179	122	88	66	33	21	24	80
Statutory sick pay	..	8	7	9	18	30	27	42	46	41	19	25
Industrial injury disablement benefit	..	-	4	12	26	25	13	15	7	10	3	12
Sickness, industrial injury benefit	..	17	13	6	4	14	7	9	4	7	6	9
Widows' benefit	..	28	26	34	37	51	31	41	36	15	40	34
Statutory maternity pay/ allowance	..	3	5	4	7	12	14	18	25	9	10	11
Miscellaneous contributory benefits	..	6	8	8	7	5	4	3	2	2	2	5
Non-contributory												
Supplementary benefit	..	874	661	342	299	197	122	70	42	42	17	267
Child benefit	..	310	230	199	265	310	297	244	209	174	113	235
Housing benefit	..	437	574	574	314	166	75	42	17	20	7	223
Attendance allowance	..	-	20	25	59	69	38	21	18	10	8	27
Mobility allowance	..	11	9	14	27	49	27	26	18	2	8	19
War pensions	..	1	5	2	18	14	20	13	12	8	6	10
Severe disablement allowance	..	9	53	43	84	64	64	23	16	3	11	37
Student maintenance awards	..	38	39	41	23	41	39	15	26	8	-	27
Government training schemes	..	35	17	22	35	29	45	22	16	18	1	24
Family income supplement	..	20	15	9	4	10	2	1	2	1	-	6
Other non-contributory benefits	..	12	21	15	27	49	38	12	19	16	6	21
Total cash benefits	..	3 017	3 330	2 929	2 622	2 138	1 603	1 224	920	720	616	1 912
Gross income	..	3 975	4 819	5 503	7 752	10 082	12 604	14 088	17 065	20 694	31 571	12 816
Direct taxes and Employees' NIC												
Income tax	..	128	151	310	669	1 150	1 652	2 027	2 727	3 699	6 512	1 903
less: Tax relief at source ¹	..	37	43	42	89	160	220	262	326	418	548	214
Employees' national insurance contributions	..	37	65	120	278	456	646	743	929	1 128	1 175	558
Domestic rates (gross)	..	431	432	426	451	460	498	491	533	570	673	496
Total	..	559	604	814	1 308	1 906	2 576	3 000	3 863	4 979	7 811	2 742
Disposable income	..	3 415	4 214	4 689	6 444	8 176	10 029	11 089	13 202	15 715	23 760	10 074
Equivalised disposable income	..	3 199	4 251	4 947	5 798	6 874	8 018	9 327	11 128	13 823	23 248	9 062
Taxes on final goods and services												
VAT	..	315	304	339	521	656	818	895	1 019	1 124	1 348	734
Duty on tobacco	..	187	185	167	232	256	261	230	231	185	152	209
Duty on beer and cider	..	37	39	39	65	83	108	105	124	127	116	84
Duty on wines	..	7	6	8	12	15	24	27	35	57	82	27
Duty on spirits	..	20	28	31	38	55	77	72	85	89	132	63
Duty on hydrocarbon oils	..	64	57	56	108	148	181	200	235	254	258	156
Car tax	..	5	8	12	16	22	28	47	52	57	62	31
Vehicle excise duty	..	31	28	30	52	66	84	94	102	111	111	71
Television licences	..	43	43	43	48	49	52	52	53	54	53	49
Stamp duty on house purchase	..	6	3	4	8	12	16	20	25	33	52	18
Customs' duties	..	14	15	15	22	25	31	34	36	37	43	27
Betting taxes	..	18	16	20	25	45	40	41	38	49	63	35
Other	..	14	16	13	16	20	19	21	22	24	23	19
Intermediate taxes												
Commercial and industrial rates	..	89	87	89	121	153	177	189	214	236	289	164
Employers' NI contributions	..	98	95	98	134	169	196	211	241	265	327	184
Duty on hydrocarbon oils	..	44	44	43	58	73	82	87	101	107	131	77
Vehicle excise duty	..	10	10	10	14	17	20	21	25	27	33	19
Other	..	45	43	44	62	76	89	95	106	116	140	82
Total indirect taxes	..	1 048	1 028	1 058	1 548	1 940	2 304	2 439	2 744	2 951	3 415	2 048
Post-tax income	..	2 367	3 187	3 630	4 896	6 236	7 725	8 649	10 459	12 764	20 345	8 026
Benefits in kind												
Education	..	907	685	664	649	808	866	699	557	488	233	656
National health service	..	1 002	1 056	985	968	947	898	799	781	655	612	870
Housing subsidy	..	75	122	120	90	65	48	32	32	19	12	61
Rail travel subsidy	..	10	12	12	12	22	31	32	42	55	77	30
Bus travel subsidy	..	27	37	38	31	24	24	20	18	18	18	26
School meals and welfare milk	..	98	59	38	24	26	23	16	13	11	6	31
Total	..	2 118	1 971	1 858	1 773	1 891	1 889	1 598	1 443	1 245	958	1 674
Final income	..	4 485	5 158	5 488	6 668	8 127	9 614	10 247	11 902	14 009	21 303	9 700

¹ On mortgage interest and life assurance premiums.

Average incomes, taxes and benefits, 1987

By quintile groups within household type

TABLE 5

Quintile groups of households ranked by equivalised disposable income									
				Bottom	2nd	3rd	4th	Top	All groups
Average per household (£ a year)									
(i) 1 adult retired									
Quintile points (equivalised £)				3 944	4 661	5 174	6 522		
Number of households in the sample				212	212	211	212	212	1 059
Original Income				237	421	480	1 089	6 478	1 742
Direct benefits in cash									
Contributory									
Retirement pension				1 974	2 070	2 046	2 059	1 902	2 010
Sickness/ injury related				16	2	1	23	37	16
Unemployment benefit				-	-	-	7	14	4
Other				38	20	40	23	105	45
Total contributory				2 029	2 091	2 087	2 111	2 056	2 075
Non-contributory									
Supplementary benefit				62	73	60	60	41	59
Child benefit				-	-	-	-	5	1
Housing benefit				167	488	793	656	177	456
Sickness/ disablement related				-	6	11	59	112	38
Other				15	-	25	33	138	42
Total non-contributory				244	567	888	807	473	595
Gross Income				2 509	3 079	3 455	4 007	9 009	4 413
Income tax ¹ and Employees' NIC				43	51	58	152	1 418	345
Domestic rates (gross)				411	391	403	423	514	429
Disposable Income				2 055	2 637	2 993	3 432	7 077	3 639
Equivalised disposable income				3 369	4 323	4 907	5 627	11 554	5 957
Taxes on final goods and services				305	304	282	359	896	429
Intermediate taxes				176	153	147	177	360	203
Post-tax Income				1 575	2 179	2 564	2 897	5 821	3 008
Benefits in kind									
Education				-	-	-	-	14	3
National health service				994	943	876	932	854	920
Housing subsidy				33	102	125	141	51	90
Travel subsidies				37	39	54	51	46	45
Final income				2 638	3 263	3 619	4 020	6 785	4 066
(ii) 2 or more adults retired									
Quintile points (equivalised £)				4 098	4 753	5 950	8 204		
Number of households in the sample				176	175	176	175	176	878
Original Income				578	806	2 046	4 444	14 343	4 447
Direct benefits in cash									
Contributory									
Retirement pension				2 879	3 299	3 271	2 938	2 779	3 033
Sickness/ injury related				122	81	253	280	208	189
Unemployment benefit				18	10	34	20	23	21
Other				17	17	18	30	16	20
Total contributory				3 036	3 407	3 576	3 268	3 026	3 263
Non-contributory									
Supplementary benefit				211	146	48	87	4	99
Child benefit				20	4	-	2	6	7
Housing benefit				247	479	248	91	5	214
Sickness/ disablement related				26	85	322	352	247	206
Other				43	51	85	102	19	60
Total non-contributory				546	765	704	635	281	586
Gross Income				4 160	4 978	6 325	8 347	17 650	8 296
Income tax ¹ and Employees' NIC				41	49	242	704	3 656	940
Domestic rates (gross)				441	438	474	506	681	508
Disposable Income				3 678	4 490	5 609	7 137	13 314	6 848
Equivalised disposable income				3 511	4 405	5 344	6 906	12 635	6 563
Taxes on final goods and services				759	743	943	1 250	1 798	1 099
Intermediate taxes				302	269	346	419	670	401
Post-tax Income				2 617	3 478	4 321	5 469	10 845	5 348
Benefits in kind									
Education				63	-	34	13	48	31
National health service				1 448	1 487	1 424	1 385	1 267	1 402
Housing subsidy				48	100	77	49	11	57
Travel subsidies				68	77	76	63	93	75
School meals and welfare milk				4	-	-	-	-	1
Final income				4 248	5 142	5 932	6 980	12 262	6 915

1 After tax relief at source on mortgage interest and life assurance premiums.

Average incomes, taxes and benefits, 1987

By quintile groups within household type

TABLE 5 (continued)

				Quintile groups of households ranked by equivalised disposable income					All groups	
				Bottom	2nd	3rd	4th	Top		
Average per household (£ a year)										
(iii) 1 adult non-retired										
Quintile points (equivalised £)	..	..	..	5 141	7 934	11 182	15 789		
Number of households in the sample				160	160	158	161	160	799	
Original income	..	..	..	754	3 565	7 104	10 630	19 596	8 336
Direct benefits in cash										
Contributory										
Retirement pension ..	..	..	..	58	242	84	17	51	90
Sickness/ injury related	..	..	..	124	168	50	32	29	81
Unemployment benefit	..	..	..	110	62	67	8	14	52
Other ..	..	..	..	123	178	100	58	83	108
Total contributory ..	..	..	..	415	649	302	116	177	331
Non-contributory										
Supplementary benefit	..	..	..	719	241	98	24	17	220
Child benefit	..	..	..	-	-	-	-	2	-
Housing benefit	..	..	..	686	352	100	16	3	231
Sickness/ disablement related	..	..	..	146	143	64	8	52	83
Other ..	..	..	..	168	49	9	16	1	49
Total non-contributory ..	..	..	..	1 718	786	270	64	76	583
Gross income	..	..	..	2 887	5 000	7 678	10 811	19 849	9 250
Income tax ¹ and Employees' NIC	..	..	..	118	662	1 564	2 473	4 602	1 885
Domestic rates (gross)	..	..	..	370	349	386	383	508	399
Disposable income	..	..	..	2 400	3 990	5 725	7 955	14 739	6 966
Equivalised disposable income	..	..	..	3 934	6 540	9 386	13 040	24 162	11 420
Taxes on final goods and services	..	..	..	514	717	1 043	1 171	1 742	1 037
Intermediate taxes	..	..	..	177	235	316	404	580	342
Post-tax income	..	..	..	1 709	3 038	4 366	6 380	12 417	5 586
Benefits in kind										
Education ..	..	..	..	438	60	22	22	-	109
National health service	..	..	..	259	271	242	224	229	245
Housing subsidy	..	..	..	90	85	62	35	11	57
Travel subsidies	..	..	..	24	31	33	64	52	41
School meals and welfare milk	..	..	..	1	-	-	-	-	-
Final income	..	..	..	2 521	3 485	4 726	6 725	12 708	6 037
(iv) 2 adults non-retired										
Quintile points (equivalised £)	..	..	..	6 665	9 363	12 238	16 400		
Number of households in the sample				298	298	298	298	298	1 490	
Original income	..	..	..	3 722	9 015	13 562	18 381	30 803	15 097
Direct benefits in cash										
Contributory										
Retirement pension ..	..	..	..	467	553	209	115	203	309
Sickness/ injury related	..	..	..	460	245	117	98	64	197
Unemployment benefit	..	..	..	143	72	48	20	28	62
Other ..	..	..	..	60	44	25	44	27	40
Total contributory ..	..	..	..	1 131	914	399	278	321	609
Non-contributory										
Supplementary benefit	..	..	..	529	94	15	25	12	135
Child benefit	..	..	..	-	1	-	2	4	2
Housing benefit	..	..	..	351	64	18	9	2	89
Sickness/ disablement related	..	..	..	174	196	19	17	8	83
Other ..	..	..	..	87	56	40	14	8	41
Total non-contributory ..	..	..	..	1 141	410	92	67	34	349
Gross income	..	..	..	5 994	10 339	14 052	18 726	31 158	16 054
Income tax ¹ and Employees' NIC	..	..	..	572	1 738	2 709	4 041	7 278	3 268
Domestic rates(gross)	..	..	..	448	449	452	516	673	508
Disposable income	..	..	..	4 974	8 152	10 892	14 169	23 207	12 279
Equivalised disposable income	..	..	..	4 875	8 011	10 723	14 011	22 965	12 117
Taxes on final goods and services	..	..	..	1 148	1 489	1 739	2 113	2 665	1 831
Intermediate taxes	..	..	..	360	458	560	659	934	594
Post-tax income	..	..	..	3 466	6 204	8 592	11 396	19 608	9 854
Benefits in kind										
Education ..	..	..	..	138	74	76	9	-	59
National health service	..	..	..	651	633	521	487	501	559
Housing subsidy	..	..	..	84	69	33	20	8	43
Travel subsidies	..	..	..	38	45	46	49	112	58
School meals and welfare milk	..	..	..	1	1	-	-	-	-
Final income	..	..	..	4 378	7 026	9 268	11 962	20 230	10 573

1 After tax relief at source on mortgage interest and life assurance premiums.

Average incomes, taxes and benefits, 1987

By quintile groups within household type

TABLE 5 (continued)

				Quintile groups of households ranked by equivalised disposable income					All groups
				Bottom	2nd	3rd	4th	Top	
Average per household (£ a year)									
(v) 3 or more adults non-retired									
Quintile points (equivalised £)	..	..	..	6 679	8 427	10 299	13 130		
Number of households in the sample				136	137	136	137	136	682
Original income	..	..	..	6 337	12 498	16 420	23 194	36 801	19 047
Direct benefits in cash									
Contributory									
Retirement pension ..	..	..	..	513	717	636	229	246	468
Sickness/ injury related ..	..	..	..	446	304	223	145	142	252
Unemployment benefit ..	..	..	..	151	118	86	101	104	112
Other ..	..	..	..	43	69	51	2	30	39
Total contributory ..	..	..	..	1 153	1 208	996	477	522	871
Non-contributory									
Supplementary benefit ..	..	..	..	972	340	142	83	106	328
Child benefit ..	..	..	..	21	8	14	3	11	11
Housing benefit ..	..	..	..	239	86	110	8	66	101
Sickness/ disablement related ..	..	..	..	255	300	147	122	46	174
Other ..	..	..	..	414	240	172	161	75	212
Total non-contributory ..	..	..	..	1 901	974	585	376	304	827
Gross income	..	..	..	9 390	14 680	18 001	24 046	37 627	20 745
Income tax ² and Employees' NIC ..	..	..	..	1 113	2 350	3 255	5 063	7 641	3 884
Domestic rates (gross) ..	..	..	..	468	508	491	582	657	541
Disposable income	..	..	..	7 809	11 822	14 255	18 402	29 330	16 320
Equivalised disposable income	..	..	..	5 009	7 610	9 273	11 647	18 587	10 423
Taxes on final goods and services ..	..	..	..	2 000	2 363	2 531	3 119	3 617	2 726
Intermediate taxes ..	..	..	..	568	676	773	943	1 191	830
Post-tax income	..	..	..	5 241	8 783	10 951	14 339	24 521	12 763
Benefits in kind									
Education ..	..	..	..	1 254	552	268	312	205	518
National health service ..	..	..	..	944	981	927	857	921	926
Housing subsidy ..	..	..	..	89	64	20	49	26	50
Travel subsidies ..	..	..	..	100	69	92	68	165	99
School meals and welfare milk ..	..	..	..	-	1	-	-	-	-
Final income	..	..	..	7 628	10 451	12 259	15 624	25 837	14 356
(vi) 1 adult with children¹									
Quintile points (equivalised £)	..	..	..	3 858	4 377	5 050	6 494		
Number of households in the sample				57	57	56	57	57	284
Original income	..	..	..	497	375	955	2 438	8 624	2 584
Direct benefits in cash									
Contributory									
Retirement pension ..	..	..	..	-	46	-	-	-	9
Sickness/ injury related ..	..	..	..	21	58	-	10	57	29
Unemployment benefit ..	..	..	..	8	-	-	18	6	6
Other ..	..	..	..	7	-	-	121	194	65
Total contributory ..	..	..	..	36	104	-	149	256	109
Non-contributory									
Supplementary benefit ..	..	..	..	1 349	2 101	1 968	1 285	457	1 430
Child benefit ..	..	..	..	736	777	641	683	653	698
Housing benefit ..	..	..	..	951	1 164	1 176	897	325	902
Sickness/ disablement related ..	..	..	..	-	39	-	56	-	19
Other ..	..	..	..	30	18	69	224	192	107
Total non-contributory ..	..	..	..	3 067	4 100	3 854	3 145	1 627	3 156
Gross income	..	..	..	3 599	4 580	4 809	5 732	10 507	5 849
Income tax ² and Employees' NIC ..	..	..	..	-19	-43	54	85	1 098	236
Domestic rates (gross) ..	..	..	..	463	439	446	455	531	467
Disposable income	..	..	..	3 155	4 183	4 310	5 192	8 878	5 146
Equivalised disposable income	..	..	..	3 073	4 126	4 677	5 620	9 396	5 381
Taxes on final goods and services ..	..	..	..	598	584	571	748	1 263	753
Intermediate taxes ..	..	..	..	243	240	226	305	435	290
Post-tax income	..	..	..	2 314	3 359	3 512	4 139	7 179	4 103
Benefits in kind									
Education ..	..	..	..	1 633	1 667	1 431	1 456	1 781	1 590
National health service ..	..	..	..	756	620	706	688	499	654
Housing subsidy ..	..	..	..	142	254	198	122	88	161
Travel subsidies ..	..	..	..	12	11	28	33	19	21
School meals and welfare milk ..	..	..	..	264	259	176	134	101	187
Final income	..	..	..	5 121	6 171	6 051	6 572	9 647	6 715

1 This group is smaller than the category of "one parent families" because some of these families will be contained in larger household types.

2 After tax relief at source on mortgage interest and life assurance premiums.

Average incomes, taxes and benefits, 1987

By quintile groups within household type

TABLE 5 (continued)

				Quintile groups of households ranked by equivalised disposable income					All groups
				Bottom	2nd	3rd	4th	Top	
Average per household (£ a year)									
(vii) 2 adults with 1 child									
Quintile points (equivalised £)	..	..	..	5 811	7 693	9 594	12 735		
Number of households in the sample				118	119	118	119	118	592
Original income	..	..	..	3 539	8 816	12 290	15 823	27 410	13 571
Direct benefits in cash									
Contributory									
Retirement pension	..	..	..	34	27	18	18	-	19
Sickness/ injury related	..	..	..	147	117	88	88	53	99
Unemployment benefit	..	..	..	278	221	142	137	59	168
Other	..	..	..	109	78	92	117	66	93
Total contributory	..	..	..	569	443	340	360	178	378
Non-contributory									
Supplementary benefit	..	..	..	911	226	122	12	-	254
Child benefit	..	..	..	374	379	383	368	365	374
Housing benefit	..	..	..	468	179	39	30	6	144
Sickness/ disablement related	..	..	..	155	154	37	23	9	76
Other	..	..	..	88	146	5	58	12	62
Total non-contributory	..	..	..	1 996	1 083	585	492	392	909
Gross income	..	..	..	6 104	10 343	13 215	16 675	27 981	14 859
Income tax ¹ and Employees' NIC	..	..	..	482	1 618	2 473	3 084	6 289	2 788
Domestic rates(gross)	..	..	..	428	440	487	528	687	514
Disposable income	..	..	..	5 193	8 285	10 256	13 063	21 005	11 557
Equivalised disposable income	..	..	..	4 276	6 837	8 596	10 910	17 676	9 656
Taxes on final goods and services	..	..	..	1 186	1 478	1 686	1 932	2 532	1 783
Intermediate taxes	..	..	..	370	472	563	662	940	601
Post-tax income	..	..	..	3 637	6 335	8 006	10 469	17 533	9 193
Benefits in kind									
Education	..	..	..	787	787	694	657	610	707
National health service	..	..	..	959	845	965	1 022	858	930
Housing subsidy	..	..	..	110	51	18	12	20	42
Travel subsidies	..	..	..	19	35	34	29	84	40
School meals and welfare milk	..	..	..	64	26	26	13	12	28
Final income	..	..	..	5 576	8 079	9 742	12 202	19 117	10 941
(viii) 2 adults 2 children									
Quintile points (equivalised £)	..	..	..	5 452	7 083	8 734	11 123		
Number of households in the sample				175	175	174	175	175	874
Original income	..	..	..	4 129	9 968	13 137	16 840	30 283	14 873
Direct benefits in cash									
Contributory									
Retirement pension	..	..	..	14	-	12	-	7	7
Sickness/ injury related	..	..	..	125	104	70	40	34	74
Unemployment benefit	..	..	..	205	74	12	34	59	77
Other	..	..	..	33	27	40	45	28	35
Total contributory	..	..	..	377	205	133	118	128	192
Non-contributory									
Supplementary benefit	..	..	..	1 019	137	40	61	22	266
Child benefit	..	..	..	743	757	736	736	734	741
Housing benefit	..	..	..	527	52	15	15	14	125
Sickness/ disablement related	..	..	..	28	28	38	7	38	28
Other	..	..	..	102	59	15	19	23	44
Total non-contributory	..	..	..	2 418	1 033	844	838	830	1 193
Gross income	..	..	..	6 924	11 206	14 114	17 796	31 241	16 259
Income tax ¹ and Employees' NIC	..	..	..	648	1 743	2 450	3 137	6 255	2 847
Domestic rates(gross)	..	..	..	457	475	521	587	750	558
Disposable income	..	..	..	5 819	8 988	11 143	14 072	24 236	12 854
Equivalised disposable income	..	..	..	4 121	6 345	7 871	9 819	16 815	8 995
Taxes on final goods and services	..	..	..	1 157	1 528	1 758	1 913	2 385	1 748
Intermediate taxes	..	..	..	408	564	629	734	996	666
Post-tax income	..	..	..	4 255	6 896	8 756	11 426	20 856	10 440
Benefits in kind									
Education	..	..	..	1 760	1 516	1 704	1 819	1 710	1 702
National health service	..	..	..	1 082	1 044	1 047	974	923	1 014
Housing subsidy	..	..	..	135	41	26	29	11	48
Travel subsidies	..	..	..	19	21	25	39	76	36
School meals and welfare milk	..	..	..	174	43	46	50	50	73
Final income	..	..	..	7 426	9 561	11 603	14 337	23 626	13 313

1 After tax relief at source on mortgage interest and life assurance premiums.

Average incomes, taxes and benefits, 1987

By quintile groups within household type

TABLE 5 (continued)

					Quintile groups of households ranked by equivalised disposable income					All groups
					Bottom	2nd	3rd	4th	Top	
Average per household (£ a year)										
(ix) 2 adults with 3 or more children										
Quintile points (equivalised £) ..	..	..	..	..	4 027	5 366	6 896	8 623		
Number of households in the sample					68	68	68	68	68	340
Original income ..	..	..	..	..	1 846	7 052	11 032	15 090	29 240	12 852
Direct benefits in cash										
Contributory										
Retirement pension ..	..	..	..	..	-	-	-	-	-	-
Sickness/ injury related ..	..	..	..	..	253	60	52	9	15	78
Unemployment benefit ..	..	..	..	..	295	52	42	30	4	85
Other ..	..	..	..	..	6	42	33	9	13	21
Total contributory ..	..	..	..	..	554	154	128	48	32	183
Non-contributory										
Supplementary benefit ..	..	..	..	..	1 864	633	273	184	9	593
Child benefit ..	..	..	..	..	1 356	1 242	1 189	1 192	1 144	1 225
Housing benefit ..	..	..	..	..	722	324	90	4	3	229
Sickness/ disablement related ..	..	..	..	..	-	278	81	132	-	98
Other ..	..	..	..	..	184	103	8	49	3	70
Total non-contributory ..	..	..	..	..	4 126	2 580	1 642	1 561	1 160	2 214
Gross income ..	..	..	..	..	6 526	9 787	12 801	16 699	30 432	15 249
Income tax ¹ and Employees' NIC ..	..	..	..	..	201	1 300	2 004	2 873	6 998	2 575
Domestic rates (gross) ..	..	..	..	..	422	450	475	543	770	532
Disposable income ..	..	..	..	..	5 902	8 036	10 322	13 283	22 663	12 041
Equivalised disposable income ..	..	..	..	..	3 284	4 663	6 080	7 732	13 446	7 041
Taxes on final goods and services ..	..	..	..	..	1 178	1 669	1 697	2 038	2 390	1 794
Intermediate taxes ..	..	..	..	..	399	581	555	761	1 133	686
Post-tax income ..	..	..	..	..	4 325	5 787	8 070	10 484	19 140	9 561
Benefits in kind										
Education ..	..	..	..	..	3 467	3 268	2 865	3 158	2 435	3 038
National health service ..	..	..	..	..	1 597	1 410	1 431	1 213	1 290	1 388
Housing subsidy ..	..	..	..	..	130	128	83	27	9	75
Travel subsidies ..	..	..	..	..	12	29	9	41	93	37
School meals and welfare milk ..	..	..	..	..	373	257	117	103	74	185
Final income ..	..	..	..	..	9 903	10 877	12 574	15 025	23 041	14 284
(x) 3 or more adults with children										
Quintile points (equivalised £) ..	..	..	..	..	4 854	6 720	8 294	10 248		
Number of households in the sample					80	79	80	79	80	398
Original income ..	..	..	..	..	4 376	11 475	16 275	19 903	31 063	16 623
Direct benefits in cash										
Contributory										
Retirement pension ..	..	..	..	..	225	352	307	119	54	211
Sickness/ injury related ..	..	..	..	..	224	210	99	67	105	141
Unemployment benefit ..	..	..	..	..	134	225	57	78	47	108
Other ..	..	..	..	..	60	42	54	38	28	44
Total contributory ..	..	..	..	..	644	829	517	302	234	505
Non-contributory										
Supplementary benefit ..	..	..	..	..	1 902	669	199	114	119	602
Child benefit ..	..	..	..	..	786	546	583	495	581	599
Housing benefit ..	..	..	..	..	529	168	34	33	2	154
Sickness/ disablement related ..	..	..	..	..	119	140	130	97	145	126
Other ..	..	..	..	..	422	236	313	296	129	279
Total non-contributory ..	..	..	..	..	3 758	1 760	1 259	1 036	977	1 760
Gross income ..	..	..	..	..	8 777	14 064	18 051	21 241	32 275	18 888
Income tax ¹ and Employees' NIC ..	..	..	..	..	649	2 040	3 055	3 819	6 528	3 220
Domestic rates (gross) ..	..	..	..	..	510	501	494	527	744	555
Disposable income ..	..	..	..	..	7 619	11 523	14 502	16 895	25 003	15 113
Equivalised disposable income ..	..	..	..	..	3 756	5 827	7 530	9 119	13 487	7 946
Taxes on final goods and services ..	..	..	..	..	1 566	2 249	2 722	2 876	3 524	2 587
Intermediate taxes ..	..	..	..	..	584	703	859	917	1 179	848
Post-tax income ..	..	..	..	..	5 470	8 570	10 921	13 103	20 300	11 677
Benefits in kind										
Education ..	..	..	..	..	2 707	2 428	2 033	2 175	1 955	2 259
National health service ..	..	..	..	..	1 401	1 314	1 092	1 110	1 076	1 198
Housing subsidy ..	..	..	..	..	134	63	50	55	38	68
Travel subsidies ..	..	..	..	..	74	64	98	117	147	100
School meals and welfare milk ..	..	..	..	..	253	67	48	30	29	86
Final income ..	..	..	..	..	10 039	12 507	14 242	16 590	23 545	15 389

¹ After tax relief at source on mortgage interest and life assurance premiums.

Distribution of households¹ co-operating in the Family Expenditure Survey, 1987

By decile groups of households

TABLE 8

				Retired households		Non-retired households								
				1 adult	2 or more adults	1 adult	2 adults	3 or more adults	1 adult with children	2 adults with 1 child	2 adults with 2 children	2 adults with 3 or more children	3 or more adults with children	All households
Decile groups of households ranked by equivalised disposable income														
Bottom				195	122	59	69	25	58	43	70	60	39	740
2nd				211	188	51	50	23	79	26	44	39	28	739
3rd				286	118	64	55	19	50	29	49	36	34	740
4th				144	139	50	85	56	36	46	98	47	38	739
5th				71	93	69	122	63	25	69	126	47	55	740
6th				38	62	63	140	105	11	82	128	43	68	740
7th				42	54	86	159	106	10	90	123	19	50	739
8th				21	40	87	217	117	8	81	106	15	48	740
9th				20	34	113	276	101	5	65	74	25	26	739
Top				31	28	157	317	67	2	61	56	9	12	740
All households ..				1 059	878	799	1 490	682	284	592	874	340	398	7 396

1 See Appendix 2 for definitions of retired households, adults and children.

METHODOLOGY AND DEFINITIONS

The allocation of government expenditure and its financing

1. There are considerable difficulties in moving from the aggregates of government expenditure and financing published in the United Kingdom National Accounts - the CSO Blue Book - to apportioning taxes and benefits to individual households. We can obtain information about the types of household that receive cash benefits and pay direct taxes through surveys such as the Family Expenditure Survey (FES). From the replies respondents give to questions on their expenditure we can impute their payments of indirect taxes, and from information they supply about such factors as their ages and the number of children in the household we can estimate the average costs of providing them with social services, such as health and education. But there are other kinds of financing, such as corporation tax and government receipts from public corporations: no attempt is made in this analysis to apportion them to households because it would be too difficult. Similarly, there are other items of government expenditure, such as capital expenditure and expenditure on defence and on the maintenance of law and order, for which there is no clear conceptual basis for allocation, or for which we do not in any event have sufficient information to make an allocation. In all, 66 per cent of government financing (including the Borrowing Requirement) and 51 per cent of expenditure are allocated to households in this analysis.

Family Expenditure Survey (FES)

2. The estimates in this article are based mainly on data derived from the FES. The FES is an annual survey of the expenditure and income of private households. People living in hotels, lodging houses, and in institutions such as old peoples' homes are excluded. Each person aged 16 and over keeps a full record of payments made during 14 consecutive days and answers questions about hire purchase and other payments. The respondents also give detailed information, where appropriate, about income (including cash benefits received from the state) and payments of income tax. Information on age, occupation, education received, family composition and housing tenure is also obtained. The survey covers the whole 12 month period.

3. One of the main purposes of the FES is to produce information on household expenditure patterns which is used to derive the weights for the index of retail prices. The survey is conducted by the Office of Population Censuses and Surveys on behalf of the Central Statistical Office who analyse and report on it (prior to July 1989, the FES was the responsibility of the Department of Employment). The Family Expenditure Survey Report for 1987, containing detailed data on household characteristics, income, and expenditure, was published in June 1989. Details of the survey method are set out in 'The Family Expenditure Survey Handbook' by W F F Kemsley, R U Redpath and M Holmes. Both are published by Her Majesty's Stationery Office.

4. The number of households in the United Kingdom responding to the FES in 1987 was 7,396. The response rate in Great Britain was 72 per cent: the FES in Northern Ireland is done as a separate exercise to the rest of UK, with a larger sampling fraction, and only a proportion of these cases go into the UK analysis. To count as a co-operating household, all members aged 16 and over must fill in the diaries for both weeks and give full details of income

etc. The available evidence suggest that older households, households where the head is self-employed, those without children and higher income households, are less likely to co-operate than others (see 'Family Expenditure Survey: a second study of differential response, comparing Census characteristics of FES respondents and non-respondents' by Bob Redpath, *Statistical News No 72*, February 1986. (HMSO)). In addition response in Greater London is noticeably lower than in other areas. However, at present, the results in this article are based on the responses of those households which actually co-operated in the survey and they are not reweighted. This means that some of the figures differ from those produced by other surveys such as the Survey of Personal Incomes from the Inland Revenue.

Unit of analysis

5. The basic unit of analysis in the article is the household, and not the family, individual or tax unit. A household is defined in the FES as comprising people who live at the same address and who share common catering for at least one meal a day. Spending on many items, particularly on food, housing, fuel and light, is largely joint spending by the members of the household. Without further information or assumptions it is difficult to apportion indirect taxes between individuals or other sub-divisions of households.

6. In classifying the households into various types, a **child** (ie a dependant) is defined as:

either aged under 16

or aged 16, 17 or 18 not married, and receiving full-time non-advanced further education. [The definition used in previous articles was a person aged under 16].

Most of the 'extra' adults in households with at least three adults are sons or daughters of the head of household rather than retired people.

7. A **retired household** is defined as one where the combined income of retired members amounts to at least half the total gross income of the household, where a retired person is defined as anyone who describes themselves as 'retired' or anyone over minimum NI pension age describing themselves as 'unoccupied' or 'sick or injured but not intending to seek work'.

8. By no means all retired people are in retired households: about one in five households comprising three or more adults contain retired people, for example, and households comprising one retired and one non-retired adult are often classified as non-retired.

9. The sample households have been classified according to their compositions at the time of the interview. This classification is sensible for the vast majority of households, but it can be misleading for the very small number of cases (26 in 1987) where a spouse is absent from the household at the time of interview. The absent spouse may well be working away from home (eg on an oil rig), or living separately - but contributing financially to the household's upkeep. These contributions would be picked up as part of the household's original income. Also, it is likely that some households will have changed their composition during the year.

10. Economically active people comprise employees, the self-employed and others not in employment but who are seeking or intending, when able, to seek work. In 1982 there were changes in the FES in the definition relating to economic activity. The effect of these changes is to exclude all those out of employment for more than a year rather than five years. This exclusion applies regardless of the fact that they may still describe themselves as seeking work. Also excluded are those who have not been in paid employment since leaving full-time education unless they have worked within the previous year; certain of the part-time self-employed with very small incomes; and those whose only economic activity is working as mail-order agents or baby-sitters.

Income: redistributive stages

11. Stage one:

Original income plus cash benefits = Gross income.

Stage two:

Gross income minus income tax, employees' National Insurance contributions and domestic rates = Disposable income.

Stage three:

Disposable income minus indirect taxes = Post-tax income

Stage four:

Post-tax income plus 'benefits in kind' = Final income.

12. The starting point of the analysis is **original income**. This is the annual income in cash of all members of the household before the deduction of taxes or the addition of any state benefits. It includes income from employment, self-employment, investment income, occupational pensions and annuities. Employment income is based on the last payment received before the interview or, where different, the amount usually received. Allowance is made for any periods of absence from work through sickness and unemployment in the preceding 12 months, and for bonuses. Income from self-employment is recorded in the FES for a past period. This is brought up to current levels using the average earnings index. Income from interest, dividends and rent is taken as the amount received in the 12 months before the interview. Income from occupational pensions is based on the last payment received.

13. About 99 per cent of original income comes from earnings, occupational pensions (including annuities) and investment income. The tiny bit remaining comes from a variety of sources: trade union benefits, income of children under 16, private scholarships, earnings as a mail order agent or babysitter, regular allowance from a non-spouse, allowance from an absent spouse and the imputed value of rent-free accommodation. Households living in rent-free dwellings are each assigned an imputed income based upon the rateable value of the dwelling. This is counted as employment income if the tenancy depends on the job.

14. The next stage of the analysis is to add cash benefits to original income to obtain **gross income**. This is slightly different to the 'gross normal weekly income' used in the FES Report, mainly because it excludes the imputed rent of owner-occupiers. Cash benefits are:

Contributory:

Retirement pension and Christmas bonus, unemployment benefit, sickness and industrial injury benefit, statutory sick pay, invalidity pension and allowance, industrial injury disablement benefits, widows' benefits, maternity allowance and statutory maternity pay.

Non-contributory:

Supplementary benefit, child benefit, housing benefit, attendance allowance, mobility allowance, war pensions, severe disablement allowance, family income supplement, old persons pension, government training scheme allowances (YTS etc), student maintenance awards, maternity grant.

15. Statutory Sick Pay is classified as a cash benefit even though it is paid through the employer.

16. Income from short-term benefits is taken as the product of the last weekly payment and the number of weeks the benefit was received in the 12 months prior to interview. Income from long-term benefits, and from housing benefit, is based on current rates.

17. Income tax, domestic rates and employees' and self-employed contributions to National Insurance and National Health services are then deducted to give **disposable income**. Taxes on capital, such as capital gains tax and inheritance tax, are not included in these deductions because there is no clear conceptual basis for doing so, and the relevant data is not available from the FES.

18. The figures for domestic rates include, as well as local authority rates, charges made by water authorities for water, environmental and sewerage services. Rates are shown in full with any rebates given in housing benefit. [In previous articles, domestic rates have been included in the 'indirect' tax category. They are now deducted in the derivation of disposable income in anticipation of their replacement by the community charge in 1989. The National Accounts system, which strongly influences this article, will be showing the community charge as a deduction before disposable income is produced].

19. The tax estimates are based on the amount deducted from the last payments of employment income and pensions, and on the amount paid in the last 12 months in respect of income from self-employment, interest, dividends and rent. The income tax payments recorded will therefore take account of a household's tax allowances, with the exception of tax relief obtained 'at source'. In 1987 there were two types of tax relief obtained in this way: mortgage interest relief and life assurance premium relief. Where households are eligible for these reliefs imputations are made and deducted from recorded income tax payments. In the case of mortgage interest relief obtained through the MIRAS scheme, which was introduced in April 1983, these imputations are based on the interest component of the latest mortgage repayment.

20. The next step is to deduct indirect taxes to give **post-tax income**. Indirect tax on final consumer goods and services include:

Duties on beer, wines, spirits, tobacco, oil, betting, etc
Value Added Tax (VAT)
Customs (import) duties
Car tax
Motor vehicle duties
Driving licences
Stamp duties
Gas levy

21. Taxes levied on final goods and services are assumed to be fully incident on the consumer, and can be imputed from a household's FES expenditure record. For example, the amount of VAT which is paid by the household is calculated from the household's total expenditure on goods and services subject to VAT.

22. VAT and car tax affect the prices of secondhand cars and are therefore assumed to be incident on the purchasers of such cars.

well as on the purchasers of new cars. In allocating taxes, expenditures recorded in the FES on alcoholic drink, tobacco, ice cream, soft drinks and confectionery are grossed up to allow for the known under-recording of these items in the sample. The true expenditure in each case is assumed to be proportional to the recorded expenditure. This approach has its drawbacks because there is some evidence to suggest that heavy drinkers, for example, are not picked up by the FES.

23. The incidence of stamp duty on house purchase on an owner-occupying household has been taken as the product of the hypothetical duty payable on buying their current dwelling (estimated from rateable values) and the probability of a household of that type moving in a given year (estimated from the General Household Survey).

24. Indirect taxes on intermediate goods and services are:

- Local authority rates on commercial and industrial property
- Motor vehicle duties
- Duties on hydrocarbon oils
- Employers' contributions to National Insurance, the National Health Service, the industrial injuries fund and the redundancy payments scheme
- Customs (import) duties
- Stamp duties
- VAT

25. These are taxes that fall on goods and services purchased by industry. Only the elements attributable to the production of subsequent goods and services for final consumption by the UK personal sector are allocated in the article, being assumed to be fully shifted to the consumer. Their allocations between different categories of consumers' expenditure are based on the relation between intermediate production and final consumption using estimated input-output techniques. This process is not an exact science, and many assumptions have to be made.

26. Finally, we add those notional benefits in kind provided to households by government for which there is a reasonable basis for allocation to households, to obtain **final income**. Benefits in kind are:

- State education
- School meals and welfare milk
- National Health service
- Housing subsidy
- Railway travel subsidy
- Bus travel subsidy

27. Education benefit is estimated by the Department of Education and Science as the cost per pupil or student in special schools, primary and secondary schools, universities, and other further education establishments. The value of the benefit attributed to a household depends on the number of people in the household recorded in the FES as receiving each kind of education (students away from home are excluded).

28. The value of school meals and other welfare foods is based on their cost to the public authorities. Any payment by the individual household is subtracted to arrive at a net contribution.

29. Each individual in the FES is allocated a benefit from the National Health Service according to the estimated average use made of the various types of health service by people of the same age and sex, and according to the total cost of providing those services. The benefit from maternity services is assigned separately to those households containing children under the age of 12 months.

30. In this article public sector tenants are defined to include the tenants of local authorities, New Town Corporations, the Scottish Special Housing Association (SSHA), Northern Ireland Housing Executive (NIHE) and housing associations. The total housing subsidy includes the contribution from rate funds and from central government to the housing revenue accounts of local authorities: and grants paid to the New Town Corporations, the SSHA, the NIHE and housing associations. Within Greater London, the rest of England, Wales, Scotland and Northern Ireland each public sector tenant has been allocated a share of the region's total relevant subsidy based on the gross rateable value of his dwelling. Housing subsidy does not include mortgage interest tax relief, rent rebates and allowances or rate rebates included in housing benefit (see paragraphs 14 and 18 respectively).

31. The rail travel subsidies allocated are those to British Rail passenger operations and the London Underground. The subsidy to London and South East services is allocated to households living in the area and subsidies to provincial services to households living outside the South East, in proportion to households' expenditure on rail fares as recorded in the FES. A single allocation of the subsidy to inter-city services was made by dividing that subsidy between all households in proportion to their recorded expenditure on rail fares. In making both these allocations allowances are made for the use of rail travel by the business sector, tourists and the institutional part of the personal sector.

32. In this article, bus travel subsidy covers both the cost of concessionary travel schemes for senior citizens and others, and subsidies to operators. Separate allocations are made for Greater London, the other metropolitan areas and the rest of the United Kingdom. The subsidy is divided between households according to recorded expenditure on bus travel and the types of concessionary passes held.

33. We must emphasise that the analysis in this article provides only a very rough guide to the kinds of household which benefit from government expenditure, and by how much, and to those which finance it. Apart from the fact that large parts of expenditure and receipts are not allocated, the criteria used both to allocate taxes and to value and apportion benefits to individual households could be regarded as too simplistic. For example, the lack of data forces us to assume that the incidence of direct taxes falls on the individual from whose income the tax is deducted. This implies that the benefit of tax relief for mortgage interest, for example, accrues directly to the taxpayer rather than to some other party, for instance, the vendor of the land. It also implies that the working population is not able to pass the cost of the direct tax back to employers through lower profits, or to consumers through higher prices. And, in allocating indirect taxes we assume that the part of the tax falling on consumers' expenditure is borne by the households which buy the item or the service taxed, whereas in reality the incidence of the tax is spread by pricing policies and probably falls in varying proportions on the producers of a good or service, on their employees, on the buyer, and on the producers and consumers of other goods and services. Another example is that we know only an estimate of the total financial cost of providing benefits such as education, and so we have to treat that cost as if it measured the benefit which accrues to recipients of the service. In fact, the value the recipients themselves place on the service may be very different to the cost of providing it: moreover, there may be households in the community, other than the immediate beneficiaries, who receive a benefit indirectly from the general provision of the service.

Equivalence scale

34. The equivalence scale used in this analysis is the *McClements scale* (before housing costs are deducted). The scales (separate

ones for before and after housing costs) were developed by Dr L D McClements at the Department of Health and Social Security (DHSS) in the mid-seventies, based on expenditure data from the 1971 and 1972 FES. They are based on the assumption that it is possible to estimate equivalence scales from people's spending behaviour as recorded in the FES without making any specific assumption about the criteria for equivalence. These scales are in regular use, though it is recognised that they are based on what is now rather old expenditure data and that it might be desirable to update them. The scales are regarded as plausible and they are well within the range of equivalence scales developed at different times in a number of countries. Hence their use is fully justified for broad statistical standardisation pending any re-calculation.

35. The equivalence values are given below:

Type of household member	Equivalence value
a. married head of household (ie a married couple of 2 adults)	1.00
1st additional adult	0.42
2nd (or more) additional adult	0.36 (per adult)
b. single head of household (ie 1 adult)	0.61
1st additional adult	0.46
2nd additional adult	0.42
3rd (or more) additional adult	0.36 (per adult)
c. Child aged:	
16-18	0.36
13-15	0.27
11-12	0.25
8-10	0.23
5-7	0.21
2-4	0.18
under 2	0.09

The values for each household member are added together to give the total equivalence number for that household. This number is then divided into the disposable income for that household to give **equivalised disposable income**. For example, a household has a

married couple with 2 children (aged 6 and 9) plus one adult lodger. The household's equivalence number is $1.0+0.21+0.23+0.42=1.86$. The household's disposable income is £20,000, and so its equivalised disposable income is £10,753 ($=£20,000/1.86$).

36. This quantity is used to produce the single ranking used in all the tables in this article (apart from the Gini coefficients which have to be ranked afresh for each different definition of income). [In previous articles, three types of ranking were used: the main one was using original income but gross income and disposable income were also used. In addition, the tables showing income shares were re-ranked for each separate income measure]. It is important to note that most monetary values shown in the article are ordinary (ie *unequivalised*) £ a year, not equivalised £ a year. Where equivalised £ a year do appear (eg the quintile points in Table 3 of Appendix 1), they are shown in italics.

Gini coefficient

37. The Gini coefficient is the most widely used summary measure of the degree of inequality in an income distribution. It can most easily be understood by considering a Lorenz curve of the income distribution, (see Diagram B) ie a graph of the cumulative income share against the cumulative share of households. The curve representing complete equality of income is thus a diagonal line while complete inequality (with only one recipient of income) is represented by a curve comprising the horizontal axis and the right-hand vertical axis (see Diagram A). The area between the Lorenz curve and the diagonal line of complete equality, as a proportion of the triangular area between the curves of complete equality and inequality, gives the value of the Gini coefficient. Thus a distribution of perfectly equal incomes has a Gini coefficient of zero; as inequality increases (and the Lorenz curve bellies out), so does the Gini coefficient until, with complete inequality, it reaches its maximum value of 1 (or 100 per cent).

38. To calculate the Gini coefficient for an income distribution, the first step is to rank that distribution in ascending order. All the Gini coefficients shown in this article (apart from the few on the 'old' basis in Appendix 4) are based on distributions of equivalised income eg the coefficient for original income is calculated after dividing the original income for all the households by their appropriate equivalence values.

[In previous articles, no such equivalisation was used].

Diagram A

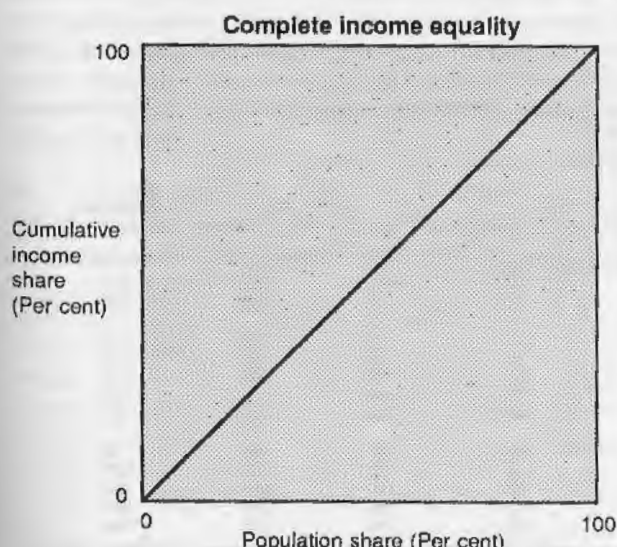
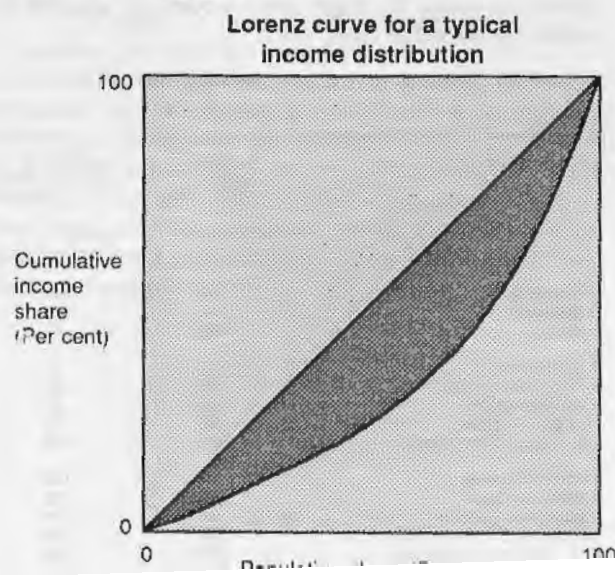


Diagram B



39. Strictly speaking, one could argue that the equivalence scales used here are only applicable to disposable income because this is the only income measure relating directly to spending power. Since the scales are often applied, in practice, to other income measures, we are content to use them to equalise original, gross and post-tax income for the purpose of producing Gini coefficients (and in the tables giving percentage shares of total income). However, we do not think it is appropriate to equalise the final income measure because this contains notional income from benefits in kind (eg state education): the equivalence scales used here are based on actual household spending and do not, therefore, apply to such items.

Sampling errors and reliability

40. As the FES is a sample survey, data from it will differ in varying degrees from those of all households in the UK. The degree of difference will depend on how widely particular categories of income and expenditure vary between households. This 'sampling error' is smallest in relation to, say, the average expenditure of large groups of households on items purchased frequently (when spending does not vary greatly between households). Conversely, it is largest for small groups of households, and for items or services purchased

infrequently (for which expenditure varies considerably between households). A broad numerical measure of the amount of variability is provided by the quantity known as the standard error.

41. The formula used below is a simple approximation, obtained by regarding the co-operating households as if they were a representative sample, from a single-stage random selection, of all private households in the United Kingdom. This simple random sample formula therefore takes no account of the multi-stage design of the actual sample: it is very likely to yield smaller estimates than the more complicated formula for the multi-stage process. The standard error of the mean for N households is S/\sqrt{N} where S^2 is the estimate of the population variance. Table (i) gives the standard errors of the mean for the five income measures, for all households and the ten household types. These figures are very likely to be under-estimates of the actual values.

42. The standard errors can be used to give an idea of the reliability of a mean by quoting a confidence interval of the form:

$$\text{estimate of mean} + \text{or} - (1.96 * \text{standard error})$$

where the factor 1.96 corresponds to the 95% confidence interval.

Standard errors of the mean, 1987

TABLE (i)

Household type	Number in sample	Standard error of the mean for the 5 income measures (£ a year):				
		Original income	Gross income	Disposable income	Post-tax income	Final income
All households	7 396	134	125	92	83	86
Non-retired	5 459	157	148	110	100	104
Retired	1 937	149	147	103	96	99
1 adult retired	1 059	140	136	108	105	106
2 or more adults retired	878	273	264	168	159	162
1 adult non-retired	799	307	288	207	194	192
2 adults non-retired	1 490	280	264	186	172	171
3 or more adults non-retired	682	507	476	383	361	371
1 adult with children	284	244	195	169	162	203
2 adults and 1 child	592	405	378	260	234	234
2 adults and 2 children	874	402	387	296	281	283
2 adults and 3 or more children	340	723	677	447	398	398
3 or more adults with children	398	539	486	366	332	341

Standard errors for disposable income for quintile groups within households type, 1987

Households ranked by equalised disposable income

TABLE (ii)

Household type	Number in sample	Standard error of mean disposable income for quintile groups (£ a year):					All households
		Bottom	2nd	3rd	4th	Top	
All households	7 396	44	64	84	105	286	92
Non-retired	5 459	65	84	100	132	351	110
Retired	1 937	47	46	54	79	389	103
1 adult retired	1 059	21	8	6	15	462	108
2 or more adults retired	878	58	28	64	78	596	168
1 adult non-retired	799	49	38	42	57	697	207
2 adults non-retired	1 490	75	48	51	66	445	186
3 or more adults non-retired	682	192	163	183	244	1 246	383
1 adult with children	284	166	102	127	144	542	169
2 adults and 1 child	592	119	79	84	132	660	260
2 adults and 2 children	874	101	72	90	111	1 009	296
2 adults and 3 or more children	340	166	137	152	195	1 548	447
3 or more adults with children	398	230	268	220	275	974	366

**Standard errors for disposable income expressed
as a percentage of the mean, 1981 to 1987**

TABLE (iii)

OLD BASIS

Household type				Number in sample	Standard errors for disposable income expressed as a percentage of the mean							
				(1986)	1981	1982	1983	1984	1985	1986	1987	
All households	7 178	0.8	1.1	0.8	0.8	0.8	0.8	1.0	0.9
Non-retired	5 366	0.9	1.2	0.8	0.8	0.8	0.8	1.0	0.9
Retired	1 812	1.3	1.2	1.4	1.4	1.4	1.6	1.6	1.9
1 adult retired	986	1.4	1.2	1.5	1.5	1.5	1.4	1.8	2.8
2 or more adults retired	826	1.7	1.5	1.8	1.8	1.8	2.0	2.0	2.4
1 adult non-retired	758	2.7	2.8	2.4	2.5	2.5	2.3	3.3	2.9
2 adults non-retired	1 530	2.0	1.3	1.7	1.7	1.4	1.4	2.3	1.5
3 or more adults non-retired	746	1.4	1.4	1.6	1.7	1.7	1.8	1.7	2.1
1 adult with children	266	9.6	3.1	3.6	3.5	3.5	3.3	3.2	3.5
2 adults and 1 child	550	2.0	2.5	1.9	2.2	2.2	2.3	3.4	2.3
2 adults and 2 children	742	1.4	1.5	1.7	1.7	1.9	1.7	1.8	2.4
2 adults and 3 or more children	325	2.8	2.9	2.7	3.3	3.3	3.6	3.0	2.9
3 or more adults with children	449	1.9	6.2	1.8	1.8	1.8	2.5	3.0	2.7

For example: the mean disposable income for all households is £10,074 (see Table 3 in Appendix 1), and its standard error is £92 (from Table (i)). So the confidence interval for the population value is £10,074 + or - £180 ie about (£9,900 to £10,250). It is very likely that the mean disposable income for the whole population (ie all UK private households) will lie in this range, though the interval is likely to be larger if the more accurate standard error formula is used.

43. The standard errors for the household types are larger than for the whole sample, mainly because the sample sizes concerned are smaller. For quintile groups of given household types, the sample sizes are of course smaller still, which would tend to increase sampling variability. On the other hand, the income values are by definition in a narrower range which would tend to reduce the sampling error. Precise estimates of standard errors for averages for quintile groups are complicated to produce. As well as the variability of the observations between the quintile points, we should also take account of the randomness which exists because the sample quintile points are themselves subject to random variation. However, to get a feel for the order of magnitude involved, we have ignored the latter element of variability and have estimated the standard error of the mean for the quintile groups of disposable income using the simple random sample formula (S/\sqrt{N}). This formula almost certainly under-estimates the actual values, and for sample sizes of 50-500 the simple formula may seriously underestimate the error (the true value may be as much as twice the simple estimate). Table (ii) gives these estimated standard errors for disposable income. The standard errors of the top quintile group are always much larger than for the other quintile groups. This is not surprising as, in general, any distribution of incomes has a long positive tail. The standard errors for the top quintile group are so large that it is doubtful whether the averages for this group are reliable enough to be worth quoting in the tables in this article.

44. Another aspect of sampling errors and reliability is the variation from year to year. Table (iii) gives the standard error of the mean (expressed as a percentage of the mean) for disposable income

for the seven years from 1981 to 1987. Note that this table is in terms of the old methodology and definitions. The two groups with consistently high proportionate standard errors are one adult with children, and two adults with 3 or more children. Relatively small groups like these are more likely to be strongly influenced by unusually large income and expenditure values.

If the change between years were to be considered, then it is the standard error of the *difference* between years that is relevant. This is about twice the size of the standard error for a particular year - because the standard errors for the individual years are effectively added together.

Previous articles

45. This article is the latest in an annual series. Earlier articles covering the years 1957 to 1986 were published in the following issues of *Economic Trends*: November 1962, February 1964, August 1966, February 1968, 1969, 1970, 1971, 1972, November 1972 and 1973, December 1974, February 1976, December 1976, February 1978, January 1979, 1980, 1981 and 1982, December 1982, November 1983, December 1984, December 1985, July 1986, November 1986, July 1987 and December 1988. This year's article has such a marked change in methodology that the results are **completely incompatible** with those for earlier years. We intend to produce a consistent time series (as far as the ever-changing FES will allow) for a selection of tables in the next article.

46. The results in previous articles were designed to be freestanding: they were *not* designed for direct comparison with other years except where some limited comparisons were made in the articles. Such comparisons are fraught with difficulty because of changes in definitions eg housing benefit in 1983. However, some broader measures like the Gini coefficients quoted in those earlier articles are relatively robust and will stand comparison with other years. Enquiries should be addressed to Dave Westcott, Branch E2, Central Statistical Office, Room 1936, Millbank Tower, Millbank, London SW1P 4QU.

APPENDIX 3

CHANGES IN THE METHODOLOGY THIS YEAR

Background

1. This year we have used equivalisation in the article extensively for the first time. This is the major change. At the same time, we have taken the opportunity to review the methodology in general - the first such review for over 10 years. As a result of this review, we have made various changes in definition and coverage to improve the analysis and make it more amenable to time series work. This review has taken some time and hence this year's article has taken longer to publish than previous articles. The changes are described below.

Equivalisation

2. Equivalisation of income means adjusting income for household size and composition. The main effect is that small households are no longer concentrated at the bottom of the income distribution, nor are larger households concentrated at the top. The effects of equivalisation are covered in detail in Part II of this article, and a description of the McClements equivalence scale (before deducting housing costs) is given in paragraphs 34-36 of Appendix 2. By equivalising the income distributions for a period of years, any changes (eg growing proportion of single retired households in the country) in household size or composition (ie demographic changes) will be automatically taken into account. Hence, these 'standardised' income distributions for a period of years allow a much more meaningful and consistent time series analysis than is possible without equivalisation. In the next article, we intend to produce a time series for selected tables on a consistent basis (or as consistent as the ever-changing FES will allow).

3. It is very important to note that we have confined the use of equivalisation to the ranking of income that produces the distribution of quintiles and deciles. So the vast majority of monetary values quoted in the tables are ordinary £ a year, and not equivalised £ a year. Some of the tables in Appendix 1 show the decile and quintile points which are given in equivalised money (and printed in *italics*), but all other monetary values are average £ a year for the particular quintile group or decile group concerned.

4. For example, Table 3 of Appendix 1 shows the stages of the tax-benefit system for quintile groups of households, ranked by equivalised disposable income. This table was produced as follows:

- take each household's disposable income and divide it by the household's equivalence factor to produce the households equivalised disposable income eg disposable income of £18,000, equivalence factor 1.18, equivalised disposable income of £15,254
- rank the equivalised disposable incomes in ascending order
- divide this income distribution into quintile groups

- calculate, for each quintile group separately, the average (unequalised) values of original income, cash benefits, gross income, tax payments, disposable income etc.

Ranking the income distribution

5. We have decided to use only one system for ranking the income distribution for percentile analysis, viz equivalised disposable income. In previous articles, there were three ways of ranking income: the most common was by original income, but gross income and disposable income were also used. This could have led to some confusion because the bottom quintile group (say) of original income would not contain the same households as the bottom quintile group of gross income. So now, the bottom quintile group of households refers to the same set of households throughout the entire article.

6. We chose the disposable income measure because this corresponds most closely to the cash amounts that households have to spend on goods and services - and the equivalisation process is most appropriate to this income measure. Strictly speaking, the equivalisation process is not appropriate to apply to the original income, gross income or post-tax income measures. In practice, the process is widely used elsewhere on many income measures and so we apply it to these other income measures in this article for the calculation of percentage shares of total household income, and Gini coefficients. However we do not think it is appropriate to equalise final income because it contains notional income from benefits in kind (eg from state education) that is not available in cash for the household to spend.

7. The tables showing percentage shares of total household income (Tables C, J and M in Part I) are now based on the one ranking (ie equivalised disposable income). So, for example, in Table C the bottom quintile group of households (when ranked by equivalised disposable income) had 2.1 per cent of the total equivalised household original income. The same set of households had 7.5 per cent of the total household equivalised gross income etc. By staying with the same groups of households, the effects of the tax-benefit system are more clearly seen. In previous articles, the income distribution was re-ranked for each of the income measures. Hence the bottom quintile of households for original income was different to the bottom quintile group for gross income etc.

8. The Gini coefficients are the only part of the new method of analysis where the single ranking rule is broken. The Gini coefficient needs a distribution of income in ascending order. So, for example, the coefficient for original income has to have the (unequalised) original incomes ranked in order. As mentioned in paragraph 6 above, we do not think it is appropriate to equalise final income - so there is now no percentage share or Gini coefficient for this income measure.

Original income

9. A comprehensive coverage (with accurate valuations) of the many minor perks which attach to various types of employment is not possible. Original income, therefore, no longer includes free meals and food from employer, luncheon vouchers and concessionary coal and coke. These had become small in money terms: £218 a year on average for the 533 sample households receiving free meals and food, £222 a year for the 77 households with luncheon vouchers, and £319 a year for the 85 households getting coke and coal (the corresponding amounts for the whole sample are £16, £2 and £4). Their valuations were rather arbitrary. However, there are much more significant items, most notably the company car, which are seen not as a 'fringe benefit' or 'perk' but as an integral part of the remuneration package. We intend to extend the analysis to cover this item in future years (a question on the engine size of company cars was introduced into the 1990 FES), and follow Inland Revenue valuations.

Disposable income

10. We have re-defined this income measure to be exclusive of domestic rates (which were previously in the indirect tax section along with VAT, duty on beer etc). This change is made in anticipation of community charge data being available in the 1989 FES and onwards. The National Accounts system, which we use extensively in our analysis, will show the community charge as a

deduction before arriving at disposable income - we will follow suit. For the sake of only 2 year's data (ie 1987 and 1988) it seems silly to introduce a discontinuity in the series, when it can so easily be avoided.

Domestic rates

11. Domestic rates are now shown in full ie before any rebates which are now shown as a cash benefit (as part of housing benefit). This will be very useful in the next article (which will look at disposable income in earlier years) because it avoids a discontinuity - arising from the introduction of Housing Benefit in 1983 - which was present under the old definition. In previous articles, domestic rates were shown net of rebates and these rebates were excluded from cash benefits.

Definition of a 'child'

12. The new definition, given in paragraph 6 of Appendix 2, is now the same as that used in the derivation of a tax unit (and hence is in line with usage in other Government Departments). The old definition was that anyone under 16 was a child - mainly because anyone over 16 in the FES had to fill in a diary record of their expenditure over a fortnight. The number of children in the 1987 FES is 4,283 on the old basis and 4,555 on the new basis. This change of definition will, of course, have an effect on the ten household types shown in Table 5 of Appendix 1.

APPENDIX 4

Selection of tables on the old basis

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Table

Average incomes, taxes and benefits, 1987

By decile groups of households ranked by original and disposable income 1

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Average incomes, taxes and benefits, 1987

By decile groups of households ranked by original and disposable income

TABLE 1

OLD BASIS

£ per year												Average over all decile groups	
Decile group													
Bottom	2nd	3rd	4th	5th	6th	7th	8th	9th	Top				
(i) Ranked by original income													
All households													
Decile Points (£)	31	820	2 757	6 030	8 897	11 502	14 222	17 333	23 382		
Number of households in the sample	740	739	740	739	740	740	739	740	739	740	7 396		
Original income..	3	319	1 686	4 383	7 504	10 246	12 832	15 896	20 166	34 542	10 759
Direct benefits in cash													
Contributory													
Retirement pension	..	1 206	1 865	1 797	1 159	605	337	247	232	164	160	777	
Sickness/ injury related	..	150	146	198	234	130	115	77	78	72	53	125	
Unemployment benefit	..	89	41	83	114	76	70	67	31	43	45	64	
Other contributory benefits	..	29	53	66	80	77	46	40	30	27	16	46	
Total contributory benefits	..	1 454	2 105	2 144	1 587	889	568	430	371	306	274	1 013	
Non-contributory													
Supplementary benefit	..	1 152	495	323	299	148	60	82	32	39	35	267	
Child benefit	..	246	94	110	190	238	322	305	312	279	254	235	
Rent rebates/ allowances	..	748	392	192	142	41	20	21	1	2	3	156	
Sickness/ disablement related	..	186	135	180	104	129	52	51	31	41	20	93	
Other non-contributory benefits	..	78	97	130	125	78	54	62	73	62	26	79	
Total non-contributory benefits	..	2 409	1 213	935	860	636	509	521	450	424	339	829	
Gross income	3 866	3 637	4 766	6 830	9 029	11 324	13 784	16 717	20 896	35 155	12 601
Income tax ¹ and Employees' NIC	-21 ¹	8	119	575	1 274	1 898	2 421	3 182	4 272	8 195	2 193
Disposable income	3 887	3 629	4 646	6 255	7 755	9 425	11 362	13 535	16 623	26 960	10 408
Domestic rates ²	153	208	338	392	435	455	480	526	581	731	430
Taxes on final goods and services	543	532	790	1 100	1 397	1 559	1 827	2 105	2 368	3 006	1 523
Intermediate taxes	196	219	289	384	454	525	609	696	776	1 103	525
Post-tax income	2 996	2 671	3 229	4 379	5 469	6 887	8 446	10 208	12 898	22 120	7 931
Benefits in kind													
Education	570	301	434	544	634	766	788	951	836	732	656
National health service	971	1 029	997	895	862	810	815	788	748	787	870
Housing subsidy	156	89	85	74	62	45	37	27	24	16	61
Travel subsidies	37	46	55	48	41	44	48	47	72	121	56
School meals and welfare milk	76	34	33	43	28	20	23	21	21	15	31
Final Income	4 804	4 170	4 833	5 983	7 097	8 751	10 157	12 041	14 588	23 791	9 605
(ii) Ranked by disposable income													
All households													
Decile points (£)	3 166	4 293	5 554	7 103	8 720	10 493	12 479	14 873	19 172		
Number of households in the sample	740	739	740	739	740	740	740	739	740	739	740	7 396	
Original income..	413	1 047	2 098	4 444	7 263	9 932	12 649	15 882	19 960	34 090	10 759
Direct benefits in cash													
Contributory													
Retirement pension	..	1 472	1 440	1 464	991	757	473	370	314	268	222	777	
Sickness/ injury related	..	29	98	132	263	153	147	155	114	83	78	125	
Unemployment benefit	..	26	48	96	96	77	71	67	47	63	50	64	
Other contributory benefits	..	39	50	65	55	59	49	54	40	35	19	46	
Total contributory benefits	..	1 566	1 636	1 756	1 406	1 046	740	646	515	449	369	1 013	
Non-contributory													
Supplementary benefit	..	250	484	590	476	333	190	120	102	59	62	267	
Child benefit	..	33	97	176	248	269	329	307	309	303	280	235	
Rent rebates/ allowances	..	338	445	362	185	111	41	32	23	9	16	156	
Sickness/ disablement related	..	31	65	115	163	135	131	89	78	75	47	93	
Other non-contributory benefits	..	43	57	92	96	106	92	52	108	86	53	79	
Total non-contributory benefits	..	695	1 148	1 335	1 168	954	784	601	620	531	459	829	
Gross income	2 674	3 831	5 189	7 018	9 267	11 456	13 895	16 817	20 941	34 919	12 601
Income tax ¹ and Employees' NIC	59	132	303	727	1 355	1 857	2 497	3 180	4 139	7 675	2 193
Disposable income	2 615	3 699	4 886	6 292	7 907	9 600	11 398	13 637	16 802	27 244	10 408
Domestic rates ²	213	238	296	368	408	451	484	523	592	726	430
Taxes on final goods and services	406	559	806	1 129	1 379	1 575	1 824	2 131	2 422	2 995	1 523
Intermediate taxes	180	218	291	366	458	522	607	708	813	1 088	525
Post-tax income	1 816	2 685	3 493	4 428	5 661	7 051	8 483	10 276	12 976	22 435	7 931
Benefits in kind													
Education	168	198	433	611	657	895	856	970	976	791	656
National health service	825	857	987	930	898	890	856	825	802	834	870
Housing subsidy	85	121	100	85	66	52	34	22	30	18	61
Travel subsidies	37	40	49	42	50	49	39	56	82	115	56
School meals and welfare milk	9	23	53	65	41	36	24	22	22	18	31
Final Income	2 939	3 923	5 115	6 161	7 374	8 972	10 292	12 172	14 988	24 210	9 605

1 Net of tax relief at source on mortgage interest and life assurance premiums. See Appendix 1.

2 Net of the rate element of housing benefit, but including water, etc. charges.

3 Negative average tax payment results largely from imputed tax relief on life assurance premiums.

Percentage distribution of original, gross, disposable, post-tax, and final income, households re-ranked at each stage, 1975-87

TABLE 2

OLD BASIS

	1975	1977	1979	1981	1983	1985	1986	1987
Original income								
Quintile group								
Bottom ..	0.8	0.6	0.5	0.6	0.3	0.3	0.3	0.3
2nd ..	10	10	9	8	7	6	6	6
3rd ..	19	19	19	18	18	17	16	16
4th ..	26	27	27	27	27	27	27	27
Top ..	44	44	45	46	48	49	51	51
All households ..	100	100	100	100	100	100	100	100
Gross income								
Quintile group								
Bottom ..	5.5	5.7	5.5	5.6	5.7	5.4	5.3	5.1
2nd ..	12	12	11	11	11	10	10	10
3rd ..	18	18	18	17	17	17	16	16
4th ..	25	25	25	25	25	25	24	24
Top ..	40	40	40	41	42	43	44	45
All households ..	100	100	100	100	100	100	100	100
Disposable income								
Quintile group								
Bottom ..	6.6	6.9	6.5	6.7	6.8	6.5	6.2	6.1
2nd ..	13	13	12	12	12	11	11	11
3rd ..	18	18	18	18	18	17	17	17
4th ..	24	24	25	24	24	24	24	24
Top ..	38	38	39	39	40	41	42	42
All households ..	100	100	100	100	100	100	100	100
Post-tax income								
Quintile group								
Bottom ..	6.2	6.4	6.1	6.0	6.0	5.8	5.1	5.1
2nd ..	12	12	11	11	11	11	10	10
3rd ..	18	18	18	17	17	17	16	16
4th ..	24	24	25	24	24	24	24	24
Top ..	39	39	40	41	42	43	45	45
All households ..	100	100	100	100	100	100	100	100
Final income								
Quintile group								
Bottom ..	7.1	7.3	7.1	7.2	6.9	6.7	6.3	6.2
2nd ..	13	13	12	12	12	12	11	11
3rd ..	18	18	18	18	18	17	17	17
4th ..	24	24	24	24	24	24	24	24
Top ..	38	38	38	39	39	40	42	42
All households ..	100	100	100	100	100	100	100	100

Gini coefficients for the distribution of income at each stage of the tax-benefit system, 1975-87

TABLE 3

OLD BASIS

	1975	1977	1979	1981	1983	1985	1986	1987
Gini coefficients (per cent)								
Original income ..	43	44	45	47	49	51	52	52
Gross income ..	35	34	35	36	36	38	40	40
Disposable income ..	32	31	33	33	33	35	36	37
Post-tax income ..	33	33	35	36	36	38	40	40
Final income ..	31	31	32	32	33	34	36	36