

## A Comparison of Current and Annual Measures of Income in the British Household Panel Survey

René Böheim<sup>1</sup> and Stephen P. Jenkins<sup>2</sup>

The measures of household income in UK household surveys refer to income received round about the time of the interview (“current income”). By contrast the measure of income in surveys for most other countries refers to annual income. The British Household Panel Survey provides a unique opportunity to compare estimates of Britain’s income distribution based upon both current and annual measures. This article compares the measures, shows that they provide remarkably similar estimates, and explains why. The results suggest that differences in income distributions between Britain and other nations do not arise because of the different survey measures of income.

*Key words:* Survey measures of income; income; inequality; poverty.

### 1. Introduction

A distinctive feature of the measures of household income in virtually all UK social surveys is that they refer to *current* income – they are derived from respondents’ reports about income received round about the time of the survey interview. This is true for both of the leading income surveys, the Family Expenditure Survey (FES) and the Family Resources Survey (FRS), a much larger survey that has now replaced the former as the source for the official statistics on the personal income distribution.<sup>3</sup> It is the FES (and, more recently, FRS) that has been included as the British data set in the cross-national archive at the Luxembourg Income Study (<http://www.lisproject.org/>). These income data have been widely used for cross-national comparative analysis, a leading example of which is Atkinson et al. (1995).

By contrast with the British situation, surveys for most other countries provide measures of *annual* household income. Most are derived from respondents’ reports of incomes

<sup>1</sup> Johannes Kepler Universität Linz, Altenbergerstr. 69, A-4040 Linz, Austria. Email: Rene.Boeheim@jku.at

<sup>2</sup> Institute for Social and Economic Research, University of Essex, Colchester CO4 3SQ, UK. Email: stephenj@essex.ac.uk

**Acknowledgments:** This is a revised and shortened version of a report prepared for the Analytical Services Division of the UK Department of Social Security (Böheim and Jenkins 2000). Supporting funding also came from the U.S. National Institute on Aging Program Project #1-PO1-AG09743-01, “The Well-Being of the Elderly in a Comparative Context”, and from the UK Economic and Social Research Council and the University of Essex. We are particularly grateful to the Associate Editor, an anonymous referee, Nick Buck and Peter Lynn for helpful comments and suggestions. Jenkins thanks the SOEP group at DIW Berlin for hosting the visit during which this article was revised.

<sup>3</sup> For information about the FES, see <http://www.data-archive.ac.uk/findingData/snDescription.asp?sn = 4490>, and <http://www.data-archive.ac.uk/findingData/snDescription.asp?sn = 5139> for information about the FRS. The most recent official income distribution statistics for Britain were published by the Department for Work and Pensions (2005). The Office for National Statistics also report income distribution statistics in their articles on the effects of taxes and benefits on household incomes: see e.g., Jones (2005).

received over the previous year. North American examples include the U.S. Current Population Survey, the U.S. Panel Study of Income Dynamics and the Canadian Survey of Labour and Income Dynamics. The main household income measure provided in the German Socio-Economic Panel (SOEP) survey is annual gross household income. (The current income measure in the SOEP refers to the household head's subjective estimate of household income, rather than an aggregation of household members' incomes.) The income measure produced on a cross-nationally harmonised basis in the European Community Household Panel (ECHP) surveys is annual net income. In contrast, rotating panel surveys such as the U.S. Survey of Income and Program Participation (SIPP), and the Spanish Encuesta Continua de Presupuestos Familiares (ECPF) provide income measures for sub-annual periods (months and quarters, respectively). However, the survey design means that annual income measures can be derived by adding together the sub-annual measures.

The existence of different income measures raises several questions that the analysis provided in this article, based on data from the British Household Panel Survey (BHPS), helps provide answers to. Are the differences in income distribution between Britain and other countries due to the use of different survey measures of income? How would income inequality in Britain and patterns of low income across population subgroups look if annual income measures were used rather than current income ones?

New empirical work to answer these questions is justified for two reasons. First, theoretical analysis provides only limited guidance about how differences in the accounting period affect the shape of the income distribution. Second, existing empirical evidence is rare – and we aim to fill the gap with a more systematic and comprehensive study based on the BHPS.

In the rest of this Introduction, we expand upon these arguments, and also point out the relative merits of the BHPS. We provide more precise definitions of BHPS measures of current and annual income in Section 2. We then turn in Section 3 to comparisons of income distribution statistics derived from current and annual income measures. The statistics compared are ones that are commonly used for describing national income distributions and comparing incomes cross-nationally. First, we undertake comparisons of cumulative distribution functions, deciles, income shares, and inequality, for the population as a whole. Second, we look at subgroups of the population defined in terms of family type and economic status, and compare estimates of the composition of the low-income population and of poverty rates for each subgroup. Third, we build on these cross-sectional pictures, adding comparisons of estimates of rates of income growth over time and, finally, estimates of longitudinal income mobility and annual low-income entry and exit rates. Discussion seeking to explain the results appears in Section 4, and Section 5 contains our conclusions.

We show that the BHPS current and annual income measures provide very similar pictures of the income distribution and its trends and, hence, any differences in income distributions for Britain and other nations are likely to be substantive rather than due to the survey measure of income used.

### *1.1. Previous Literature*

Most theoretical analysis has contrasted estimates from measures of short-term and long-term income where, for each income-receiving unit, long-term income is the arithmetic

average of some fixed number of short-term incomes. Shorrocks (1978) proved that, for all standard inequality measures, inequality of short-term income must be at least as large as inequality of long-term income. Predictions about differences in estimates of the proportions of persons with low income depend on the level at which the poverty line is set and the number of individuals with incomes in the neighbourhood of this cut-off. It can be shown, however, that if the poverty line income is less than the modal income (the typical case in western industrialised nations), then the poverty rate estimated using short-term income must be at least as large as the poverty rate estimated using long-term income (Ravallion 1988; Chesher and Schluter 2002).

If longitudinal income mobility is summarized using the Pearson correlation coefficient, then it is straightforward to establish that mobility estimates are larger for a short-term income measure than for a long-term income measure. (Allowing for income variability over time for individuals loosens the overall association between past and current incomes.) Predicted differences in estimates of poverty transition rates are not so clear-cut. Consider the poverty exit rate, defined as the number of persons who were poor last year but are not poor this year, divided by the total number of persons who were poor last year. Normalising the numerator and denominator by last year's population size, the poverty exit rate can be written as the normalised fraction of poverty leavers, divided by last year's poverty rate. The earlier discussion suggests that short-term income measures will typically provide larger estimates not only of the fraction who move out of poverty (the numerator of the exit rate calculation), but also larger estimates of poverty rates at a point in time (the denominator). Hence it is not obvious that a short-term income estimate of the poverty exit rate will necessarily be larger – or smaller – than the corresponding long-term income estimate. It is an empirical matter. The same is true for estimates of changes in incomes over time (for example growth rates in average income), for which the theory provides no guide at all.

There is remarkably little empirical evidence available about differences between estimates provided by sub-annual and annual income measures. Virtually all studies to date have instead defined short-term income as annual income and long-term income as a multi-year average: see, for example Shorrocks (1981). We are aware of only four previous comparisons of estimates from sub-annual and annual income measures.

The most extensive set of results was provided by Morris and Preston (1986) as a by-product of their analysis of the UK income distribution and its trends using FES data for 1968, 1977, and 1983. They used three income measures: “normal net income” (NNY), current net income (CNY), which had the same definition as NNY except that labour income was the last amount received rather than the “usual” amount, and annualized net income (Annual) that “attempts to approximate income over the last 52 weeks by using the employment and benefit receipt history of each individual” (Morris and Preston 1986, p. 288).<sup>4</sup> Their paper showed that that estimates of inequality (Gini coefficient, coefficient of variation) and the poverty rate were each one or two percentage points smaller for the

<sup>4</sup> Unfortunately no further details about variable construction were provided, and the two working papers cited for further details are no longer available. It appears from Morris and Preston (1986, p. 289) that the main adjustment made was that, for individuals who were working at the time of the FES interview but who had recently become unemployed, annualized income included information about benefit income previously received.

NNY measure than for the CNY one – the use of usual rather than current employment earnings in the income measure had a smoothing effect. However, the annual income measure did not lead to still lower inequality and poverty, as one might expect. In many cases the annual estimate lay between the CNY and NNY ones, and in 1983 the annual measure yielded inequality and poverty rate estimates that were larger, not smaller, than for the other two measures.<sup>5</sup>

Nolan (1987) compared the inequality of distributions of current (monthly) income and annual income using 1977 UK FES data, both for income defined as “original” (pre-tax pre-transfer) income and for income defined as gross income (pre-tax post-transfer income). He derived the annual income measure using the same limited retrospective recall data about employment and receipt of major social security benefits as used by Morris and Preston (though Nolan provides much more information about derivation methods).<sup>6</sup> Nolan found, for example, that the Lorenz curve for annual gross household income lay everywhere inside the Lorenz curve for current gross household income (so that inequality was smaller in the former case, as predicted). However, the differences between the curves were small. For example the share of total household gross income received by the poorest tenth of households was 2.19 percent if the current gross measure was used but 2.28 percent according to the annual one. For the richest tenth, the corresponding income shares were 24.04 and 23.56 (Nolan 1987, Table 5.1). These findings of small differences were confirmed when he summarised inequality amongst household heads using the coefficient of variation: its value was 0.7294 for current gross income and 0.7001 for annual gross income.

The third and fourth studies were based on rotating panel surveys. Using data from the 1984 U.S. SIPP, Ruggles (1990) found that the poverty rate was 11.0 percent according to annual income, whereas the average of the monthly poverty rates was 13.7 percent (Ruggles 1990, Table 5.1, p. 94). Cantó et al. (2002), using the Spanish ECPF, reported that use of ‘a quarterly income accounting period finds statistically significant higher poverty rates than a yearly income accounting period under a large battery of poverty indices. Also . . . we find higher income mobility using a quarterly than using a yearly accounting period’ (2002, p. 1).

In sum, the earlier studies suggest that inequality and poverty rates are lower for annual income measures than for current income measures (as theory would suggest). However, the results are less clear-cut for the British studies and it is tempting to attribute this to the fact that they are also the studies that used synthetic measures of annual income. Put another way, it remains an open question whether current and annual income measures in Britain provide similar or different estimates of income distribution statistics. To what extent are the small differences reported above a consequence of the type of measure used?

<sup>5</sup> Morris and Preston commented that ‘those who are currently working but who have been recently unemployed will have lower annualized income than current net income; as such people are likely to be less well off than average even in the current net income distribution, inequality will be increased’ (1986, p. 289). However one might also expect there to be an offsetting (inequality-reducing) effect from those who were currently unemployed, but who had recently had had a job.

<sup>6</sup> See Nolan (1987, Chapter 5 and Appendix 4) for extensive elaboration. His income measures include income from imputed rents for owner-occupiers, unlike all the other measures reviewed in this article.

The BHPS provides a unique opportunity to reexamine these issues, and to do so with reference to a more comprehensive set of income distribution statistics. The BHPS is a national general-purpose household panel survey of the British private household population, with interviews having been conducted with some 5,000 households annually since 1991.<sup>7</sup> Both current and annual income measures are provided, though it is the former that have been most widely used for income distribution analysis, largely because of a desire to use a measure that corresponded with that used in the major cross-sectional surveys (FES and FRS). Jarvis and Jenkins (1995) compared BHPS current income distributions with the distributions underlying the official low-income statistics (the HBAI series, based on FES data at that time). Their quality assessment found that, although the BHPS estimates differed systematically from the HBAI ones in some respects (for example the BHPS had lower estimates of investment income and under-representation of the very richest incomes), the estimates from the two sources corresponded well overall.

By virtue of its explicitly longitudinal design, the BHPS has more extensive retrospective recall data about income receipt and labour market activity of survey respondents over the year prior to the annual interview than do British cross-sectional surveys such as the FES, used by Morris and Preston (1986) and Nolan (1987). Thus the BHPS annual income measure is arguably better than any measure that might be calculated from the other sources.

## 2. Measures of Household Income in the BHPS

The BHPS public-release files contain two types of household income measure: current gross household income denominated in pounds per month, and annual gross household income denominated in pounds per year. For both measures, the household-level aggregate is derived by summing the incomes of all household members within each household. Gross income consists of cash income from all sources, i.e., income from employment and self-employment, investments and savings, private and occupational pensions, and other market income, plus cash social security and social assistance receipts. Both the current and annual income measures have values imputed for the small number of households containing individuals with proxy or telephone interviews, or nonrespondent adults.<sup>8</sup> For brevity, we shall refer to “income” rather than “gross income” from now on.

<sup>7</sup> The panel design is similar to those for the U.S. Panel Study of Income Dynamics and the German Socioeconomic Panel. Children in original sample households are interviewed in their own right when they reach the age of 16 years. Sample members are followed when households split or move. For a detailed discussion of BHPS methodology, representativeness, and weighting and imputation procedures, see Taylor (1994) and Taylor (2005).

<sup>8</sup> These income measures differ from those summarised in the official income (HBAI) statistics: those ones refer to current *net* household income. Net income equals gross income minus direct taxes, i.e., income tax, employee National Insurance Contributions, and local taxes such as the community charge and the council tax. BHPS researchers have also derived, separately from the official BHPS release, a current net income measure modelled on the HBAI definition (Bardasi et al. 1999). Comparisons of a version of this measure (one from which local taxes have not been deducted) and a corresponding annual net income measure have also been undertaken. Use of a net income definition rather than a gross income definition (as reported in this article) did not alter the conclusions drawn (Böheim and Jenkins 2000).

### *2.1. BHPS Current Income Measures*

For the BHPS measure of current income, the information about each income source refers to the month prior to the annual interview or the most recent relevant period in which the source was received (e.g., the week prior to the interview for incomes received on a weekly basis). There are two important exceptions. First, employment earnings refer to the “usual” amount received for the relevant period rather than the amount last received. Second, questions seeking information about income from self-employment and income from savings and investments ask for annual amounts (and these are later converted to monthly-equivalent values by BHPS staff). In both these two respects, the BHPS questionnaire follows the same principles as the FES and the FRS.

### *2.2. BHPS Annual Income Measures*

The BHPS annual income measure is produced using a sophisticated simulation model rather than being derived directly from the survey instrument. The model combines three types of information for each respondent adult: (i) income (from each possible source) received at the time of the current year’s interview, plus the incomes received on 1st September of the previous year (collected at the previous year’s interview); (ii) information gathered at the current year’s interview about the types of income received, and (un)employment, for each month between the current interview and 1st September of the previous year, and (iii) information about social security benefit levels throughout the relevant time period, taken from external sources such as administrative statistics and other publications. For each source, this information yields a series of monthly income estimates that are summed to produce an annual aggregate. Total income is derived by summing the annual receipts from each income source. The time period covered by the annual income measures refers to the twelve months up to the 1st of September of the current survey year: for example, for someone interviewed in November 1996, annual income refers to the year between 1st September 1995 and 31st August 1996.

To take a more concrete example, the derivation of annual employment earnings uses information about current usual earnings and about usual earnings on 1st September of the year prior to the current interview. For those who have remained in the same job throughout this period, earnings in the intermediate months are derived by interpolation. For those who have changed jobs, information about their job history since the last interview is used: for each labour market spell, the amount of earnings is taken to be the starting salary in that job. For those with spells of nonemployment during the period, information about receipt of unemployment benefits is derived from the retrospective month-by-month income receipt calendar, and then values are imputed from the prevailing national benefit rates. The annual income measure does not take into account earnings from a second job. (By contrast second job earnings are used in the derivation of current labour income.)

Information about receipt of social security benefits over the period back to 1st September of the year prior to the current interview is derived from the retrospective month-by-month income-receipt calendar. Uprating of benefits to take account of inflation is done in April of each year in Britain and, where relevant, the revised amounts were used to update the monthly estimates.



Annual household income is the sum of the annual incomes for all the adults who were present in the household at the time of the annual interview. That is, income received by individuals who left the household during the year is not recorded, but income received by individuals who have joined the household since the last interview is counted. When household current and annual income measures cannot be derived because of incomplete response or nonresponse by one or more household members, values are imputed by BHPS staff using a variety of imputation methods (Taylor 1994).

### 2.3. *How Different Are the Current and Annual Income Measures?*

The discussion above shows that the BHPS current income measure is not a pure one, because it already includes some income components that refer to a longer period than the month prior to the interview. In particular, employment earnings refer to usual earnings, and BHPS questions about income from investments and from self-employment explicitly use a reference period of the previous year. Both of these features will moderate any potential differences between the current and annual income measures. The first feature was illustrated by the result from Morris and Preston (1986) cited earlier. Any apparent similarities between the measures may also arise for genuine economic reasons. For example, only about 20 percent of the respondents in employment at the time of the interview report that their usual pay differs from their last pay. Put another way, when looking at the population as a whole, one would expect within-year variations in income to be relatively small for a majority, and the larger variations (and hence potential differences between current and annual income) most likely to be apparent within particular subgroups of the population.

A second factor may also potentially reduce differences between current and annual measures. To calculate annual income from employment, the annual measure uses responses to the question “Thinking back to September 1st last year, at that time how much were you usually paid?” If people have difficulty remembering an exact amount in the past, their answers to the question may be biased towards the current amount received. There is no evidence that would allow us to assess the importance of this potential influence, however.

A third feature of the BHPS measures may lead to differences in estimates based on them. The reference period for annual income does not overlap in calendar time with the period over which current income is measured (round about the interview date). The principal effect this mismatch is likely to have is on estimates of income levels, and the mean in particular. Incomes generally rose for most of the period covered by the BHPS (the 1990s), and presumably within each year as well as between years. Thus we would expect that, for any given year, average annual income is less than average current income (once converted to comparable units). This has an implication for comparisons of estimates of the prevalence of low income when low-income cut-offs are defined as some fractions of average income. If the shapes of the annual and current income distributions are the same, then a multiplicative change in scale will not matter, but this similarity cannot be assumed with confidence a priori. One factor that may lead to differences in shape, associated with differences in income assessment period, is differential income growth for high-income and low-income individuals during the twelve months of the

reference year. Given the change in shape (and mean income), estimates of the proportion poor will also be affected. We conjecture that the size of this problem may not be large, however (it might be more relevant were the income assessment period much longer).

This discussion shows that a distinction between a purely current income measure and a purely annual income measure cannot be sustained in the context of British surveys. This underscores our earlier claim that empirical analysis is required to establish the differences – or similarities – between estimates derived from the alternative measures.

### **3. Empirical Analysis**

We used data from the first seven waves of the BHPS, covering the survey years 1991–1997. Each cross-section of data contains information on more than 5,000 households, covering more than 12,000 individuals (adults and dependent children). All statistics were weighted to account for differential response at Wave 1 and subsequent differential attrition. Because results were not sensitive to the choice of survey year, we do not report results for all seven years.

We adjusted the measures of current and annual household money income – as just defined – in four ways in order to bring them closer to those conventionally used in income distribution comparisons in general (see e.g., Canberra Group 2001) and in Britain’s official income statistics in particular (Department for Work and Pensions 2005). First, the unit of analysis was the individual (adult or child) rather than the household: each person was attributed the income of the household to which she or he belonged. Second, all incomes were converted to a constant-price basis. All values were expressed in January 1998 prices using the Department for Work and Pensions before Housing Costs monthly price index (the same index as used in Britain’s official income statistics). For current incomes, we used the price index value corresponding to the month of interview; for annual incomes, we used the 12-month average of the price index values for the relevant reference period. Third, both current and annual incomes were expressed in pounds per week. (For annual income, the sum for the year was simply divided by 52.) This normalisation was made simply to enhance comparability between the two measures and with external sources. None of the statistics that we use to summarise income distributions are sensitive to this adjustment. Fourth, in order to account for differences in household size and composition, household incomes were deflated using the McClements “before housing costs” equivalence scale.<sup>9</sup>

We provide income comparisons for subgroups defined according to each individual’s “family type” and “family economic status” (details are given later). The subgroup

<sup>9</sup> See Department for Work and Pensions (2005) for the precise definition of the scale. For both current and annual measures used in our research, equivalence scale rates were based on household size and composition at the time of the current interview. For households that changed their composition during the year prior to the current interview, arguably the equivalence scale rate used to adjust annual money incomes should differ from the one used. It is not at all clear how though. (Our method reflects standard practice in all household panels with annual income measures.) In any case, a more important issue concerns the fact that the measure of the household’s annual income refers only to the incomes of the persons present at the time of the interview. Households with new members during the year may therefore have higher money incomes than households who lost members during the year, all other things being equal. On the other hand, using an equivalence scale based on household composition at the time of the interview has an offsetting effect.



partitions are defined in the same way as in Britain's official income statistics (Department for Work and Pensions 2005).

We provide estimates of approximate standard errors for all statistics presented. Conventional linearization methods for variance estimation underpin the formulae used for the majority of our derivations: see, e.g., Beach and Kaliski (1986), Kovačević and Binder (1997) and van Kempen and van Vliet (2000), and references therein. Otherwise, estimates were derived using standard bootstrap methods. All standard error calculations took account of the clustering of individuals within households. The estimates are approximate because we ignored the fact that current and annual incomes were derived from the same dataset in each year and we treated each panel wave as if it was a separate cross-section.

### 3.1. *The Shape of the Income Distribution, Inequality and Low Income Prevalence*

We begin our comparisons of the annual and current measures by contrasting their estimates of the deciles of the income distribution: see Table 1. The estimates for each measure are expressed as a percentage of the relevant median income so that irrelevant differences in scale do not affect the comparisons. Theory suggests that annual incomes should be less dispersed than current incomes, and this is what the table shows. There is a tendency for the deciles to be closer to the median according to the annual measure than according to the current one. For example, in 1997,  $p10$  was 40 percent of the median according to the annual income measure but 39 percent according to the current income one. For  $p90$  in 1997, the corresponding estimates were 213 percent and 215 percent. The overwhelming impression given by Table 1, however, is that these differences are small or in many cases nonexistent. Differences, where they occur, appear more prevalent at incomes above the median than below the median, but corresponding confidence intervals overlap even in this case. Differences are most apparent for 1997 but, even in this case, the largest difference between corresponding estimates is four percentage points. This difference is an outlier – most of the others are typically only one or two percentage points.

The impression of small differences in estimates of the dispersion may depend on how inequality is summarised. Comparisons of income shares are a widely-used device, and these are shown in Table 2 for the ten decile groups. From this perspective there is virtually no difference at all between the distributions implied by current and annual measures. The most marked difference concerns the income share for the richest ten percent in 1997 – 25.8 percent according to the annual income measure and 25.3 percent according to the current income measure but this difference is not statistically significant. The lack of differences in income shares implies that the Lorenz curves for each distribution (the graph of cumulative income shares against cumulative population shares) coincide. (Estimates not shown confirm this.)

To compare estimates of inequality based on all incomes, we turned to conventional summary indices. Table 3 reports estimates based on the Gini coefficient, the 90:10 percentile ratio, and half the coefficient of variation squared, i.e.,  $GE(2)$ , a member of the Generalised Entropy class of inequality measures. (See Cowell (2000) for a review of inequality measures.) Each of these measures is not only commonly used, but also can be

Table 1. Deciles (as a percentage of the median), by income measure and survey year

Decile*	1991		1994		1997	
	Current	Annual	Current	Annual	Current	Annual
<i>p</i> 10	41.12 (0.61)	41.74 (0.79)	39.92 (0.84)	40.82 (0.68)	38.77 (0.86)	40.34 (0.78)
<i>p</i> 20	53.96 (0.68)	55.20 (0.76)	54.41 (0.88)	55.03 (0.95)	55.32 (0.97)	55.72 (0.80)
<i>p</i> 30	69.27 (0.88)	69.56 (1.03)	69.16 (0.92)	69.88 (0.88)	70.42 (0.95)	70.05 (0.93)
<i>p</i> 40	84.17 (0.79)	84.91 (0.82)	84.31 (0.63)	84.38 (0.76)	84.37 (0.77)	84.49 (0.74)
<i>p</i> 50	100.00	100.00	100.00	100.00	100.00	100.00
<i>p</i> 60	117.34 (0.87)	116.51 (0.90)	118.66 (0.96)	116.60 (1.04)	118.59 (1.04)	117.19 (0.91)
<i>p</i> 70	136.67 (1.28)	135.07 (1.47)	139.42 (1.37)	137.66 (1.50)	139.98 (1.69)	137.15 (1.75)
<i>p</i> 80	164.13 (2.07)	164.19 (2.04)	168.18 (2.20)	166.53 (2.44)	169.65 (2.28)	165.53 (2.26)
<i>p</i> 90	213.04 (3.02)	213.79 (3.17)	218.11 (3.74)	216.57 (3.39)	214.54 (3.34)	213.06 (3.59)
Median (£ per week)	299.74 (3.33)	291.23 (3.50)	302.52 (3.41)	294.35 (3.95)	316.87 (4.77)	310.21 (4.18)

\*The deciles are the nine incomes that split the population, ranked in ascending order of income, into ten equal-sized groups. The median is the fiftieth percentile (*p*50). Numbers in parentheses are bootstrapped standard errors (250 replications). Source: authors' calculations from the BHPS.

Table 2. Decile group income shares (percent), by income measure and survey year

Decile group	1991		1994		1997	
	Current	Annual	Current	Annual	Current	Annual
1 (poorest)	2.57 (0.90)	2.57 (0.90)	2.44 (0.98)	2.53 (0.97)	2.27 (1.04)	2.42 (0.95)
2	4.06 (0.06)	4.14 (0.06)	3.93 (0.07)	4.00 (0.07)	3.94 (0.09)	4.09 (0.08)
3	5.22 (0.09)	5.26 (0.09)	5.15 (0.09)	5.25 (0.10)	5.25 (0.10)	5.30 (0.09)
4	6.52 (0.10)	6.57 (0.10)	6.41 (0.11)	6.45 (0.11)	6.49 (0.10)	6.54 (0.11)
5	7.87 (0.12)	7.86 (0.12)	7.69 (0.12)	7.73 (0.12)	7.69 (0.12)	7.80 (0.12)
6	9.20 (0.13)	9.15 (0.13)	9.08 (0.14)	9.12 (0.13)	9.14 (0.14)	9.18 (0.13)
7	10.73 (0.14)	10.65 (0.14)	10.76 (0.15)	10.71 (0.15)	10.73 (0.15)	10.72 (0.15)
8	12.69 (0.17)	12.66 (0.17)	12.74 (0.18)	12.72 (0.18)	12.86 (0.19)	12.78 (0.18)
9	15.77 (0.22)	15.67 (0.22)	15.82 (0.24)	15.92 (0.24)	15.84 (0.22)	15.83 (0.23)
10 (richest)	25.38 (0.53)	25.47 (0.53)	25.98 (0.61)	25.58 (0.58)	25.79 (0.73)	25.34 (0.61)
All	100	100	100	100	100	100

Numbers in parentheses are linearized standard errors. Source: authors' calculations from the BHPS.

Table 3. Inequality indices, by income measure and survey year

Index	1991		1994		1997	
	Current	Annual	Current	Annual	Current	Annual
Gini	0.346 (0.004)	0.344 (0.004)	0.355 (0.005)	0.349 (0.004)	0.355 (0.006)	0.347 (0.004)
$p90/p10$	5.181 (0.102)	5.122 (0.110)	5.464 (0.141)	5.306 (0.100)	5.533 (0.134)	5.282 (0.132)
GE(2)	0.245 (0.011)	0.242 (0.010)	0.277 (0.016)	0.253 (0.013)	0.330 (0.042)	0.263 (0.017)
GE(2)*	0.245 (0.010)	0.242 (0.011)	0.277 (0.017)	0.253 (0.012)	0.301 (0.028)	0.263 (0.017)

\* Calculated excluding incomes larger than £8000 per week. Numbers in parentheses are bootstrapped standard errors (250 repetitions). Source: authors' calculations from the BHPS.

estimated for distributions that include income values equal to zero. We wanted to include these so that the estimates would be comparable with those in Tables 1 and 2. (There were never more than 20 of these among the samples of over 12,000 individuals each year, and usually about half that number. Excluding these incomes had a negligible effect.)

The inequality estimates based on the annual income measure are smaller than the corresponding current income estimates, as expected. (The standard error estimates indicate, however, that one needs to be cautious about claiming that the differences are statistically significant.) For example, in 1997, the ratio of the 90th percentile to the 10th percentile in the current income distribution was 5.53, but 5.28 in the annual income distribution, a difference of just under five percent. The Gini coefficient estimates differed by at most one percentage point. Larger differences were apparent in the GE(2) estimates, though some of these may be spurious. It is well-known that GE(2) is particularly sensitive to high incomes, and a small number of high-income outliers can have a large effect on estimates. This is illustrated by the fact that when we excluded the (very few) observations with incomes above £8,000 per week, the 1997 current income estimate of GE(2) fell from 0.330 to 0.301: see the bottom row of Table 3. The current and annual income estimates thus remain different, but closer than the estimates based on the dataset that did not exclude the high-income outliers. There was a negligible effect on the other two indices when high incomes were excluded, because they are more middle-income sensitive (estimates not shown).

Overall, the use of inequality indices leads to apparently sharper differences in estimates for current and annual income measures. It remains the case, however, that the differences are not large, especially once one takes account of sampling variation for all measures and potential measurement problems among very high income recipients for the GE(2) measure.

### 3.2. *The Cumulative Distribution Function, and the Prevalence of Low Income*

Another device by which we can conveniently examine the distribution over the whole income range is the cumulative income distribution function. We present estimates in terms of the (cumulative) proportions of individuals with incomes below specified fractions of average income. Any effects from differences in scale are removed by dividing each income by the mean of the relevant distribution. Expressing the distribution function in this manner also has the advantage that one can read off estimates of low-income prevalence directly – poverty lines are commonly defined as a fraction of mean income in Britain and elsewhere. The most commonly used mean-based cut-offs have been 40 percent, 50 percent and 60 percent of the mean. In Britain, 50 percent of mean income is very close to 60 percent of median income – the low-income standard now increasingly used for cross-national comparisons, and recommended by a Eurostat Taskforce (1998).

Table 4 shows the estimates of the normalized distribution functions. Once again, the close similarities are striking. For example in survey year 1991, the proportion of persons with an income below half-average income was 23 percent according to both the annual and current income measures. In 1997, the corresponding proportions were 23 percent according to the current income measure and 22 percent according to the annual measure.

Table 4. Percentage with income below specified fractions of mean income, by income measure and survey year

Fraction of the mean	1991		1994		1997	
	Current	Annual	Current	Annual	Current	Annual
0.1	0.83 (0.13)	0.54 (0.09)	0.99 (0.16)	0.75 (0.12)	1.24 (0.20)	1.12 (0.18)
0.2	1.98 (0.22)	2.36 (0.25)	1.97 (0.21)	2.06 (0.22)	2.82 (0.29)	2.59 (0.29)
0.3	6.40 (0.40)	6.06 (0.39)	7.18 (0.46)	6.49 (0.42)	7.84 (0.50)	6.49 (0.49)
0.4	14.47 (0.54)	13.70 (0.53)	15.68 (0.61)	15.23 (0.60)	15.25 (0.64)	14.03 (0.63)
0.5	23.43 (0.63)	22.94 (0.63)	23.69 (0.69)	23.49 (0.69)	22.91 (0.73)	22.28 (0.73)
0.6	30.71 (0.69)	30.65 (0.69)	31.70 (0.76)	31.18 (0.75)	30.90 (0.78)	30.48 (0.79)
0.7	39.01 (0.74)	38.36 (0.74)	39.67 (0.80)	39.25 (0.80)	39.58 (0.82)	38.75 (0.82)
0.8	46.08 (0.76)	46.23 (0.76)	47.44 (0.81)	47.25 (0.81)	47.31 (0.84)	46.80 (0.84)
0.9	53.77 (0.76)	53.95 (0.76)	54.61 (0.81)	54.12 (0.81)	53.94 (0.83)	53.75 (0.83)
1.0	60.08 (0.75)	60.70 (0.75)	60.61 (0.80)	61.07 (0.79)	60.74 (0.81)	60.60 (0.81)
1.1	66.66 (0.72)	67.48 (0.71)	66.49 (0.77)	66.69 (0.77)	66.66 (0.77)	66.66 (0.77)
1.2	72.22 (0.68)	72.39 (0.68)	71.99 (0.73)	72.03 (0.73)	71.45 (0.73)	71.49 (0.73)
1.3	76.49 (0.64)	76.51 (0.64)	76.34 (0.70)	76.24 (0.69)	75.80 (0.69)	75.94 (0.69)
1.4	80.18 (0.59)	80.31 (0.59)	79.92 (0.66)	79.96 (0.65)	79.39 (0.65)	79.93 (0.63)
1.5	83.29 (0.55)	83.85 (0.54)	83.02 (0.62)	82.79 (0.62)	82.98 (0.60)	82.87 (0.59)
1.75	88.81 (0.46)	88.90 (0.45)	89.07 (0.53)	88.70 (0.53)	88.91 (0.49)	89.17 (0.48)
2.0	92.55 (0.38)	92.52 (0.38)	92.74 (0.45)	92.26 (0.46)	93.26 (0.39)	92.97 (0.40)
2.5	96.38 (0.27)	96.25 (0.27)	96.50 (0.37)	96.34 (0.37)	96.95 (0.27)	96.74 (0.27)
3.0	98.36 (0.19)	98.37 (0.18)	98.10 (0.33)	98.03 (0.33)	98.41 (0.21)	98.31 (0.21)

Numbers in parentheses are linearized standard errors. Source: authors' calculations from the BHPS.



The fact that the latter is smaller than the former is what one might expect from the theory, but it is the small magnitude of the difference that we would emphasise here. If one looks at other points along the income range, the differences between estimates remain small, and rarely larger than one or two percentage points.

Not only are the estimates of the overall shape of the income distribution very similar for the annual and current income measures, but it is also the case that the two measures rank individuals in order from poor to rich in very much the same way. This is shown by Figure 1, based on data for survey year 1991 (the pictures are the same for other years). Each point in the scatterplot shows the combination for one individual of his or her normalised rank in the income distribution according to the current and annual income measures.<sup>10</sup> If everyone had the same position in the annual and current distributions, then every point in the graph would lie on a 45° ray through the origin. The actual case is similar to this description. The vast majority of points lie on or close to the 45° ray. Interestingly, the association appears less strong between the 50th and 80th percentiles of the distribution. We explore the reasons for differences between current and annual distributions later in the article.

### 3.3. *Income Growth*

We now compare estimates of changes in income over time for the current and annual income measures. Specifically we look at the percentage change in income between wave 1 (1991) and wave 7 (1997) within a range of different base year income levels: the means of each decile income group and the overall mean. The results are shown in Table 5.

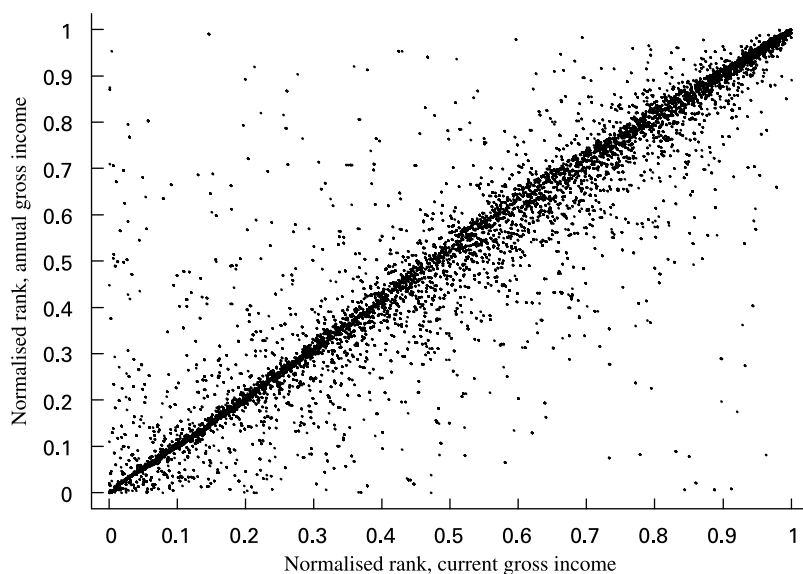
The main finding is that income growth over this six-year period differs little at most points along the income range, and also overall: look at the differences shown in the rightmost column. One exception appears to be the mean for the poorest tenth, in which case the annual income estimate was 5.3 percentage points larger than the current income estimate. But in this case the standard errors are also relatively large: sampling variability appears particularly relevant for this group. When we looked at the growth rate in the mean for the poorest decile group between 1992 (rather than 1991) and 1997, the annual income estimate was 2.64 percent (s.e. 2.82) and the current income estimate was 3.83 percent (s.e. 2.73).

Overall, the results caution against concluding that there are systematic differences between the two measures for estimates of income growth.

### 3.4. *Breakdowns by Family Type and Economic Status*

We now turn to compare the annual and current income distributions amongst subgroups of the population. We report results based on classifications by family type and by family economic status – the principal breakdowns used in British official income statistics. The groups are defined as follows (the numbers in parentheses are the percentages of the population in each subgroup category in survey year 1994):

<sup>10</sup> Individuals were placed in ascending order of income, and then normalised ranks were calculated by dividing each rank by the maximum rank (the weighted total sample size). Values range from zero to one. The person with a normalised rank of 0.10 has an income equal to the poorest decile.



Source: authors' calculations from the BHPS

Fig. 1. Scatterplot of normalised ranks in the distributions of annual and gross income, 1991

- *the individual's family type*: single pensioner (9), pensioner couple (9), couples with dependent child(ren) (38), couples without children (20), single parents (7), and childless singles (16).
- *economic status of the individual's family*: one or more self-employed (10); all adults employed full-time (23); couple – one adult working part-time, one full-time (12); couple – one working full-time, one not working (13); single person working part-time, or couple with one working part-time (6); head or spouse aged 60 + years (20);

Table 5. Percentage growth in decile group means and overall mean between survey years 1991 and 1997, by income measure

Decile group	Percentage change in income		Difference
	Current	Annual	
1 (poorest)	-4.77 (2.52)	0.55 (2.59)	5.32
2	4.55 (0.68)	5.52 (0.67)	0.97
3	8.49 (0.52)	7.93 (0.48)	-0.55
4	7.09 (0.40)	6.26 (0.41)	-0.83
5	5.76 (0.39)	5.82 (0.37)	0.06
6	6.82 (0.37)	7.33 (0.35)	0.51
7	7.69 (0.37)	7.68 (0.33)	-0.01
8	9.14 (0.43)	7.98 (0.42)	-1.16
9	8.41 (0.56)	7.69 (0.55)	-0.72
10 (richest)	9.45 (3.25)	6.23 (2.62)	-3.22
Mean	7.76 (1.73)	6.82 (1.63)	-0.93

Numbers in parentheses are linearized standard errors. Source: authors' calculations from the BHPS.

head or spouse unemployed (6); other families, including carers, long-term sick and disabled, and so on (10).<sup>11</sup>

The statistics examined are the composition of the poorest fifth of the income distribution (telling us who the poorest people are), and the proportions of each subgroup with an income below half-mean income (subgroup poverty rates).

Table 6 summarises the composition of the poorest fifth. Few differences are apparent in the breakdowns by family type, especially when standard errors are taken into account. At first glance, there are some more apparent differences in the breakdowns by economic status (though, again, the standard errors imply a need for caution in drawing conclusions). For example, among groups with at least one adult in full-time employment, the subgroup share according to annual income is larger than that for current income, whereas for groups with low labour market attachment (head or spouse aged 60 + or unemployed), the reverse is the case. An explanation for the latter pattern is that these two groups contain a relatively high proportion of persons whose incomes do not change much – at least by contrast with the groups with someone in full-time employment, amongst whom the likelihood of a family member having experienced job gain or partnership in the last year is higher. (Remember that subgroup classifications are made on the basis of characteristics at the time of the interview.) The larger within-year income variation that this induces raises the chances of these groups having experienced low income over the last year, and increasing their representation amongst the poorest fifth. We return to this point in Section 4.

Table 7 shows subgroup poverty rates and can be interpreted as summarizing the risk that an individual belonging to each of the specified family type and economic status subgroups has an income below half the overall average income (cf. Table 4, which showed the overall poverty rate). According to the theoretical discussion summarised in the Introduction, one might expect subgroup poverty rates calculated using a current income measure to be higher than those calculated using the annual income measure (subject to the caveat that the means of the pairs of distributions being compared are not exactly equal).

It turns out that differences are typically small, especially when standard errors are taken into account. Where differences in subgroup poverty rates exist, most of them are in the direction predicted but there are some exceptions. In the breakdown by family type, the exceptional results are for persons in single parent families and singles. The result for single parent families is straightforward to explain in terms of the earlier discussion – the majority of the subgroup (over 60%) has low income, so the modal income in the subgroup is below the poverty line (rather than above it, as for almost all other groups). On the other hand, this argument cannot explain why the estimated low-income risks for single people are higher for annual income than current income.

In the breakdowns by economic status, current income measures do not provide higher estimates of subgroup poverty rates (as expected) for persons in families with at least one adult in full-time employment. The most obvious explanation for this is the one offered in the discussion of the composition of the poorest fifth (Table 6): these groups contain a

<sup>11</sup> This is a hierarchical classification: families are classified into the first category that applies. For example a worker aged 63 would fall into the first category rather than the sixth one.

Table 6. Composition of the poorest fifth of the population, by family type and economic status, income measure and survey year (column percentages)

Subgroup	1991		1994		1997	
	Current	Annual	Current	Annual	Current	Annual
<i>Family type*</i>						
Single pensioner	19.35 (0.96)	19.45 (0.97)	19.69 (1.11)	19.11 (1.10)	18.87 (1.14)	17.09 (1.09)
Pensioner couple	12.98 (1.00)	12.92 (1.00)	11.06 (1.06)	10.00 (1.00)	11.80 (1.10)	10.32 (1.03)
Couple with child(ren)	32.34 (1.70)	31.10 (1.68)	30.62 (1.92)	31.31 (1.91)	29.71 (2.05)	31.54 (2.07)
Couple without child	8.27 (0.78)	7.32 (0.73)	6.65 (0.79)	5.72 (0.72)	7.11 (0.80)	5.84 (0.72)
Single parent	16.44 (1.26)	17.37 (1.29)	19.04 (1.51)	19.50 (1.52)	18.66 (1.51)	19.66 (1.54)
Single	10.63 (0.74)	11.85 (0.82)	12.94 (0.86)	14.36 (0.89)	13.85 (0.94)	15.55
All	100	100	100	100	100	100
<i>Family economic status*</i>						
1 + full-time self employed	9.82 (1.10)	10.14 (1.10)	5.90 (0.89)	6.57 (0.94)	7.89 (1.18)	6.73 (1.11)
All adults in full-time employment	2.18 (0.46)	3.41 (0.53)	1.48 (0.30)	3.43 (0.53)	2.24 (0.50)	4.82 (0.69)
Couple: 1 full-time, 1 part-time	0.99 (0.40)	2.55 (0.63)	0.21 (0.21)	1.36 (0.48)	1.21 (0.47)	2.70 (0.66)
Couple: 1 full-time, 1 not working	2.27 (0.59)	3.92 (0.74)	4.89 (0.94)	5.66 (0.97)	6.86 (1.28)	8.33 (1.36)
Single or couple: part-time worker	10.59 (1.13)	9.21 (1.04)	8.44 (1.06)	8.98 (1.07)	9.52 (1.12)	9.51 (1.11)
Head or spouse aged 60 +	36.22 (1.47)	35.26 (1.45)	33.91 (1.58)	31.37 (1.51)	33.53 (1.64)	29.30 (1.55)
Head or spouse unemployed	20.23 (1.42)	16.78 (1.33)	20.46 (1.70)	18.70 (1.66)	12.69 (1.33)	11.12 (1.30)
Other	17.71 (1.34)	18.73 (1.36)	24.71 (1.62)	23.94 (1.60)	26.06 (1.81)	27.49
All	100	100	100	100	100	100

\*See main text for definitions of subgroups. Numbers in parentheses are linearized standard errors. Source: authors' calculations from the BHPS.

Table 7. Percentage in subgroup with income below half mean income, by family type and economic status, income measure and survey year

Subgroup	1991		1994		1997	
	Current	Annual	Current	Annual	Current	Annual
<i>Family type*</i>						
Single pensioner	55.16 (1.63)	52.93 (1.64)	50.76 (1.78)	48.77 (1.78)	44.95 (1.83)	40.80 (1.81)
Pensioner couple	35.03 (2.05)	32.63 (2.01)	29.43 (2.18)	26.70 (2.11)	30.26 (2.13)	24.64 (1.99)
Couple with child(ren)	18.80 (1.10)	18.30 (1.09)	19.53 (1.27)	19.36 (1.27)	18.59 (1.36)	19.15 (1.38)
Couple without child	9.48 (0.79)	8.25 (0.74)	8.15 (0.84)	7.27 (0.79)	7.59 (0.78)	6.23 (0.71)
Single parent	60.34 (2.84)	62.70 (2.80)	62.01 (2.97)	64.01 (2.90)	58.78 (3.12)	61.02 (3.08)
Single	15.30 (0.99)	16.82 (1.07)	18.39 (1.08)	20.51 (1.13)	17.90 (1.11)	19.84 (1.17)
<i>Family economic status*</i>						
1 + full-time self employed	20.01 (1.97)	21.20 (2.01)	16.81 (2.02)	14.72 (1.94)	16.41 (2.25)	15.94 (2.24)
All adults in full-time employment	2.30 (0.42)	3.81 (0.55)	1.92 (0.33)	3.83 (0.53)	2.46 (0.47)	4.55 (0.60)
Couple: 1 full-time, 1 part-time	2.93 (0.85)	5.45 (1.12)	1.47 (0.66)	4.22 (1.08)	3.82 (1.02)	5.49 (1.20)
Couple: 1 full-time, 1 not working	7.67 (1.26)	7.71 (1.26)	11.22 (1.69)	12.45 (1.74)	13.54 (2.13)	14.77 (2.22)
Single or couple: part-time worker	37.66 (3.03)	35.16 (2.95)	31.38 (3.06)	32.50 (3.05)	35.37 (3.08)	34.94 (3.08)
Head or spouse aged 60 +	48.89 (1.43)	46.12 (1.42)	43.68 (1.50)	41.06 (1.48)	40.87 (1.52)	35.50 (1.47)
Head or spouse unemployed	68.97 (2.64)	57.50 (2.98)	70.57 (2.78)	65.17 (3.07)	70.93 (3.35)	64.90 (3.68)
Other	57.20 (2.80)	60.20 (2.74)	56.67 (2.47)	56.31 (2.48)	55.42 (2.59)	55.90 (2.57)

\* See main text for definitions of subgroups. Numbers in parentheses are linearized standard errors. Source: authors' calculations from the BHPS.

relatively high proportion of individuals whose circumstances were likely to have changed over the reference year prior to the interview. Since the past month is used as the reference period for current income, someone who was working at the time of the interview was unlikely to be poor. But extending the reference period to a year raises the chances that the person in question did not have a job (say) earlier in the year and therefore was more likely to have a low income at that time, thereby lowering annual income relative to current income.

To sum up, when we look at subgroups rather than the entire population, we find some differences between the current and annual income measures, and some of them are in a direction that is not predicted by a naïve application of the theory (but are explicable post hoc). Where there are differences that are more apparent, it should be emphasized first that relatively large standard errors mean that one should be cautious about inferring that the differences are statistically significant. Second, rankings of subgroups according to their poverty rates are altered hardly at all by changing the income measure. For example, in breakdowns by family type, single pensioners and lone parents are the poorest groups, and childless couples the least poor, according to both current and annual income. In part, this also reflects the fact that rankings in the overall current and annual income distributions are very similar at the individual level, not just for groups (Figure 1).

### *3.5. Longitudinal Income Mobility and Low-income Transition Rates*

We complete our analysis with comparisons of annual and current income estimates of longitudinal income mobility and low-income transition rates. The first row of Table 8 shows the correlation between incomes in two consecutive years, for each of three pairs of years. We would expect that the current income estimate would be lower than the annual income one, and this is what we find, with one exception: the 1991–1992 correlation. Another feature of the correlation estimates in Row 1 of Table 8 is that the difference between the current and annual income estimates depends on which pair of years is considered, though there is no economic reason for this. (The current and annual income estimates of the 1993–1994 correlation are 0.75 and 0.80, respectively, but for the 1996–1997 one they are 0.64 and 0.81.) We suspected that both features of the correlation estimates were due to contamination by outlier incomes. We therefore recalculated the correlations excluding the richest one percent and the poorest one percent of incomes in each distribution. The results, shown in the second row of Table 8, confirmed our suspicions – the new estimates were much more stable over time, with standard errors markedly smaller, and in every case the current income estimate of the correlation was less than the corresponding annual one (as expected).

A measure of intertemporal income immobility that is intrinsically more robust to outliers than the correlation is the proportion of persons who remain in the same income group from one year to the next. Our estimates of this statistic, based on decile group transition matrices, are shown in Row 3 of Table 8. There is greater mobility in current incomes than in annual incomes though the differential is small. Broadly speaking, for annual incomes, just over 40 percent of individuals remained in the same tenth of the income distribution between one year and the next, and slightly fewer when it came to current incomes.



Table 8. Longitudinal income mobility and low-income entry and exit rates, by income measure and survey year

	1991–1992		1993–1994		1996–1997	
	Current	Annual	Current	Annual	Current	Annual
Correlation	0.736 (0.018)	0.728 (0.029)	0.745 (0.024)	0.795 (0.021)	0.637 (0.037)	0.807 (0.019)
Correlation (trimmed data)*	0.788 (0.010)	0.818 (0.009)	0.799 (0.012)	0.831 (0.009)	0.807 (0.009)	0.830 (0.009)
Proportion of sample in same decile group	0.371 (0.007)	0.413 (0.008)	0.395 (0.008)	0.422 (0.008)	0.413 (0.008)	0.416 (0.009)
Low-income exit rate	0.294 (0.014)	0.283 (0.015)	0.285 (0.015)	0.275 (0.017)	0.282 (0.015)	0.274 (0.017)
Low-income entry rate	0.105 (0.005)	0.094 (0.005)	0.089 (0.005)	0.088 (0.005)	0.084 (0.006)	0.075 (0.005)

\* Calculations based on distributions excluding the poorest one percent and richest one percent of observations. Low-income entry and exit rates based on a low-income cut-off equal to half mean income. Numbers in parentheses are bootstrapped standard errors. Source: authors' calculations from the BHPS.

The remaining rows of Table 8 show estimates of low-income exit and entry rates, where the low-income cut-off is half the mean income for the year in question. Recall that theory provides no clear-cut prediction about the difference between current and annual income estimates. As it happens, the differences are very small, for all years. The low-income exit rate is just over 28 percent according to the current income measure, and smaller for the annual income measure, but never by more than about one percentage point (which is within the bounds of sampling variability). The low-income entry rate is 8–10 percent according to the current income measure and up to about one percentage point smaller according to the annual income measure, which is, again, within the bounds of sampling variability.

Overall, it appears that annual income and current income measures provide similar estimates of familiar summary statistics of longitudinal income mobility and low-income transition rates, particularly once account has been taken of high-income outliers (in the case of the correlation).

#### **4. Discussion**

Our comparisons of estimates from two BHPS income measures of a wide range of income distribution statistics have produced a clear finding: BHPS current and annual income measures provide very similar pictures of the income distribution.

We have two hypotheses to explain why this is. The first draws attention to the way in which the BHPS measures are constructed. As discussed earlier, the current income measure incorporates information about usual pay rather than last pay for employees, and uses a reference period of a year for self-employment and investments. Thus the current income measure is not totally “current” and some income smoothing is already incorporated in it. Our results are consistent in this respect with those of Morris and Preston (1986), though we have considered a wider range of income distribution statistics than they did.

Our second hypothesis refers to the potential socio-economic sources of household income variability over the year: it may simply be that the number of people moving into or out of jobs, or experiencing changes in the demographic composition of their household, is relatively small. Even if the number of such changes occurring is non-negligible, and even if the changes have large income consequences for the people concerned,<sup>12</sup> they may be relatively random (not related to personal or household characteristics). So the effect on aggregate statistics may be minor.

To examine this second hypothesis further, we explored whether differences between statistics based on current and annual income measures were larger for households which had experienced changes in labour market attachment or changes in household composition – as one might expect. Analysis by Böheim and Jenkins (2000) provided no conclusive evidence in favour of or against the hypothesis: differences were relatively small for most subgroups considered. The remainder of this section summarizes that analysis.

<sup>12</sup>See Jarvis and Jenkins (1997, 1999) and Jenkins and Rigg (2001) for evidence about the income changes associated with ‘trigger events’ such as marital dissolution and job loss.

To examine changes in household labour market attachment, we first classified each adult in each household according to whether, over the course of the reference period for annual income, she or he spent at least 50 weeks employed, at least 50 weeks unemployed, at least 50 weeks inactive, or changed attachment at least once over the year. We then aggregated these data within each household and defined four groups of persons: those in households in which all adults were 50 + weeks employed, or all adults were 50 + weeks unemployed, or all adults were 50 + weeks inactive, or there were changes in attachment.<sup>13</sup> We found that persons in households with adults who changed attachment over the reference year prior to the current interview form just over one half of all persons at each wave. Perhaps surprisingly, the differences between the current and annual income estimates were very much the same for all subgroups – “changers” as well as “non-changers.” The reason for not seeing larger differences for households with changes might be that our subgroup definitions were too broad. Use of subgroup partitions based on finer definitions of “changers” did not clarify matters and, in any case, using finer definitions brought its own problems, namely small cell sizes.

Some clearer associations were found between changes in household composition and differences between corresponding current and annual income estimates. We classified persons according to whether there had been changes in the number of adults or children in their household, comparing the situation at the time of last year’s interview with that at the time of this year’s interview. Between 20 and 25 percent of persons experienced a change in household demographic composition over the interval between interviews, and of these about one third was in a household with a different household head than at the time of the previous interview. When we looked at the estimates for the proportions of each subgroup estimated to have an income below half-average income, we found some evidence consistent with our earlier conjectures in the discussions of the subgroup breakdowns. In particular, for individuals in households with demographic change between interviews, annual income measures often provided higher poverty rate estimates than did current income measures.

## 5. Conclusions

We began by pointing out that British surveys, and the official income statistics based on them, were unusual compared to those of many industrialised countries because they relied on current income measures rather than annual income measures. Our results suggest that, regardless of the advantages of one measure over the other in principle, in practice they provide very similar estimates of the British income distribution in the 1990s. Although our conclusions are based on the measures available in the BHPS, the BHPS current income measure is constructed in the same manner as the one used in the main (cross-sectional) British income surveys, the FES and the FRS. These are the two surveys that form the basis of the official income distribution estimates, and the ones that have been widely used for cross-national comparisons. Our results therefore suggest that differences

<sup>13</sup> We used BHPS variables summarising the month-by-month calendar of labour force attachment for each adult derived by retrospective recall. An alternative would have been to classify persons (and households) according to changes in labour force attachment measured at the time of the interview.

in income distributions between Britain and other nations do not arise because of the different survey measures of income that have been used.

Our findings also allow some comment on earlier discussions in Britain about whether annual income measures should be developed. In particular, the 1991 Stocktaking Report on Households below Average Income considered whether the official low-income statistics should be based on annual as well as, or instead of, current income measures. The Working Group stated that “there are substantial practical difficulties associated with the estimation of annual income. . . . [E]stimates of annual income are more complex (and hence vulnerable to possible data discontinuities) than estimates of current income” (Department of Social Security 1991, p.25). Our results provide an entirely practical reason for retaining the emphasis on the existing current income measures – they are likely to provide very similar estimates to any synthetic measure of annual income.

It might be argued that this conclusion is premature, on the grounds that different results might have been derived from a nonsynthetic annual income measure of the type considered here. To derive this alternative measure would require the collection of reliable information about all types of income over an annual reference period. In Britain, at least, this remains a difficult exercise because, for example, most social security benefits are paid fortnightly, and many individuals do not have to complete a tax form annually (and therefore do not have to keep annual records). Thus respondents’ recall about all income sources during the previous year may not be sufficiently reliable. The only example of a recall-based annual income measure for Britain is that provided in the British component survey of the ECHP (though this focuses on net income rather than gross income as in this article). We are not aware of any published assessments of how the British ECHP income estimates match up with those from the main British surveys, and any such assessment is complicated by the fact that the ECHP does not include a current income measure. However, the 1994 Living in Ireland Survey (Callan et al. 1996), the Irish component of the ECHP, provided not only the harmonised annual income measure, but also a current income measure (constructed in a manner very similar to those in the British surveys discussed here). The Irish survey would be a valuable source for any future assessments of the differences between current and annual measures.

Finally, we remind readers that the shortest accounting period for the survey measures of income used in this article was the month. Although we have found that current and (synthetic) annual income measures give rise to similar income distributions, this does not necessarily imply that distributions of monthly income (say) are similar to the distributions for shorter periods such as the week or fortnight (the reference period for many social assistance benefits in Britain). Further research is required in order to analyse this issue.

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Received April 2004

Revised August 2006