

Jenkins, Stephen P.

Working Paper

The distribution of income by sectors of the population

DIW Discussion Papers, No. 217

Provided in Cooperation with:

German Institute for Economic Research (DIW Berlin)

Suggested Citation: Jenkins, Stephen P. (2000) : The distribution of income by sectors of the population, DIW Discussion Papers, No. 217, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin

This Version is available at:

<http://hdl.handle.net/10419/18202>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

DIW **Diskussionspapiere**
Discussion Papers

Discussion Paper No. 217

**The Distribution of Income
by Sectors of the Population**

by
Stephen P. Jenkins*

*University of Essex and DIW Research Professor

Berlin, May 2000

Deutsches Institut für Wirtschaftsforschung, Berlin
Königin-Luise-Str. 5, 14195 Berlin
Phone: +49-30-89789- 0
Fax: +49-30-89789- 200
Internet: <http://www.diw.de>
ISSN 1433-0210

THE DISTRIBUTION OF INCOME BY SECTORS OF THE POPULATION

by

Stephen P. Jenkins

(University of Essex and DIW-Berlin)

4 May 2000

Abstract

I interpret the 'distribution of income by sectors of the population' to refer to the personal distribution of income, with evidence about it derived from household surveys. Section 1 outlines the links between the personal and factor income distributions, and includes a discussion of research using National Accounts data to check the quality of household survey income data. Section 2 provides a number of breakdowns of the personal income distribution in Britain using a variety of methods and subgroup types (including age, family type, housing tenure, and economic status). Section 3 draws attention to longitudinal issues – how much individuals' incomes and subgroup membership changes between one year and the next, and the links between them. Section 4 provides a summary and concluding remarks.

Acknowledgements

Paper prepared for a lecture hosted by ISCONA at ISTAT, Rome, 29 March 2000. I acknowledge with thanks the invitations from Professors Giannone and Buscema. The research reported here has been part-supported by the EU TMR network 'Living Standards, Inequality and Taxation' (Contract No. ERBFMRXCT 980248). The Institute for Social and Economic Research receives core funding support from the UK Economic and Social Research Council and the University of Essex. I am very grateful to John Hills and John Rigg for providing some of the data used in Section 2.

Address for correspondence

Institute for Social and Economic Research, University of Essex, Wivenhoe Park, Colchester CO4 3SQ, U.K. Email: stephenj@essex.ac.uk.

0. INTRODUCTION

As an applied micro-economist specialising in the personal distribution of income, I am very conscious of the fact that ISCONA is the Institute for National Accounts. Clearly our specialisms differ. The first part of my lecture therefore aims to build a bridge between our respective interests. I shall do this in two ways: first, by outlining the conceptual links between the factor distribution of income (about which the National Accounts provide information) and the personal distribution of income (derived mostly from household surveys); and, second, by reporting how economists have used the National Accounts and other national statistics to check the reliability and coverage of their data. My illustrations refer primarily to the UK experience. After these introductory remarks, the remainder (and bulk) of the lecture focuses on the distribution of personal incomes.

Section 2 of the lecture asks what the most relevant ‘sectors of the population’ are when one looks at the distribution of income. The answers depend on the research issue being addressed, whether for example one is most interested in characterising the social structure at a particular point in time, or in using breakdowns by subgroup in order to explain trends in the distribution of income. The empirical illustrations refer to the UK, and include breakdowns by age, gender, family type, family economic status, and housing tenure.

Section 3 of the lecture points out that the information provided in Section 2 is intrinsically static in nature: it refers to different samples of the population for different years – the same group of people are not followed over time. Thus nothing can be said about the chances that individuals have of moving out of or into low income (or high income) between one year and the next. Nor is anything said about the fact that the “population sector” to which an individual belongs may change from one year to the next (for example because of moves into or out of work, or changes in household composition). And yet from a policy point of view such information, about income dynamics, is of particular importance. I use British household panel data to illustrate the extent of income mobility and demographic change from one year to the next.

Section 4 provides a summary and concluding remarks.

1. THE LINKS BETWEEN ‘MICRO’ INCOME DISTRIBUTION ANALYSIS AND NATIONAL ACCOUNTS

1.1 The factor distribution of income and the personal distribution of income

I shall be talking later mostly about the distribution of income amongst persons in the population, rather than the factor distribution. To the classical economists they were of course closely related concepts, but the links are now blurred. A corollary is that National Accounts information about factor share distribution is of less relevance today for examination of the personal distribution. Let us tease out the links between factor and personal distributions in more detail, with reference to the National Accounts.¹

Ricardo saw ‘the principal problem of Political Economy’ as being to determine how ‘the produce of the earth ... is divided among the three classes of the community, namely, the proprietor of the land, the owner of the stock or capital necessary for its cultivation, and the labourers by whose industry it is cultivated (1821, cited by Atkinson 1983, p. 200). In other words, there was a three class society: landlords whose income was in the form of rent,

¹ This section draws heavily on Atkinson (1983, chapter 9; 1996).

capitalists receiving capital income (profits or interest), and workers receiving wages. There was a clear relationship between ‘sectors of the population’ – social classes – and personal incomes. Why is this no longer a satisfactory way to characterise the personal distribution, and to explain trends?

First, this picture ignores the great variations of income within each class. Looking just at wages, one notes that accountants earn much more than filing clerks. And computer programmers earn much more than telephone sales staff. In the UK in 1998, the ratio of the 90th percentile to the 10th percentile of men’s weekly earnings was nearly 3.36 (New Earnings Survey 1998, Table A28) Similarly there is great heterogeneity in capital incomes varying from, say, a football fan’s single share in his football club, to a pensioner’s small annuity, to Bill Gates’s income from his Microsoft share holdings. Landlords range from someone letting out a room in their house to the Duchy of Cornwall with its vast estates.

Second, the three class distinction focuses on physical capital rather than human capital. And yet arguably human capital is nowadays of at least as great importance (and received great attention from economists, with notable pioneering work by e.g. T. Schultz and Nobel Prize winner Gary Becker). Increases in human capital investments and the resultant growth in the human capital stock are often cited – in both developing and developed nations contexts – as being responsible (or potentially responsible) for secular growth in earnings levels, and (more recently) for the growth in earnings inequality.

Third, and a related point, is that nowadays a majority of people are members of more than one factor income class. Should the returns to investments in human capital (e.g. education and training) be counted under the headings of wages or of capital income? Arguably workers today are capitalists – human capitalists. Many people now receive not only employment income, but also income from financial investments and savings. Many workers own a house and thence receive rent (albeit an imputed rent in most cases). How too should one classify self-employed people for their income is a mixture of the returns on their own labour and returns on capital invested or property owned? To some extent this overlap between classes may be exaggerated since the ‘diversity of income sources is in part associated with different stages of the individual lifecycle’ (Atkinson 1983, p. 27). Younger workers’ income may be primarily from wages, but as they get older they accumulate savings or property which can be used as a source of income in retirement.

Fourth, the three-way distinction does not recognise the important role played by a range of institutions which stand between the production and distribution to individuals, notably the corporate sector, financial institutions (e.g. pension funds), governments, and families. Each of these modifies factor distributions in significant ways.

Although all corporate profits ultimately belong to shareholders, and pension fund incomes to their investors, at any given time the links can be difficult to trace out. Corporations may choose not to release all profits in the form of dividends, but to retain and reinvest a proportion. Pension funds are major shareholders, holders of financial assets, and property owners. Thus their income comes from rents and capital income, and moreover the inter-temporal nature of the contract with investors makes the link between current pension fund incomes and returns to specific individuals harder to make. Not only do governments redistribute some pre-tax incomes (especially in the form of social insurance and social assistance benefits) – a separate class of income – but they also levy taxes and borrow, in order to finance current spending and accumulating assets. Families are like mini-governments, redistributing the factor incomes and transfers which come into the households between household members. One has to talk about the family (or household) in order to include children in the income distribution. More generally, the living standards individuals receive depend on whom they live with.

A fifth factor modifying the link between factor incomes and personal incomes is net income from abroad. As Atkinson (1996) points out this is particularly important for the corporate sector and for the ownership of foreign securities.

To illustrate the complexity of the links between factor incomes and the personal distribution, I draw upon the work of Atkinson (1996), who has provided a very useful schematic summary for the UK in the early 1990s: see Figure 1 (within-household complications are not included in this).² At the top of the picture is the production sector, with distinctions between income from wages, self-employment income, profits, and rent, as in the National Accounts. The percentages shown in parentheses are the fractions of GDP paid to these factors. (The positive numbers add to more than 100% because direct taxes and occupational pension contributions are deducted from disposable income.) At the bottom of the picture, there is household disposable income, allocated between seven principal categories, with the proportions of each in the total (on average) shown in parentheses. The arrows indicate the links between different categories.

Clearly there is not a single arrow from each of the categories at the top of the Figure to each the categories at the bottom; indeed there are links between factor incomes themselves (in part reflecting some of the allocation issues alluded to earlier). Some of the factor shares and income shares are reassuringly similar, notably the share of wages (about 2/3 in both cases). But as Atkinson points out, this is misleading: ‘the household category ‘rent, dividends and interest’, for instance, is similar in size to the factor share of rent in GDP, but includes dividends paid by companies, income from abroad, and interest on the national debt, and excludes rent paid to pension funds or accruing to the state or paid to overseas residents’ (1996, p. 29). And household income includes categories like occupational pensions and life insurance income and state transfers without a national income counterpart.

This discussion suggests that if one wishes to study the distribution of income amongst persons, and its determinants, then one needs a different framework from the classical one. And one needs to recognise the variety of income sources which each person may receive, as well as the heterogeneity in amounts received amongst recipients of a given income source. Household surveys are a source of information about these. This is not to say that National Accounts (and other national) information are not of relevance. On the contrary, these sources are particularly valuable for checking the coverage of the survey data. The next section illustrates this point.

1.2 Using National Accounts and other national statistics to benchmark ‘micro’ income survey data

Checking income totals recorded by household income surveys against the totals recorded in national sources such as the National Accounts is an important part of checking the validity of the survey data. Under-reporting of income can lead to biased estimates of income levels in the population. It can also lead to biased estimates of the degree of inequality (Rigg, 1999). This is because mis-reporting affects the survey estimates of the shares of the various income sources in total income, and overall inequality is (broadly speaking) an income-share-weighted sum of the inequalities of each income source. Mis-reporting may of course also affect the estimates of the income inequalities themselves, but there are rarely external data available which allow one to benchmark the survey data. In fact virtually all the studies of

² For a detailed study of the relationships between the functional and personal income distributions in Italy, see Brandolini (1997).

survey data coverage I am aware of focus on income totals (mean income, in effect) rather than other distributional aspects.

There are several complications involved in using National Accounts and other external data to benchmark household survey totals. The first is related to the issues in the previous section. The National Accounts data may not be in directly comparable form, because they can use different income concepts or cover different groups of people (Atkinson et al., 1995). For example interest income in the National Account might include income going to non-profit organisations as well as households, and need to be excluded. Most household surveys are of private households, whereas National Accounts also include the institutionalised population. In the UK, adjustments to income survey data on self-employment are required to account for differences in the timing of receipt. Various other adjustments are required given differences in definitions, e.g. of profits (Atkinson and Micklewright, 1983).

A second complication is that the National Accounts (and other external sources) are themselves estimates and subject to error. And sometimes the compilation of the estimates may draw upon household surveys including the one being benchmarked.

Third, differences in survey and National Accounts estimates of income aggregates can arise for several reasons. There may be item non-response whereby respondent households do not provide responses to questions about particular types of income. Or households may answer all questions, but give inaccurate responses, e.g. systematically under-reporting self-employment or investment income. And there may be differential non-response to the survey as a whole by particular groups within the population. If rich households are less likely to participate in the survey, then investment income is likely to be under-recorded. It is now common to use weights to ‘gross up’ survey data to adjust for differential non-response. The weights are derived using population totals from external sources such as population censuses. In Britain adjustments for income under-reporting among the rich is also partly adjusted in the derivation of the official income distribution statistics (Department of Social Security, 1999). The total incomes of the very richest individuals in the household survey are replaced with the average incomes of the very richest in tax return data (the Survey of Personal Incomes).

Subject to all these caveats how do household income surveys measure up against (adjusted) National Accounts estimates of income aggregates? Atkinson et al (1995) provide a useful summary of results for seven OECD countries, including Italy and Britain. These are reported in Table 1.³

<Table 1 near here>

Total income recorded by the micro-data survey is about 90 per cent of the total income recorded in the (adjusted) National Accounts in four of the seven countries studied (Canada, Finland, the UK and the USA). For Australia, Germany, and Italy the corresponding percentage is about 80 per cent. Atkinson et al. refer to these results as ‘generally reassuring because in some cases at least part of the difference is explained by the fact that the totals are not fully comparable’ (1995, p. 35). However there are some substantial differences when one examines specific income items.

For all the countries shown, income from wages and salaries is nearly 100 per cent of the reference total (and the exception, Australia 1981-82, may be attributable to a definitional issue). Self-employment income is less well recorded, notably for Germany (but this figure is an combined aggregate with investment income) and Italy. Perhaps the most marked under-

³ The Italian figures are based on the research of Brandolini (1993) and Brandolini and Cannari (1993) using the Banca d’Italia survey of household income and wealth.

reporting is for property income, for which the fractions of the National Accounts total are nearer one half to two thirds. There are also notable cross-country variations in the proportion of government transfer income which is recorded. Atkinson et al. (1995) point out that the differences in reporting can affect cross-national comparisons of incomes, referring to the specific example of Canada which may be shown as relatively unequal because of a relatively high reported fraction of property income (unequally distributed) and relatively low fraction of transfer income (equally distributed). They do conclude on an upbeat note however: ‘Still, our major aggregates tend to be reasonably consistently reported across these countries’ (Atkinson et al., 1995, p. 37).

A focus on a single country may facilitate more in-depth study of the mis-reporting issue. For example one may also examine whether estimates such as those shown in Table 1 are stable over time. The pioneering UK study by Atkinson and Micklewright (1983), of Family Expenditure Survey income data, covered 1970-1977. (Table 1 uses their estimates for 1977.) Their work has recently been updated by Johnson and McCrae (1998), to cover FES data for 1987-1992, and is summarised in Table 2.

<Table 2 near here>

Their findings echo those reported earlier. Total income, and its major components, viz employment earnings and social security benefits, are relatively well-recorded. In most years, the FES records about 90 per cent of the total income recorded in the National Accounts. On the other hand, sources with smaller shares such as property income and self-employment, are much less well-recorded and, moreover, their estimated share relative to the National Accounts total fluctuates from one year to the next. Johnson and McCrae conclude that FES estimates of year-on-year income changes ‘should often be treated with a degree of caution. Over longer periods, changes in the FES do appear to reflect real changes. None of our major components of income seemed to suffer from serious structural breaks’ (1998, p. 64).

To what extent does income mis-reporting make a difference? Recent research by Rigg (1999) is one of the few studies which has attempted to quantify the effects of under-reporting on estimates of income inequality. He used ratios of under-reporting such as shown in Tables 1 and 2 (which refer to an average for each income item over all households), to gross up the reported income total for each household in the survey (i.e. assuming homogeneous under-response propensities), and compared estimates of inequality based on the unadjusted and the grossed-up survey data. His results are summarised in Table 3.

<Table 3 near here>

The impact of the adjustments on inequality differs across countries. In all but one case, the Gini coefficient rises with the adjustment, the exception being Australia where there is a decline from 0.30 to 0.29. The most pronounced impact is for Germany, where adjustment increases the Gini coefficient from 0.27 to 0.33 and the country’s inequality ranking from fifth out of six up to third. Whether these changes are viewed as large or small depends in part on context. For example a one percentage point change in the Gini coefficient is larger than the average year-to-year change in the UK during the 1990s, but rather smaller than the large increase over the 1980s. The change for Germany is very much larger than year-on-year changes over the last two decades.⁴

In this section I have tried to highlight the complementary nature of National Accounts information for benchmarking the validity of household income surveys. Although much important research has been done on this topic, it must also be said that there is much

⁴ See Rigg (1999) for further discussion of these results. He also goes on to explore the implications of adjusting for under-reporting on estimates of changes in the Gini coefficient over time.

which could still be done. One of the most important tasks is to extend the exercise to other commonly-used surveys. For example in Britain, research has focused on the Family Expenditure Survey – quite naturally since this has long been the major source on incomes. However no such exercise has yet been undertaken for the Family Resources Survey (annual since 1994/5) which is now used to compile the annual official income distribution statistics rather than the FES. There is also no detailed analysis of the validity of the income data in the British Household Panel Survey. Nor for most other panel surveys from around the world, including the European Community Household Panel. Further work is also required on examining the impact of mis-reporting on estimates of inequality and poverty. And of course the research may feed back into improvements in survey design. At the same time, I have to concede that analysis of this kind is not particularly popular. I would draw attention to and support the work of the Canberra Group,⁵ and the International Association for Research on Income and Wealth as a forum for bringing ‘macro’ National Accounts and ‘micro’ income survey researchers together and addressing these issues.

2. BRITAIN’S INCOME DISTRIBUTION, BROKEN DOWN BY SECTORS OF THE POPULATION

The rest of the paper focuses on the personal distribution of income, estimated using survey data – subject to the questions about validity raised in the previous section. I now have to face head-on the issue raised by the title of this paper, i.e.: what does one mean precisely by ‘sectors of the population’? I have already argued that it is inappropriate to define sectors in terms of classes of landlords, workers, capitalists. Instead the focus is on the distribution of income among individuals. From this perspective, ‘sectors of the population’ refer to (non-overlapping) groups of individuals, where the subgroup partitions are defined using characteristics associated with the individuals. But which characteristics are the most relevant ones?

The answer to this question depends on one’s purpose. One useful distinction is between analysis aiming to *describe* the social structure, and analysis aiming to *explain* changes over time. Both may utilise breakdowns by population subgroups defined in various ways. In particular the explanations of trends contrast the roles played by changes in subgroup income distributions with changes in the distribution of the population between the different groups.

One may also distinguish the methods used. One may simply look at the composition of different income groups and investigate whether particular groups are over- or under-represented at the bottom or the top of the distribution. One may also use summary indices of the income distribution for each and every subgroup (e.g of mean income income, inequality or poverty). Or one may look directly at the whole distribution for each subgroup, using pictures of cumulative distributions or density functions. Again the choice is related to one’s purpose. There are examples below of all three approaches.

I provide some descriptive analyses of the British income distribution in the 1990s using breakdowns by gender and dependence, age, family type, housing tenure, and family economic status. The first three characteristics provide examples of income breakdowns whose patterns have changed relatively little over the last two decades – even though the

⁵ The Canberra Group on Household Income Statistics was formed with the aim of improving national statistics on household income distribution and inequality and with a desire to improve the quality of international comparisons in this area. For further information, see <http://lissy.ceps.lu/canberra.htm>.

income distribution as a whole became dramatically more unequal. By contrast, the relationship between housing tenure and income has changed dramatically over this period. But in this case the characteristic describes the change in social structure – it does not explain it. For explanations of the large rise in inequality in the UK over the 1980s, breakdowns by family economic status have proved particularly informative.

Throughout my analysis, the distribution of income between individuals is defined in the following way. Each person is assumed to enjoy the living standards of the household to which they belong (i.e. within-household differences are assumed away). Household income is ‘disposable income’, or ‘net income’ as it is often referred to in Britain – as in Figure 1. It is the sum, over all household members, of income from employment and self-employment, savings and investments, occupational and private pensions, cash social insurance and social assistance benefits, from which is deducted income tax, social insurance and occupational pension contributions and local taxes. Income refers to income in the receipt period prior to the interview, converted to a comparable pounds per week basis. Each household income has been adjusted by an equivalence scale factor, to account for differences in living standards associated with differences in household size and composition. (The equivalence scale used is the semi-official UK one, the so-called McClements scale: see Department of Social Security, 1999 for details.). The data sets used are the Family Resources Survey (FRS), the Family Expenditure Survey (FES) and, in the next section, the British Household Panel Survey (BHPS).

2.1 Who is located where in the income distribution?

Here I summarise the location of different subgroups of individuals in different parts of the British income distribution, drawing on the most recently published statistics (for fiscal year 1997/8). In each case the population has been ranked in order of income and split into fifths (quintile groups). The graphs below summarise the composition of each of the five income groups accounted for by different subgroup types. Also provided is the proportion of each subgroup type in the population as a whole (the ‘All’ bar). If the risks of low income, or high income, were spread equally across the population, then one would expect to see each group represented in every income group in exactly the same proportion as in the population as a whole. Deviations from these proportions thus indicate over- and -under-representation in different income locations.⁶

I begin with the breakdown by men, women, and children: see Figure 2.⁷ Children made up some 23 per cent of the British population in 1997/8, adult men comprised 37 per cent of the total, and adult women 40 per cent of the total (see the ‘all’ bar). It is clear that children are over-represented at the bottom of the British income distribution; they comprise nearly one third (31 per cent) of the persons in the poorest fifth for instance. By contrast adult men are over-represented at the top of the income distribution; nearly half of those in the richest fifth (45 per cent). Women are neither under- or over-represented across the distribution.

<Figure 2 near here>

⁶ The results presented below are likely to be somewhat sensitive to the equivalence scale chosen. A scale incorporating fewer economies of scale than the McClements scale would worsen the relative position of large families (mainly non-elderly couple families with children) relatively to small families (notably the elderly). See e.g. Buhmann et al. (1988) and Coulter et al. (1992).

⁷ The figure, and several others below, are based on data which excludes all persons in self-employed families. The Department of Social Security did this on the grounds that income data are less reliable for them.

Figure 3 provides similar breakdowns for the case where each person has been grouped according to the age of the head of his or her family. The most striking feature of the picture is the over-representation of the elderly in the lowest income groups and under-representation in the highest ones. Amongst younger groups, especially families with a head aged under 40 years, the spread across the distribution is fairly even.

<Figure 3 near here>

Most people's incomes derive from labour market work, or from transfers from the government (pensions or benefits) or from their family. This suggests taking a closer look at the associations between income location and types of living arrangements and labour market attachment. Figure 4 provides a breakdown by family type.

Individuals in lone parent families make up just under one tenth (9 per cent) of the British population but almost one fifth (19 per cent) of the poorest fifth and just over one seventh (15 per cent) of the second poorest fifth. They are correspondingly much under-represented in the top income groups (only 2 per cent of the richest fifth). Pensioner families are similarly located (as Figure 3 suggested). For example, single pensioners, 8 per cent of the population as a whole, make up 11 per cent of the poorest fifth, but only 3 per cent of the richest fifth. The individuals who are relatively best off are couples without children (couples with children are fairly evenly spread across the distribution). Childless couples form about one fifth of the population (21 per cent), but 39 per cent of the richest fifth and only 11 per cent of the poorest fifth. The other relatively well-off group is single persons without children.

<Figure 4 near here>

Breakdowns by the economic status of each individual's family are shown in Figure 5. The classification into groups used by the Department of Social Security is a sequential one: taking the hierarchy of groups shown in the legend to the Figure (and starting at the bottom), people are placed in the first group which describes them. For example individuals belonging to a family in which the husband and wife aged 63 are both in full-time employment would be placed in the 'Single or couple, all in full-time work' category rather than the 'head or spouse aged 60+' one. The 'other' category mainly contains persons from non-working lone parent or long-term sick or disabled families.

<Figure 5 near here>

Figure 5 highlights how the degree of labour market attachment is closely associated with one's position in the income distribution. Families in which both the head and spouse (if present) are in full-time employment form almost a quarter of the population (23 per cent). But they form almost one half (45 per cent) of the richest fifth, 37 per cent of the second richest fifth, but only 3 per cent of the poorest fifth. Couple families with one full-time and one part-time worker also do relatively well – employment is particular good at lowering their representation within the very poorest fifth rather than other income groups. The effect is much less marked for families with only one full-time worker, or only part-time workers. Individuals in full-time self-employed families are an interesting group, for they are over-represented relative to their population numbers in both the poorest and richest groups. The self-employed group contains window cleaners as well as freelance software engineers.

Families with a head or spouse unemployed are particularly over-represented at the very bottom of the distribution: 15 per cent of the poorest fifth of the distribution compared to 4 per cent of the population as a whole. By contrast those in pensioner families are over-represented in the bottom two groups. They are 24 per cent of the poorest fifth, 28 per cent of the second poorest fifth, and 17 per cent of the population as a whole. The huge over-representation of the 'other' group in the poorest groups echoes the earlier findings for lone parent families (Figure 4).

The patterns shown so far all refer to 1997/8. Despite the great turbulence in Britain's income distribution over the 1980s (more about this below), the relative locations of the groups identified so far did not change dramatically over this period (with perhaps the exception of economic status – more on this below).⁸ I now wish to draw attention to one major development related to income position which did occur over this period, namely the markedly greater stratification of housing tenure groups in terms of income.

Over the 1980s and early 1990s the Conservative government implemented policies such as the Right to Buy (allowing social housing tenants to buy their properties at large discounts) and shifted the emphasis of policy from subsidising house building to Housing Benefit (assistance to low income families with high housing costs). In 1979, 42 per cent of all individuals lived in social housing (rented from local authorities or housing associations), but by 1994/95, the percentage had almost halved, to 23 per cent (Hills, 1998). The main growth was in the proportion owning their own house (with a mortgage) rather than other forms of tenure.

The change in stratification by income over the same period is shown in Figure 6. Look at the upper half of the income distribution in particular. In 1979, individuals living in social housing made up significant proportions of those in the richest groups, for example about one fifth (21 per cent) of the of the richest tenth and one third (33 per cent) of the next richest tenth. But in 1994/5, the corresponding proportions were 1 per cent and 4 per cent, representing a decline substantially greater than the decline in the proportion living in social housing.

<Figure 6 near here>

From one point of view, these changes may be viewed as an improvement, in the sense that assistance from the state became more closely targeted relative to recipient's income. On the other hand, there are important negative implications as well. It was the best council houses and flats which were bought under the Right to Buy scheme and, moreover, most social housing is spatially concentrated in estates. The result is that low incomes have become markedly more concentrated by geographical neighbourhoods, and in relatively lower quality housing. This has important implications for social exclusion (Hills, 1998).

2.2 The income distributions for population subgroups compared

The analysis of the previous sub-section focused on the *relative* position of one group relative to another. However it took no account of the differences in income levels associated with the different positions. In crowded parts of the income distribution, it may take only small differences in income to shift someone between tenths or fifths of the income distribution. This suggests looking at the income differences between groups directly. Comparisons of mean incomes are one obvious way of doing this, but these ignore the dispersion of income *within* groups. In this sub-section I compare groups in terms of both their average incomes and their inequality, where inequality is measured using three different indices. With an eye to the discussion of the use of subgroup decompositions for the analysis of income distribution trends, estimates are provided for both 1979 and 1990/1, the period over which inequality in Britain rose dramatically.⁹

⁸ The main exception was some improvement in the position of the elderly relative to non-elderly unemployed families at the bottom of the income distribution.

⁹ For additional subgroup breakdowns for this period, see Jenkins (1994) on poverty and Jenkins (1997) on social welfare. Coulter et al. (1994) discuss trends between 1971 and 1986.

The top row of the Table 4 shows summary statistics for the population as a whole. It can be seen that both average income and inequality rose over this period. The increase for the mean and for the Gini Coefficient was about one third. The increases in inequality recorded by the other two indices was larger: inequality more than doubled according to these. (The inequality increase was historically very large, whichever index one focuses on: see Jenkins, 1995, 1996.)

<Table 4 near here>

The lower panels of Table 4 provide corresponding statistics for breakdowns by person type, family type and economic status, as used earlier. (Several economic status subgroups had to be combined to make the data comparable over time.) Looking first at mean incomes, the economic status breakdowns show that people in families with someone in full-time employment were slightly better-off than those in families with someone in full-time self-employed. Much bigger was the differential was between these two groups and the people in families without a full-time earner. Compared to the former two groups, the latter group not only had a much lower real income level, but also experienced lower income growth rates between 1979 and 1990/91. The result was that in 1990/91, mean income for the full-time self-employed group was 16 per cent above the overall mean (compared to 13 per cent above in 1979). Those in full-time employee families also improved their relative position: average income changed from 11 per cent above the all-persons mean to 19 per cent above it. By contrast, average income for those in families with no full-time earner fell from 72 per cent of the overall mean to 69 per cent of it.

The family type breakdowns show that childless couples have the highest real income by a long way, about one third above the overall average. The worst-off are single pensioners and lone parent families, with average incomes about three-quarters of the overall average in 1979. During the 1980s, those groups already best-off were also the ones who enjoyed the highest income growth rates – and lone parent families did the worst (income growth of some 11 per cent compared to at least 30 per cent for all other groups).

Adult men were better off than adult women who were, in turn, better off than dependent children on average, and men enjoyed the highest real income growth rate. The relatively poor economic position of dependent children can be traced back to the stagnant fortunes of children in lone parent families, since the family type breakdowns show that people in couple families with children are relatively well-off.

The average income differentials for each year just described provide conclusions which echo those from the income group composition comparisons of the previous section. But what about group *inequality* differentials (and their trends)?

Table 4 shows that inequality differentials between men, women (and children) are not large, which is not particularly surprising given so many live together in the same families. More interesting are the other breakdowns.

The decomposition by economic status shows that inequality among individuals living in families with a full-time self-employed worker (Gini coefficient = 0.423 in 1990/1) was very much higher than for the other two groups (and this differential persisted over time). Interestingly inequality was lower among individuals in full-time employee families than among individuals in families with no full-time workers (Gini coefficients of = 0.274, 0.321 in 1990/1). This result is mostly due to relative large income differences among the elderly, in particular between those with private income and those reliant entirely on the state retirement pension.

Which group experienced the largest increase in inequality depends on the particular index chosen. Inequality increases are smallest when the Gini coefficient is used, an index which is most sensitive to income differences in the middle of the distribution. The fact that increases are higher using the more ‘bottom sensitive’ index (the mean log deviation) and the

more top sensitive index (half the squared coefficient of variation) tells us that the growth in inequality occurred mostly at the tails of the distribution rather than the middle of it.

For example, using the mean logarithmic deviation, inequality among the full-time self-employed group increased by almost 150 per cent between 1979 and 1990/1, compared to 81 per cent for the full-time employed group and 88 per cent amongst families with no full-time earner. But if half the squared coefficient of variation is used the inequality increases were 107 per cent, 145 per cent and 91 per cent respectively. Put another way, it appears that for the full-time self-employed group the increase in inequality arose more from changes at the bottom of the distribution than the top, whereas the reverse was true for the full-time employed group.

Which family type experienced the greatest increase in inequality also depends on the index used. It was greatest for individuals in childless couple families if the half the squared coefficient of variation is used (195 per cent); greatest for childless singles if the mean log deviation is used (140%). One result robust to the choice of inequality index is that individuals in lone parent families experienced very much lower inequality increases than those in other family types.

The relationship between inequality in the population as a whole and inequality within the subgroups (defined by given partition) can be expressed formally. For the mean logarithmic deviation and half the squared coefficient of variation,

$$\text{Total inequality} = \text{Within group inequality} + \text{Between group inequality},$$

where within-group inequality is a weighted sum of the inequalities within each subgroup, and the weights depend, in general, on the numbers of persons in each subgroup and subgroup mean incomes. (Indeed for the mean log deviation each subgroup weight is simply the fraction of the population in each group). Between group inequality is the total inequality there would be were each person to receive the mean income of the subgroup to which they belong.¹⁰

Table 4 shows that most of total inequality is accounted for by income differences within groups, rather than income differences between groups. This is particularly so for the breakdowns by person type, and least so for those by economic status. For all three subgroup partitions, between group inequality as a proportion of total inequality fell between 1979 and 1990/1. For example for the economic status breakdown, and the mean logarithmic deviation index, between group inequality fell from 18 per cent of the total to 14 per cent.

According to the within/between decomposition, total inequality at a point in time is a function of three important sets of influences: subgroup inequalities, subgroup numbers, and subgroup mean incomes. This suggests that one can modify the additive decomposition formulae to analyse *trends* in equality: to relate *changes* in inequality to *changes* in subgroup inequalities, subgroup numbers, and subgroup mean incomes. This idea has been used to analyse what accounted for the increases in UK inequality during the 1980s: see for example Atkinson (1994) Jenkins (1995a, 1996). Decompositions by economic status have proved to be the most useful in explaining the income inequality growth. Explanations have emphasised the primary importance of growth in inequality within-subgroups.

Rather than use this framework to account for income trends in more detail I shall instead use a different approach. The reason is this approach comes to the same conclusions, but at the same time also illustrates an alternative, non-parametric, method for examining the distribution of incomes by subgroup.

¹⁰ In fact the result holds for all other members of the Generalised Entropy family of inequality indices, which includes the Theil coefficient as well as the two indices – but not the Gini coefficient, which is not additively decomposable in this way. See Shorrocks (1984) for details.

2.3 Explaining distributional trends using decompositions by population subgroup¹¹

What I shall do is show the whole distribution of income for each subgroup, rather than summarising them using indices: I use kernel density estimates of the frequency density function for income. The kernel method in effect provides a smoothed histogram of the distribution. The height of the density function shows the relative concentration of persons in different income ranges: the higher the curve the greater the concentration (see Cowell et al. 1996 for further details).

I shall exploit the relationship which exists between the income density function for the population as a whole and the functions for each of its constituent subgroups. At each income level, the height of the population income frequency density function equals a weighted sum of the heights of the functions for each subgroup, where a subgroup's weight equals its population share (the number of subgroup members divided by total population). Thus changes in the aggregate density can be related to changes in subgroup densities and changes in subgroup relative sizes. I have investigated which is most relevant for explaining the 1980s changes in the UK using graphs of subgroup frequency functions scaled by population shares (so that subgroup densities aggregate to the population density). The breakdowns by economic status (as defined above) were the most revealing for explanations of trends.

Changes in the relationship between the distributions of income and work are revealed in a striking way by Figure 7. What immediately hits the eye is the shifting apart of the density functions for the 'employed full-time' group and the 'no full-time earner' group between 1979 and 1990/91. For non-working families, there was a distinct shift in the concentration towards lower incomes and, for instance, the density function peak shifts from about £150 per week to around £100. (In part this reflects the fact that benefit levels remained relatively fixed in real terms over the period.) Meanwhile, amongst persons in families with a full-time employee, there was a big shift in concentration towards upper income ranges with the mode shifting from below £200 per week to above £200.

The impact of this polarisation on the aggregate distribution was reinforced by the change in the relative sizes of the two subgroups: people in the 'full-time employee' group comprised almost two-thirds of the population in 1979 (65 per cent), but nearer one half in 1990/91 (53 per cent), and the proportion in families with no full-time worker increased from 29 per cent to 37 per cent (see Table 4).

The changes for the self-employed subgroup reinforced these trends but had a smaller impact in the aggregate because the numbers involved were relatively small (despite doubling from about 6 per cent of the population to almost 11 per cent). As for employed working families, the mode of the distribution shifted to the right, away from the mode for non-working families. But by contrast with the 'full-time employee' group, this shift was accompanied by increased concentration at low incomes as well as high incomes.

In sum, the analysis suggests the changes in the income distribution arose from a combination of causes: changes in the patterns of work (a shift away from employment towards both unemployment and also new forms of work such as self-employment); and changes in the shape of the income distribution within each economic status subgroup (inequality growth amongst both working and non-working families).

¹¹ This discussion is based on sections of Jenkins (1995, 1996).

3. INCOME CHANGE AND SUBGROUP CHANGE FROM ONE YEAR TO THE NEXT

When comparing subgroups and their income distributions over time, as in the previous section, the analysis utilised different samples of the population for each different years – the same individuals were not followed over time. This is not necessarily a problem if our interest is in the subgroups themselves: for example the fortunes of families with children versus childless families, or working families versus non-working families, etc. However surely much of the interest of income analysts in population subgroups is as a means to an end. That is, we are primarily interested in analysing the incomes of *individuals* and their subgroup membership in so far as it helps explain those. If this is so, then one must recognise that individual's incomes vary from one year to the next and, also, of particular relevance to this lecture, so too does subgroup membership.

If a family member loses a job (or gains one), family economic status changes. Divorce, marriage, births and deaths all change family type. To look at income dynamics, we need to modify the static concept of a population subgroup or 'sector' to include classifications of individuals in terms of the economic and demographic events which they and their family experience. This provides a potentially much richer analysis of individuals' income changes and their causes.

To illustrate this argument, I provide three pieces of evidence using longitudinal data from the British Household Panel Survey. First I show the degree of flux in individuals' incomes from one year to the next. Second I show that there is also much change in family type and economic status. Third and finally I put these two components together, and show how income changes may be linked to income changes. Here I focus on movements into and out of poverty.

Information about longitudinal income change is provided by the transition matrix shown in Table 5. Individuals have been classified into six groups according to their income relative to half the average income in 1991. The estimates of the transition proportions have been derived by pooling data from successive pairs of waves of the British Household Panel Survey (BHPS): hence we track movements between income groups 'last year' and 'this year'.

Table 5 reveals a relatively high degree of income mobility. Although the transition proportions are highest on the matrix diagonal, there is a large amount of movement to off-diagonal cells. For example 45 percent of those with incomes below half the 1991 average one year are found in a higher income group the following year. A half-mean threshold has been used as a poverty line in Britain, so the table indicates a relatively high annual exit rates from poverty. But the mobility occurs throughout the income distribution. About one quarter of those with incomes more than one and half times the 1991 mean one year have an income below this cut-off the following year. In summary one can say that there is a lot of mobility, though most of it is short-range: the movements are typically to cells close to the diagonal rather than far away. See Jarvis and Jenkins (1998) for more detailed discussion of British income mobility patterns.

<Table 5 near here>

There is also quite a lot of change in subgroup membership from one year to the next, at least for non-elderly individuals. Table 6 summarises this for family type and economic status subgroups.

Almost one tenth (9 per cent) of individuals change family type between one year and the next, with most of occurring for those in non-elderly single adult families (unsurprisingly hardly any pensioners change family type). Fifteen percent of individuals in lone parent

families change subgroup and 14 per cent of single persons. In both cases the most likely reason is (re)partnership. There is also a non-significant amount of family type change for non-elderly married couple families. The reasons for this include divorce and separation, ageing (the adults becoming pensioners, or children becoming non-dependent) and, less commonly, death. The extent of family change is underlined by the fact that more than one half (56 per cent) of the adults and children present in the first wave (1991) of the BHPS had experienced a change in family type by wave 6 (1996).

There is even more change in economic status: one quarter of all individuals change subgroup between one year and the next. The reasons include job loss or gain by a family member, or changes between part-time and full-time employment or self-employment. But observe too, that the way these groups are defined means that family type changes alone may also result in an economic status change being recorded (for example if a lone parent were to find a partner). The most unstable category is for individuals in families with only part-time workers (56 per cent changing type) followed next by individuals in families with an unemployed head or spouse (48 per cent). About one third of the 'other' group and of individuals in couple families with one full-time and one part-time worker change subgroup. For individuals in families with a full-time self-employed worker, or all adults in full-time employment, the fraction changing subgroup is rather lower but still non-negligible (20 per cent). Of the adults and children present in the first wave (1991) of the BHPS almost three-quarters (74 per cent) experienced a change in family type by wave 6 (1996).

<Table 6 near here>

How do changes in individuals' income relate to the changes in family type and economic status? To investigate this I look at movements into and out of low income, and relate these to changes in household composition ('demographic events') and to changes in household money incomes ('income events'). Changes in household composition have a potentially dual influence: they change the number of persons who may contribute income to the household, and they also change the needs of the family (recall that that income is measured by comparing money income with needs summarised by an equivalence scale). My analysis is based on a classification of event types into a mutually exclusive hierarchy, and then transitions into and out of low income were tabulated by event type.¹² See Jenkins (2000) for further details.

<Table 7 near here>

The breakdowns suggest that income events are more important than demographic events for accounting for low income transitions, though demographic events are relatively more important for movements into low income than for movements out. More than four-fifths (83 per cent) of transitions out of low income were income events of various kinds, which compares with about three-fifths (62 per cent) of transitions into low income. A person's earnings can change because they receive a different amount while staying in the same job, or because they get or lose a job altogether. Both are important. For example, amongst the persons for whom a rise in household head's labour earnings was the main event associated with a transition out of low income, the household head moved from not working to working in 51 per cent of the cases. Amongst the persons for whom a fall in household

¹² For each low income transition, I first determined whether there had been a change in household head. If so this was labelled a demographic event, and then further sub-classified according to whether this resulted from a birth, new partnership or partnership split, others joining or leaving the household, death of a spouse, etc. Cases in which the household head was the same but the change in household 'needs' was greater than the money income change was also labelled a demographic event. The remaining transitions were classified as 'economic events', and were sub-classified according to which income source changed the most (earnings of the household head or spouse, other labour earnings, non-labour income, etc.).

head's labour earnings was the main event associated with a transition into low income, the household head moved from working to not working in 56 per cent of the cases.

The breakdowns in Table also draw attention to the relative importance of different types of income events. In particular they highlight the relevance of earnings changes for persons other than the head of household. For example, for movements out of low income, changes in the labour earnings of a spouse or other person in the household besides the household head are almost as important as changes for the head. Non-labour income changes also play an important role.

There are of course some variations in the relative importance of different types of events when one focuses on different subgroups of the population. For example, demographic rather than income events account for the majority of the low income entry transitions amongst those currently in lone parent households. However the broad conclusions are fairly robust across household types (Jenkins, 2000). The findings that demographic events and non-labour income dynamics play significant role for many echoes those reported by Bane and Ellwood (1986) for the US during the 1970s.

4. SUMMARY AND CONCLUDING REMARKS

In this lecture I have made four main points about the analysis of the distribution of income by sector of the population.

First, the most relevant classification of individuals into subgroups is not the division into landlords, capitalists and workers, especially since people nowadays may also have all three roles, and there are important types of intervening institutions, notably governments. Most contemporary income distribution analysis uses a range of other definitions to characterise subgroup partitions, and also gives great attention to income differences within subgroups. Classification of individuals according to reliance on income from work versus other sources such as government remains fundamental however, not just for characterising the social structure at a point in time but also for explaining income trends. The importance of income types is also emphasised by a parallel tradition which has received no attention at all in this lecture, namely income inequality decomposition by factor source (rather than by population subgroup). This relates total inequality to inequality in employment income, self-employment income, investment income, benefits etc.¹³

The second, and related, point is that the subgroup definitions most relevant for breakdowns depends on one's purpose. Some partitions may be particularly informative about the social structure at a point in time, or how it has changed, but these need not be particularly useful for constructing a plausible story to *explain* income distribution trends.

Third, the membership of each population subgroup changes over time. Indeed these changes – or rather the underlying 'income events' and 'demographic events' – may be the causes of income changes at the level of the individual. And it is these longitudinal income changes which are increasingly seen to be relevant for policy. For example we are interested not simply in whether individuals are poor, but how long they remain poor, and the factors associated with movements out of (or into) poverty. Much future work under the heading of distribution of income by population sector is likely to look at these changes rather than 'sector' per se.

¹³ See Goodman and Webb (1994) and Jenkins (1995, 1996) for applications to analysis of income inequality trends in Britain.

Fourth and finally, all this empirical research is based on household surveys, and its conclusions are therefore contingent on the reliability of the data. Although there have been some important studies benchmarking survey income totals and other key numbers against the National Accounts and other sources, the focus has been limited to a small number of surveys and could be broadened in scope. There is much to be gained from collaboration between National Accountants and 'micro data' analysts of income distribution.

REFERENCES

- Atkinson AB (1983) *The Economics of Inequality*, second edition. Clarendon Press, Oxford
- Atkinson AB (1994) What is happening to the distribution of income in the UK? In: *Proceedings of the British Academy, Volume 82, 1992 Lectures and Memoirs*, Oxford University Press, Oxford.
- Atkinson AB (1996) Seeking to explain the distribution of income. In: Hills J (ed) *New Inequalities. The Changing Distribution of Income and Wealth in the United Kingdom*, Cambridge University Press, Cambridge
- Atkinson AB, Micklewright J (1983) The reliability of income data in the Family Expenditure Survey 1970-1977. *Journal of the Royal Statistical Society A*, 146, 33-61.
- Atkinson AB, Rainwater L, Smeeding TM (1995) *Income Distribution in OECD Countries*. Social Policy Studies No. 18, OECD, Paris
- Bane MJ, Ellwood DT (1986) Slipping into and out of poverty: the dynamics of spells. *Journal of Human Resources*: 21, 1-23
- Brandolini A (1993) A description and an assessment of the sample surveys of the personal distribution of incomes in Italy. Discussion Paper 9303, Microsimulation Unit, University of Cambridge.
- Brandolini A (1997) *Adamento macroeconomica, regole di assegnazione e distribuzione personale dei redditi*. Unpublished paper, Banca d'Italia, Rome
- Brandolini A, Cannari L (1993) Methodological appendix: the Bank of Italy's survey of household income and wealth. In: Ando A, Guiso L, Visco I (eds), *Savings and the Accumulation of Wealth*, Cambridge University Press, Cambridge
- Buhmann B, Rainwater L, Schmauss G, Smeeding TM (1988) Equivalence scales, well-being, inequality, and poverty: sensitivity estimates across ten countries using the Luxembourg Income Study (LIS) database. *Review of Income and Wealth* 34: 115-142
- Coulter FA, Cowell FA, Jenkins SP (1992) Equivalence scale relativities and the extent of inequality and poverty. *Economic Journal* 102: 1067-1082
- Coulter FA, Cowell FA, Jenkins SP (1994) Family fortunes in the 1970s and 1980s. In: Blundell R, Preston I, Walker I (eds.), *The Measurement of Household Welfare*, Cambridge University Press, Cambridge, 215-246.
- Cowell FA, Litchfield J, Jenkins SP (1996) The changing shape of the UK income distribution: kernel density estimates. In: Hills J (ed) *New Inequalities. The Changing Distribution of Income and Wealth in the United Kingdom*, Cambridge University Press, Cambridge, 49-75.
- Department of Social Security (1999) *Households Below Average Income 1994/5-1997/8*. Corporate Data Services, London
- Goodman A, Webb S (1994) For Richer, For Poorer. *The Changing Distribution of Income in the United Kingdom, 1961-91*. Commentary No. 42, Institute for Fiscal Studies, London. Abridged version in: *Fiscal Studies* 15: 29-62

- Hills J (1998) *Income and Wealth. The Latest Evidence.* Joseph Rowntree Foundation, York
- Jenkins SP (1994) *Winners and losers: a portrait of the U.K. income distribution in the 1980s* (Report to the Joseph Rowntree Foundation), Economics Discussion Paper 94-07, University of Wales, Swansea
- Jenkins SP (1995a) Accounting for inequality trends: decomposition analysis for the UK, 1971-86. *Economica* 62: 29-63
- Jenkins SP (1995b) Did the middle class shrink during the 1980s? U.K. evidence from a kernel density estimation approach. *Economics Letters* 49: 407-413
- Jenkins SP (1996) Recent trends in the U.K. income distribution: what happened and why. *Oxford Review of Economic Policy* 12: 29-46
- Jenkins SP (1997) Trends in real income in Britain: a microeconomic analysis. *Empirical Economics* 22: 483-500
- Jenkins SP (2000) Modelling household income dynamics. *Journal of Population Economics*, forthcoming
- Johnson P, McCrae J (1998) Robustness of FES income data, 1985-92. In: Banks J, Johnson P, How reliable is the Family Expenditure Survey? *Trends in Incomes and Expenditures over Time.* Institute for Fiscal Studies, London
- Rigg, JA (1999) *Income shares and income inequality in OECD countries since the late 1970s.* Unpublished PhD thesis, University of Cambridge, Cambridge
- Shorrocks AF (1984) Inequality decomposition by population subgroups. *Econometrica* 52: 1369-1388

Table 1
Quality of income data: ratio of survey estimates to adjusted National Accounts estimates (per cent)

Income item	Country and year									
	Australia		Canada		Finland	Germany	Italy	UK	United States	
	1981-82	1985-86	1981	1987	1987	1983	1989	1977	1979	1987
Wages and salaries	92.2	100.6	101.6	100.0	101.5	108.8	106.9	93.7	97.4	99.4
Self-employment income	124.9 ^a	83.7	78.2	90.4	73.4	36.3 ^b	53.1	75.7	84.2	78.5
Property income	50.7	66.7	60.5	47.7	82.5		78.4	50.6	45.1	55.2
Occupational pension income			85.4					74.5	81.5	81.6
Government transfers	75.4	66.4	77.5	75.5	90.6	50.6	74.3	90.9	82.8	86.9
Total (all income)	83.0	81.7	92.4	90.1	93.5	76.9	80.6	89.0	89.0	89.2

^a: In 1981-82 (but not 1985-86) wages received by persons from their own limited liability company have been grouped with self-employment income, whereas the convention followed by the national accounts is to classify this income as wages and salaries.

^b: includes property income. ^c: Based on the sum of items presented above only. Some income amounts e.g. alimony and child support or private transfers, have no administrative data to which the survey data can be compared.

Source: Atkinson et al. (1995, Table 3.7), who provide details of the country sources used to compile the table.

Table 2
Quality of UK Family Expenditure Survey income data, 1985-1992:
ratio of survey estimates to adjusted National Accounts estimates (per cent)

Year	Investment income	Social security benefits	Occupational pensions ^a	Self-employment income	Earnings	Total gross income
1985	41.3	98.1	112.0	63.2	95.6	89.7
1986	48.2	95.2	113.3	65.5	96.5	91.1
1987	56.7	95.5	104.1	72.1	97.6	93.3
1988	54.5	93.4	117.7	83.8	96.6	93.6
1989	43.0	94.0	111.8	72.8	93.3	88.7
1990	50.1	93.3	107.2	71.9	98.6	91.9
1991	65.2	93.1	96.9	74.9	96.5	92.9
1992	60.3	96.4	98.7	74.1	96.2	92.9

Source: Johnson and McCrae (1998, Tables 2.2, 2.3, 2.13, 2.15, 2.16, 2.20). Note: earnings form 'about 63 per cent of all income, social security forms about 12 to 13 per cent, self-employment 10 to 11 per cent, investments 9 to 10 per cent and occupational pensions about 4 per cent' (Johnson and McCrae, 1998, pp. 21-22). ^a: The occupational pensions estimates use additional sources in addition to adjusted National Accounts data.

Table 3
Inequality estimates with and without adjustment for income under-reporting

Country	Year	Unadjusted		Adjusted	
		Gini coefficient	Rank	Gini coefficient	Rank
USA	1986	0.35	1	0.36	1
UK	1986	0.32	2	0.34	2
Australia	1985	0.30	3	0.29	5
Canada	1987	0.29	4	0.29	4
Germany	1983	0.27	5	0.33	3
Finland	1987	0.21	6	0.22	6

Source: Rigg (1999, Table 4.4), using Luxembourg Income Study data. Income under-reporting is accounted for by multiplying each household's income from a given income source by the reciprocal of the ratio of the survey total to National Accounts total for all households.

Table 4. Mean income and inequality, UK 1979 and 1990/91, by subgroup

Subgroups	Population share (%)		Mean income				Inequality			
	1979	1990/1	1979	1990/1	Gini ×1000		Mean log deviation ×1000		Half coefficient of variation squared ×1000	
					1979	1990/1	1979	1990/1	1979	1990/1
<i>All persons</i>	100.0	100.0	188	254	250	338	108	227	121	282
<i>Person type</i>										
Adult men	35.6	37.6	202	277	249	338	109	235	115	287
Adult women	38.9	40.1	187	253	255	336	111	216	125	274
Children	25.6	22.3	171	218	229	323	96	235	112	256
							98.1	98.2	98.3	98.9
							1.9	1.8	1.7	1.4
<i>Family type</i>										
Pensioner couple	8.5	9.4	147	203	242	319	95	166	151	344
Single pensioner	7.9	7.9	140	185	222	296	82	149	115	274
Couple with children	46.7	38.4	179	239	226	317	95	223	109	239
Couple without children	18.3	22.0	244	340	216	313	89	201	84	247
Single with children	4.2	6.1	139	153	205	238	74	113	80	121
Single without children	14.3	16.2	213	276	229	324	100	241	102	242
							86.1	89.4	86.8	91.8
							14.8	10.6	13.2	8.2
<i>Economic status of family</i>										
One or more self-employed full-time	6.2	10.5	212	295	333	423	214	527	219	453
One or more employed full-time	65.1	53.0	209	301	209	274	70	127	84	183
No full-time earners	28.6	36.6	135	176	240	321	107	201	134	318
							83.3	86.3	86.8	90.4
							17.6	13.7	13.2	9.9

Income is equivalised disposable household income (pounds per week, April 1993 prices). Source: Jenkins (1994, Table 11). Derived from Family Expenditure Survey data, HBAI subfiles. 'Within' and 'Between' show the percentage of total inequality accounted for by inequality within groups and between groups, respectively.

Table 5
Outflow rates (%) from last year's income origins to this year's income destinations*

Last year's income (relative to 1991 mean)	This year's income (relative to 1991 mean)						All	(column %)
	< 0.5	0.5- 0.75	0.75- 1.0	1.0- 1.25	1.25- 1.5	≥ 1.5		
< 0.5	55	30	9	4	1	2	100	(15)
0.5-0.75	16	55	20	5	1	2	100	(24)
0.75-1.0	6	20	47	20	5	3	100	(21)
1.0-1.25	4	7	20	43	19	7	100	(15)
1.25-1.5	3	4	9	25	36	23	100	(9)
≥ 1.5	2	2	4	6	12	75	100	(16)
All	14	24	20	16	10	16	100	(100)

*: Income groups defined using fixed real income cut-offs equal to 0.5, 0.75, 1.0, 1.25, and 1.5 times mean Wave 1 (1991) income. Source: author's calculations from British Household Panel Survey, waves 1-6, pooling data from successive pairs of waves.

Table 6
Percentage of individuals changing subgroup membership between one year and the next,
by family type and economic status subgroups

Subgroup	% of group in different group this year
<i>Family type last year</i>	
Pensioner couple	0
Single pensioner	4
Couple with children	8
Couple without children	11
Single with children	15
Single without children	14
All family types	9
<i>Economic status last year</i>	
One or more self-employed (30+ hours)	20
Single or couple, all in full-time work	20
Couple, 1 in full-time work, 1 in part-time work	33
Couple, 1 in full-time work, 1 not working	40
Part-time work only	56
Head or spouse aged 60+	2
Head or spouse unemployed	48
Other (e.g. lone parent families, disabled)	32
All economic status subgroups	25

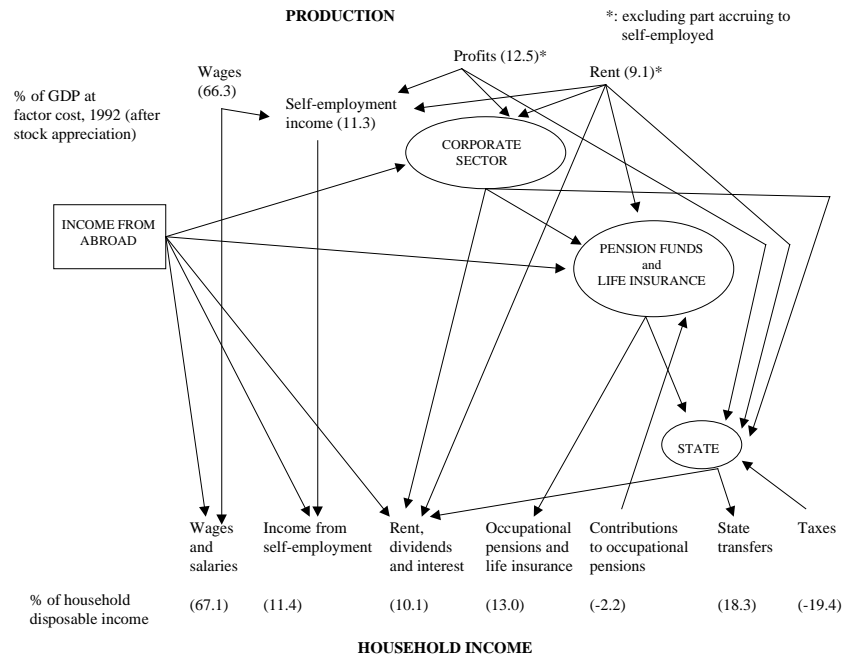
Source: author's calculations from British Household Panel Survey, waves 1-6, pooling data from successive pairs of waves.

Table 7
Movements out of and into low income broken down by type of event
(column percentages)

Main event associated with low income transition	Transitions out of low income	Transitions into low income
Household head's labour earnings change	33.6	31.0
Spouse's or other labour earnings change	28.5	15.9
Non-labour income change	20.2	15.5
Demographic event	17.7	37.7
All	100.0	100.0

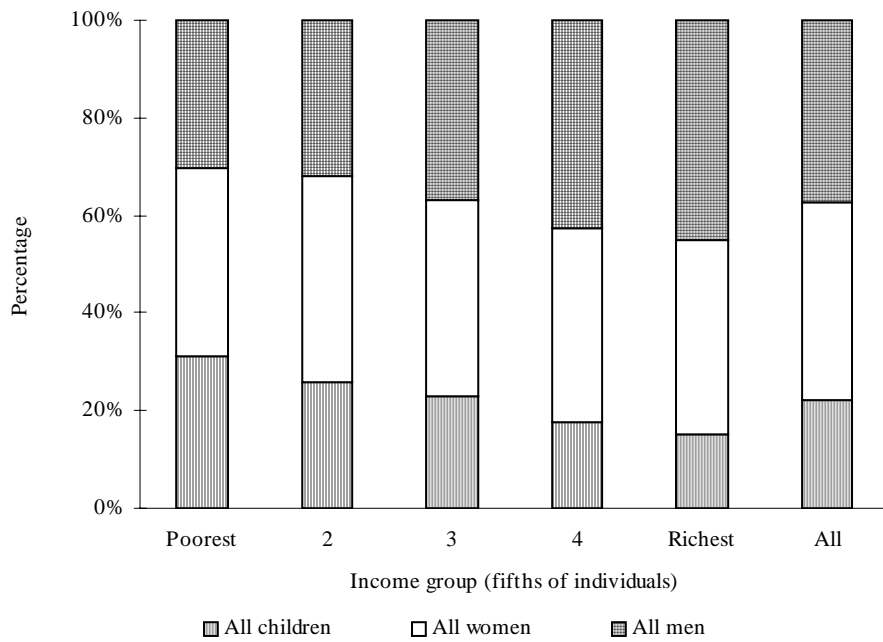
Income changes are money income rises for movements out of low income and money income falls for movements into low income. Analysis based on income transitions between one year and the following year, using pooled data for BHPS waves 1-6 (1991-6). Movements out of low income only included if net income rose to at least 10% above the low income threshold; and movements into low income only included if net income fell to at least 10% below the threshold. See text for definitions of income and low income threshold and of the hierarchy of event types.

Figure 1. Links between factor and personal income distributions, UK 1992.



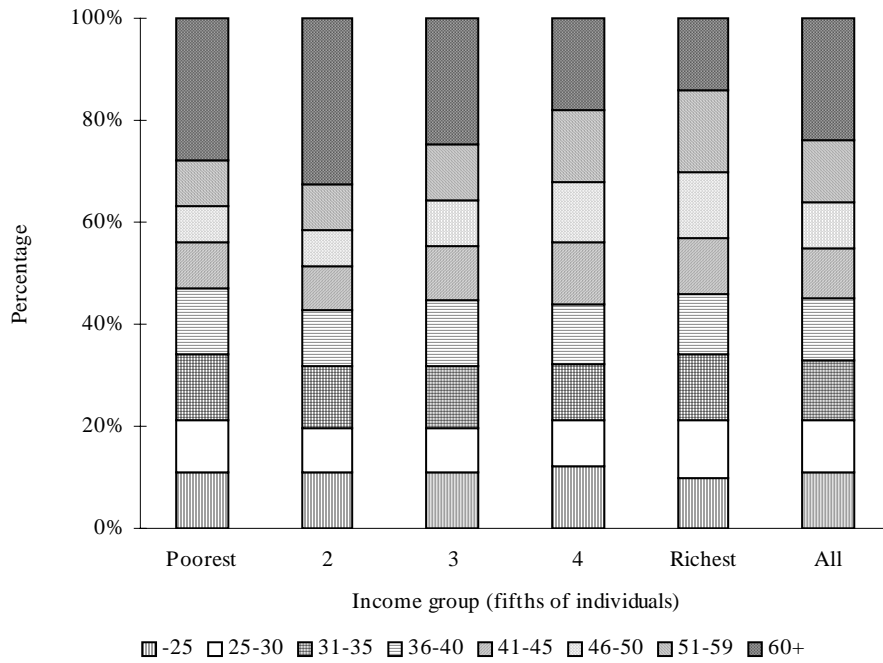
Source: Atkinson, 1996, Figure 2.4

Figure 2. Income group composition by gender, Britain 1997/8



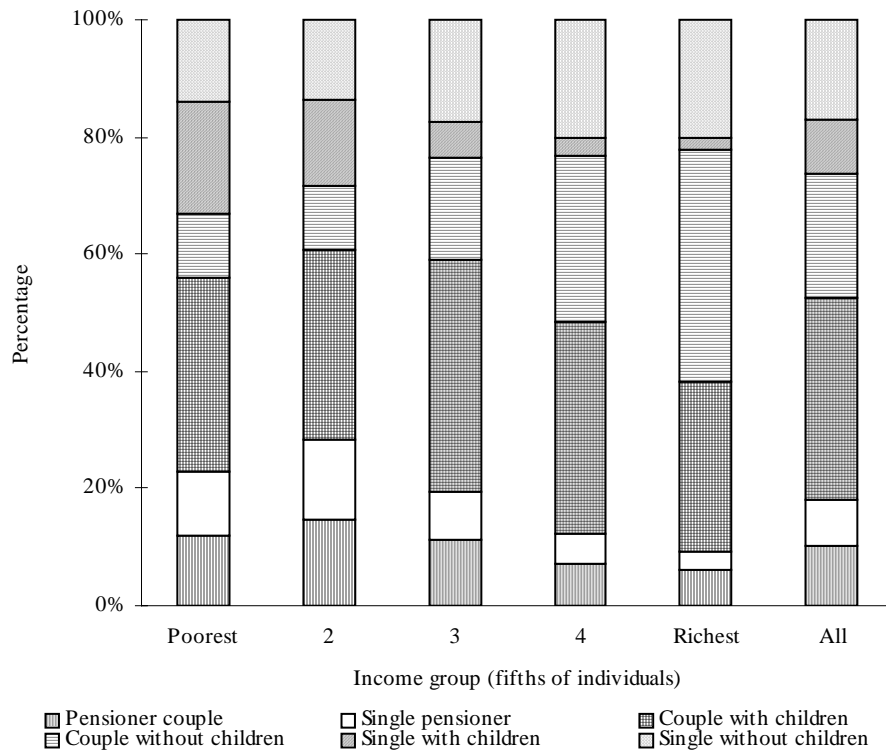
Source: Author's calculations from Department of Social Security (1999, Table 2.4(BHC)). Derived from Family Resources Survey 1997/8; excludes persons in self-employed families. Figure shows for each income group, and all persons, the percentages from each subgroup type.

Figure 3. Income group composition by age of individual's family head, Britain 1997/8



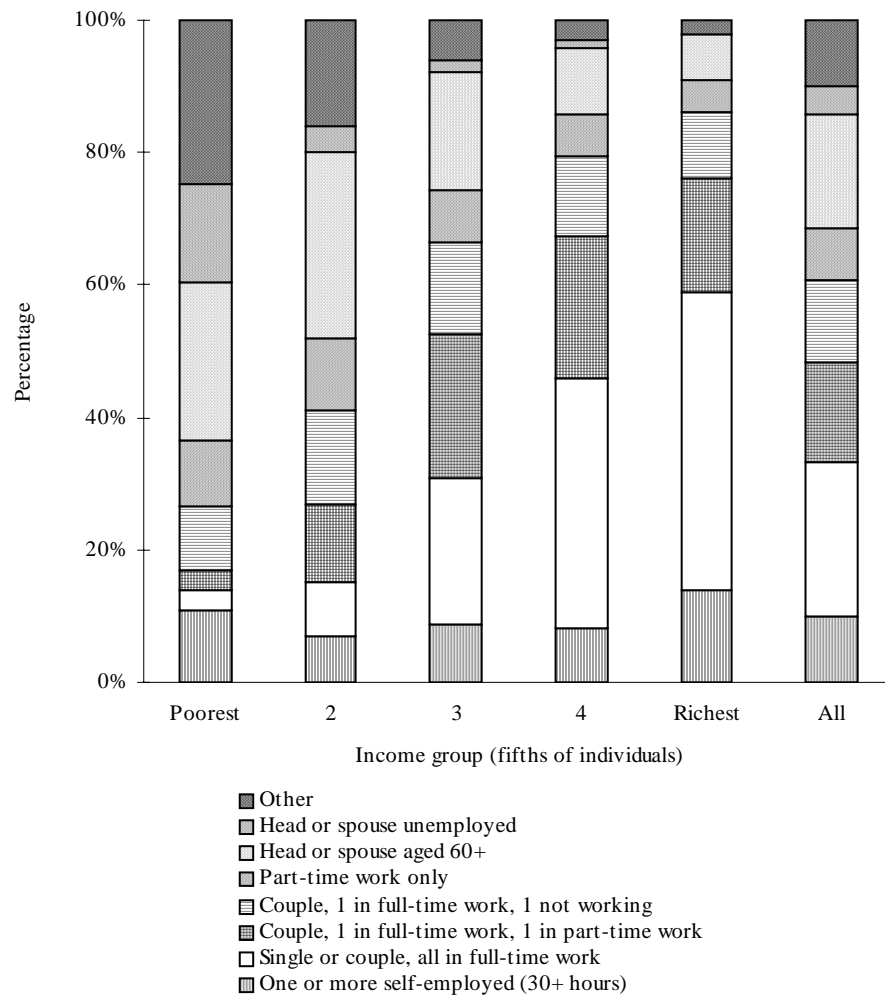
Source: Author's calculations from Department of Social Security (1999, Table 3.1(BHC)). Derived from Family Resources Survey 1997/8; excludes persons in self-employed families. Figure shows for each income group, and all persons, the percentages from each subgroup type.

Figure 4. Income group composition by family type, Britain 1997/8



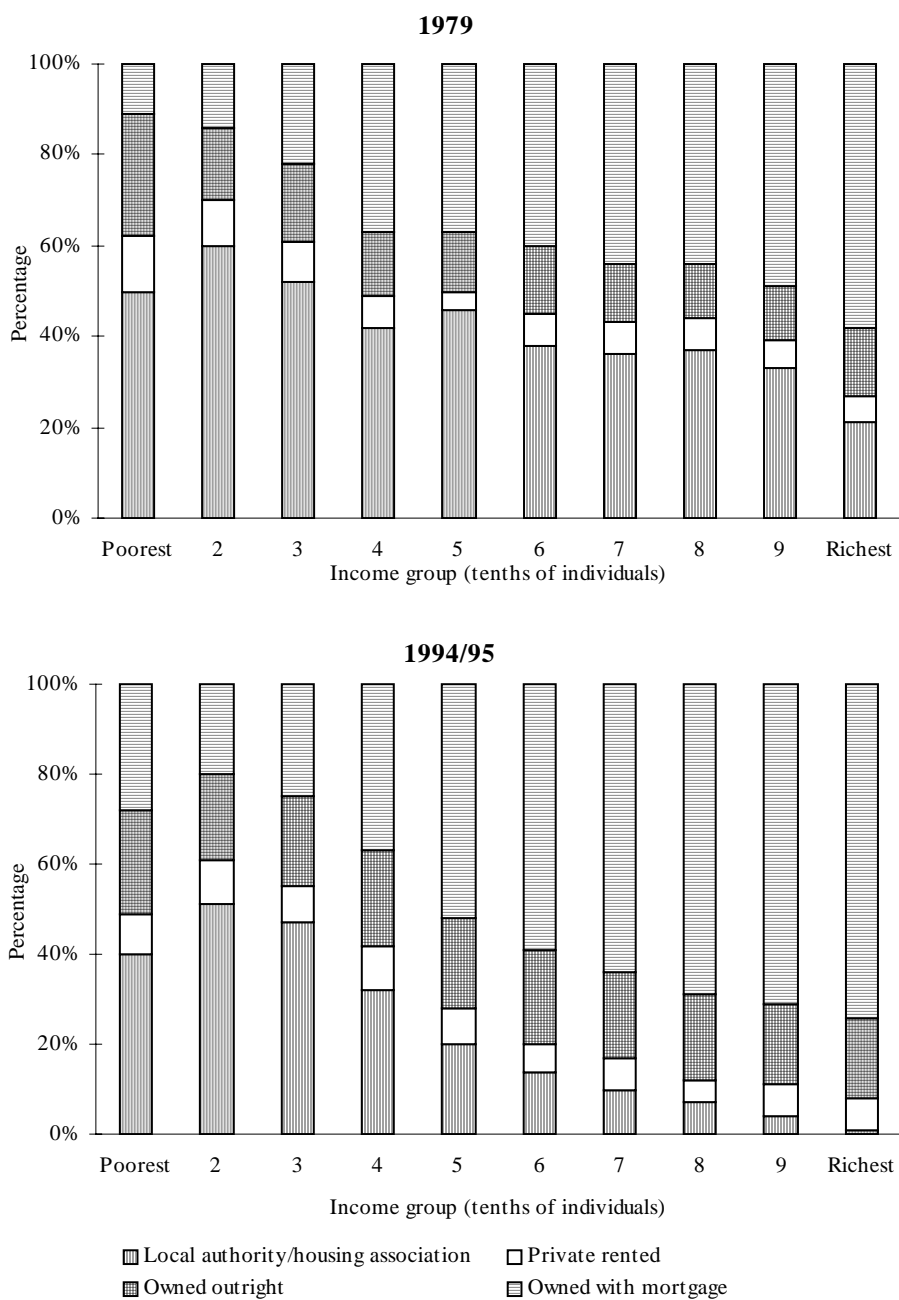
Source: Author's calculations from Department of Social Security (1999, Table 2.2(BHC)). Derived from Family Resources Survey 1997/8; excludes persons in self-employed families. Figure shows for each income group, and all persons, the percentages from each subgroup type.

Figure 5. Income group composition by family economic status, Britain 1997/8



Source: Author's calculations from Department of Social Security (1999, Table 2.4(BHC)). Derived from Family Resources Survey 1997/8. Figure shows for each income group, and all persons, the percentages from each subgroup type.

Figure 6. Income group composition by housing tenure, Britain 1979 and 1994/95



Source: Hills (1998, Figure 9), using data supplied by the Department of Social Security. Derived from Family Expenditure Survey. Figures show for each income group the percentages from each subgroup type.

Figure 7.
Income frequency density functions for economic status subgroups, UK 1979 and 1990/1



Each subgroup curve shows the sub-group income frequency density multiplied by the subgroup population share. The population shares are shown in Table 4. Source: Jenkins (1995b, 1996).