

# Measuring living standards with income and consumption: evidence from the UK

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## Non-technical summary

Much research is concerned with the living standards of households, how equally distributed are these living standards, and whether the level of or the inequality in living standards are becoming more or less unequal over time. When making these assessments, it is common to use the net income of a household as a proxy for its standard or living; indeed, in the UK, there are statutory measures of child poverty against which the government of the day has to report progress annually, all of which define “poverty” in terms of a low household income; similar targets exist at the level of the European Union. An alternative, long-favoured by economists, is to use a household’s consumption as a proxy for its standard of living, where “consumption” is defined as a household’s expenditure, plus the benefits it derives from durable goods, including housing. At any point in time, consumption and income will differ because households can borrow or save and will benefit from their stock of accumulated durable goods, but current consumption should be a better guide to a household’s long-term standard of living than current income. Furthermore, some have argued that income in household surveys is under-reported for households with low resources, giving a practical reason to use consumption rather than income. This paper uses data from the UK household budget surveys (the Living Cost and Food Survey and its predecessors) to construct four decades of consistent micro-data on households’ income and consumption. A key step in this is to estimate the consumption flow (or the imputed income) from housing.

Adding an imputed income (or consumption flow) from housing to a measure of household resources makes a substantial difference to average annual growth rates in living standards, and particular so for elderly households. This reflects that housing has risen in value faster than other goods, and home-ownership rates have risen over time. Inequality and relative poverty grew less rapidly when measured with consumption. In recent years, the relative position of elderly households in the distribution of living standards improves markedly if we assess living standards by consumption or a measure of income that includes an imputed income from housing, compared to using the usual measure of near-cash income. And there are clear cohort effects when considering this broader measure of income or consumption that are not seen with the usual measure of near-cash income, with each successive cohort of adults aged 65 being less likely to be in the bottom decile group of living standards than their predecessors. The paper recommends that official measures of the relative living standards should take account of the value of housing, either by imputing the income stream or consumption flow. This in turn may require surveys to collect better information about the quality – and, ideally, value – of housing in UK household surveys. And this should be informed by further consideration of how one should value housing (in welfare terms) given the existence of large financial and, arguably, psychological transaction costs to moving house.

# Measuring living standards with income and consumption: evidence from the UK

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This paper compares consumption and income as measures of households' living standards using UK data. It presents evidence that income is likely to be under-recorded for households with low resources. It describes the different impressions one gets about trends in the level and inequality of living standards in the UK when using consumption, and when one adds an imputed income from housing, rather than near-cash income. It describes what different impressions one gets about the composition of households with low living standards if these are identified with consumption rather than income.

JEL codes: D31, I32,

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## 1 Introduction<sup>2,3</sup>

As Blundell and Preston (1996) note, “standard economic arguments suggest that consumption expenditure will better reflect expected lifetime resources [than income]”.

The reason that consumption and income will give different impressions is that households can borrow or save (including by buying consumer durables), so the amount of consumption in any period is not constrained to be equal to income in that period. The reason that we should prefer to use consumption over income is that, providing households prefer to smooth their consumption over time, current consumption should be a better guide to long-term resources than current income.<sup>4</sup>

Forceful argument in favour of using consumption rather than income to measure lifetime resources or household welfare have been made by, amongst others, Poterba (1989), Cutler and Katz (1992) and Slesnick (1993). These arguments were mostly on theoretical grounds. In recent years, the cause has been championed by Bruce Meyer and James Sullivan (MS) in a series of papers (Meyer and Sullivan 2003, 2004, 2008, 2011) in which they argue that the conceptual appeal of consumption goes alongside a practical advantage: that income is likely to be mis-measured for households with low resources – and, in particular, likely to be under-reported – and that spending (from which analysts derive a measure of consumption) is more likely to be

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<sup>2</sup> This work draws on several past projects based at the Institute for Fiscal Studies, and we are very grateful to our current and former colleagues on whose shoulders we metaphorically stand. We are also very grateful to Thomas Crossley for advice and encouragement, to Robert Joyce, Laura Keyse, Richard Tonkin and Karen Watkins for a number of useful conversations, and to seminar participants at the Institute for Fiscal Studies, the Institute for Social and Economic Research at the University of Essex, and the Department for Economics at the University of Sheffield for useful comments. The authors gratefully acknowledge funding from the ESRC Centre for the Microeconomic Analysis of Public Policy at the Institute for Fiscal Studies (Brewer and O’Dea) and from the ESRC Research Centre on Micro-social Change at the Institute for Social and Economic Research (Brewer). Material from Department for Work and Pensions Research Report 577 is Crown Copyright and reproduced under the terms of the Open Government Licence v1.0. The Living Cost and Food Survey and its predecessors, and the Family Resources Survey, are Crown copyright and are reproduced with the permission of the Controller of HMSO and the Queen’s Printer for Scotland, and are available from the Economic and Social Data Service ([www.esds.ac.uk](http://www.esds.ac.uk)). The ESDS, the original owners of the data (the Office for National Statistics and the Department for Work and Pensions respectively) and the copyright holders bear no responsibility for their further analysis or interpretation. All errors remain the responsibility of the authors.

<sup>3</sup> Some of this section repeats material in Brewer, O’Dea, Paull and Sibieta (2009).

<sup>4</sup> Blundell and Preston (1996) highlight some difficulties with using comparisons of consumption levels to infer differences in lifetime resources, such as when comparing households at different stages of their lifecycle or when comparing individuals who are born many years apart.

measured correctly.<sup>5</sup> This gives an additional, data-driven, reason to prefer consumption over income when assessing the level of household resources (or living standards).<sup>6</sup> In a comprehensive assessment of trends in poverty in the US, MS (2009) conclude that “consumption poverty rates often indicate large declines, even in recent years when income poverty rates have risen” and that “the patterns are very different across family types, with consumption poverty falling much faster than income poverty since 1980 for the elderly, but more slowly for married couples with children.” They also conclude that:

“income and consumption measures of deep poverty and poverty gaps have generally moved sharply in opposite directions in the last two decades with income deep poverty and poverty gaps rising, but consumption deep poverty and poverty gaps falling. Since both the poverty rate and the poverty gap per poor person have fallen appreciably more in consumption data than in income data, the overall picture of the change in poverty is much more favorable using consumption measures than income measures.” (p38)

The extent to which having a low income identifies households with low material living standards is particularly pertinent in the UK, as there are four statutory measures of child poverty against which the United Kingdom government of the day has to report progress annually (and, ideally, “eradicate” by 2020-21; see Brewer et al (2011)), all of which define “poverty” in terms of a low household income.<sup>7</sup> Similar targets exist at the level of the European Union.<sup>8</sup> It is also the case that the ability of survey instruments to capture accurately income and consumption will depend upon their design, and the population in question, and MS illustrate their arguments with US data only.

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<sup>5</sup> In earlier work using US data, Sabelhaus and Groen (2000) argue that the skewness of consumption-income ratios observed in the Consumer Expenditure Survey is impossible to rationalise given data on income variability and plausible specifications of the consumption function.

<sup>6</sup> On the other hand, various authors have argued that expenditure data in the US is also measured with error, and have proposed various ways to correct for this: see, for example, Attanasio et al. (2005), Parker et al. (2009) and Aguiar and Bils (2011). MS’s claims about the relative mis-measurement of income and expenditure, first made in MS (2003) and elaborated on in their subsequent work, have been called into question by, inter alia, Bavier (2008); MS (2011) contains a good guide to the debate on this issue, which we do not cover here as our interest lies in data from the UK, rather than US.

<sup>7</sup> Two of the four measures compare the income of households containing children to poverty lines (one which is fixed in real terms, and one which moves in line with median income); the third is defined in terms of persistently low relative income, and the fourth is defined in terms of having a low relative income and being materially deprived according to an index. See <http://www.legislation.gov.uk/ukpga/2010/9/contents> for details.

<sup>8</sup> These were first agreed to at the European Council in June 2010. See Annex I of [http://ec.europa.eu/eu2020/pdf/council\\_conclusion\\_17\\_june\\_en.pdf](http://ec.europa.eu/eu2020/pdf/council_conclusion_17_june_en.pdf).

This paper does four things. First, we document thoroughly the mis-match in the UK's budget survey between reported income and reported spending for households with low resources, and we present evidence suggesting this is more likely to be due to under-reporting of income than either of over-reporting of spending or consumption-smoothing. Second, although there is a high (and growing) under-recording of expenditures in the main UK expenditure survey, the evidence suggests that spending reported by low-spenders is more likely to be accurately recorded than that of high-spenders, giving us confidence that consumption is a good indicator of the living standards of those with low resources; this is backed up with evidence that consumption is a better metric than income to use when identifying which households have a low level of resources. Third, we describe what different impressions we get about trends in the level and inequality of living standards in Great Britain when we use consumption, rather than the semi-official measure of "net disposable income" (near-cash income), and when we use an augmented measure of income which includes imputed income from housing. Fourth, we describe what different impressions we get about the composition of households with low living standards if we identify such with consumption, rather than income. Unlike the analysis in much of the literature on the use of spending as a measure of welfare, our analysis is of all groups in society, and not just low-education lone parents, or other groups thought to have a low income.

As we make clear below, we are not the first to use UK data on spending or consumption as a measure of living standards of UK households, nor the first to assess the quality of income or spending data recorded in the main UK household surveys. However, this paper presents a comprehensive assessment across all groups in society (and not just low-education lone parents, or other groups thought to have a low income), and across four decades of micro-data; we also go to greater lengths than previous studies to construct consistent and comparable measures of consumption and income, and to adjust them correctly to account for changes in relative prices.<sup>9</sup>

The paper is arranged as follows. Section 2 discusses the household surveys that we make use of, and how we construct measures of expenditure, consumption and income. In Section 3, we show, building on DSS (1993), Saunders et al. (2002), Attanasio et al. (2006) and Brewer et al. (2006, 2009), that those with the lowest income do not have the lowest expenditures, but those with the

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<sup>9</sup> MS (2003) looks only at low-education lone parents, but MS (2011) performs similar analysis for other groups.

lowest expenditures do have the lowest income. We provide new evidence on how this mismatch has changed over time, and how it varies between sub-groups. These facts could be reconciled by any combination of under-reporting of income, over-reporting of expenditure, or that households smooth expenditure over time, but we present various pieces of evidence points to the first of these as the predominant explanation. First, UK data sources do not capture anything like the amount of cash transfer payments which the government reports paying out (and that this under-recording has been growing in recent years as a proportion of household income). Second, while consumption-smoothing could of course explain those with low income having high spending, a fact that militates against this explanation is that only a minority of those with low recorded income have positive financial assets, so access to debt markets would have to be widespread and comprehensive to facilitate the continuing level of consumption that we observe. Third, the relationship between income and other proxy measures of living standards looks little different if we use a income measured over a longer period of time. We also assess the quality of the spending data in the LCFS by comparing the estimates of total household income and consumption implied by the microdata with those reported in the UK National Accounts. This confirms other studies' findings (Deaton, 2005; Attanasio et al., 2006) that there is an increasing (and alarming) gap between spending captured in the LCFS and spending reported in the National Accounts. However, we show that, as in the US (see Meyer and Sullivan, 2010) those items which make up a large fraction of spending of low-spending households have relatively good coverage rates, suggesting that consumption may be a less good indicator of the living standards of those with high resources than it is for those with low resources. We also show that having a low consumption is correlated to a much greater extent than having a low income with other indicators of having a low standard of living or being deprived.

Section 4 compares the impressions we get from using income and consumption about the trends in the level and inequality of household resources in the UK, and in the characteristics associated with being a household with low resources in the UK. This builds on Attanasio et al. (2006) and Brewer et al. (2006), who directly compare relative poverty measures based on spending and income (in Great Britain), Blundell and Etheridge (2010) and Goodman and Oldfield (2004), who directly compare inequality in consumption and income (in Great Britain/United Kingdom), and Carrera (2010), who assesses how our impression of the redistributive nature of the tax and

benefit system depends on whether one uses expenditure or income to rank households.<sup>10,11</sup> There is also a literature examining how our impression of the distribution of income (or spending/consumption) is different when using a broader measure of income (or spending/consumption). For the UK, Sutherland and Zantomio (2007) and Barnard et al. (2011) look at how the distribution of income and position of particular groups in the income distribution alters when the value of public services is included, and Frazis and Stewart (2011) examine how inequality in the US changes when one adds a measure of home production to household income; we do not look at the value of public services or home production. Mullan et al (2011) examine how the income distribution in the UK changes when one imputes income from housing, but does this only for the most recent year of data, and Milligan (2008), using Canadian data, shows how the well-being of elderly households relative to working-age households is very sensitive to whether one imputes a consumption flow from housing. We extend all of the papers that have used UK data by examining a longer span of data, looking at measures of inequality and poverty together, and (most importantly) by going to greater efforts than previous studies to create a good measure of consumption (rather than expenditure) from the UK household budget survey data. We find that adding the imputed income or consumption from housing to our measure of household resources makes a substantial difference to average annual growth rates in living standards, even after an appropriate correction to the price deflator, and particular so for elderly households. Inequality and relative poverty grew less rapidly when measured with consumption, partly because consumption at the bottom grew more strongly than income in the 1980s, and because consumption at the top grew less strongly than income in the 1990 and 2000s. In recent years (but not in 1978 and the early 1980s), the relative position of elderly households in the distribution of living standards improves markedly if we assess living standards by consumption or (especially) broad income, compared to the usual measure of near-cash income. There are clear cohort effects amongst the elderly when considering broad income and consumption, with each successive cohort of adults aged 65 being less likely to be in the

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<sup>10</sup> MS (2011) contains references to many studies examining this issue in countries other than the US or UK.

<sup>11</sup> A parallel strand of the literature studies changes over time in the joint distribution of income and consumption to try to understand the relative importance of temporary and permanent shocks to income, including papers such as Krueger and Perri (2006) and Attanasio et al (2009) which use US data, and a series of papers by Blundell and co-authors (Blundell and Preston (1996, 1998), Blundell and Etheridge (2010) and Blundell et al (2011)), which use the same UK data as we do.



bottom decile group of living standards than their predecessors, but these are not present when considering HBAI income. Finally, in the most recent data, broad income and consumption give statistically-significantly- and substantively- different impressions of whether older individuals are worse off than their younger peers, whether those with large families are worse off than those with small families, and whether the self-employed are worse off than others. Section 5 concludes.

Of course, income and consumption are not the only two ways in which one could measure living standards, and our paper is clearly related to the literature which examines whether income gives the same impression of the level, composition and trends of who is poor as do measures of low living standards based on neither income nor spending, such as a measure of material deprivation or a hardship index.<sup>12</sup> For example, Bradshaw and Finch (2003) showed, using UK data, the lack of overlap between those who had a relative low income, and those who were defined as subjectively poor, or who had a high level of material deprivation, using data from the Poverty and Social Exclusion Survey. Calandrino (2003) found that the incidence of material deprivation amongst households in GB was lower in the bottom income decile group than the second income decile group. Brewer et al. (2009) show the relationship between income and the official indicator of material deprivation used for assessing progress towards the previous UK government's 2010 child poverty target; they also show that many of the children living in households with the very lowest incomes (first or second percentile of the overall income distribution) have lower levels of material deprivation than most other children in the bottom half of the income distribution. But we focus on income, because the United Kingdom government and the European Union have high-profile poverty targets defined in terms of income, and we focus on consumption, given the existence in the UK of consistent micro-data on spending over a long time-span.

## **2 Income, spending and consumption in the UK: data and measurement**

### **2.1 Data on household income**

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<sup>12</sup> Definitions of these terms are not entirely standardised, but “material deprivation” is usually defined as an “enforced lack of certain goods or access to certain services”: see Mack and Lansley, 1985 for an early use of this, and Pantazis et al. 2006 for a recent one; and Boarini and d’Ercole (2006) for international experience and see McKay, 2004 for a critique.

In the UK, there are two main datasets which can be used to measure the distribution of household income. One is the UK's household budget survey, currently called the Living Costs and Food Survey (LCFS). The LCFS is an annual, repeated cross-sectional, survey that has been running since 1961 (although with some substantial changes in form since then), although we use data from 1978. It is run by the national statistical agency (the Office for National Statistics) and interviews approximately 5,000 households throughout the year. The second is the Family Resources Survey (FRS), also an annual, repeated cross-sectional, survey but that started more recently (1994-95). One of the specific aims of the FRS was to measure income at the bottom end of the income distribution more accurately than the LCFS by having a more comprehensive questionnaire about sources of income, and a much larger sample. It does not, however, contain questions on spending.

There is also an official publication (and associated micro-dataset) known as "Households Below Average Income" (hereafter HBAI<sup>13</sup>) that is now the official source of data on income inequality and measures of relative or absolute income poverty. The HBAI document sets out the precise definition of income that government statisticians are seeking to measure, and the various methods that they use for constructing and analysing the HBAI micro-data (such as what equivalence scale to use, and how to uprate data to make real comparisons within and between years). As we attempt to produce the same measure of income, we reproduce some of these in Appendix A4, but the key factors are as follows. First, the measure of income, described as "net household disposable income", comprises all forms of cash income plus a very few, government-provided, near-cash benefits-in-kind, less personal taxes paid (mostly based on self-reports, although some are imputed) less some transfers to other individuals and less some forms of saving. Income is measured at the household level, and equivalised for household size and composition. Compared to the definition of income used to assess poverty status in the US, this measure includes all forms of cash income, including that which comes from state benefits or tax credits. Other than some small government-provided near-cash benefits-in-kind, no allowance is made for non-cash incomes such as those from housing or unrealised capital gains. This definition of income – which we hereafter call "HBAI income" – is known in the HBAI document as income "before housing costs [are deducted]"; an alternative measure of income,

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<sup>13</sup> An entirely misleading name, as the micro-data and published statistics relate to the entire income distribution.

known as “after housing costs [are deducted]”, subtracts spending on rent, mortgage interest and water charges from BHC income, but we do not consider that in this paper.

The intent is that any reasonable household survey dataset with information on household composition and sources of income could be used to derive a measure of HBAI income. The official HBAI series is based on the LCFS and its predecessors until 1993/94, and on the FRS from 1994/95; we have generated our own equivalent series based on the LCFS from 1994/95 in order to create a consistent series based on the LCFS and its predecessors.

## **2.2 Data on household spending**

The source of our data on household spending (from which we construct a measure of consumption) is the Living Costs and Food Survey (known between 2001 and 2007 as the Expenditure and Food Survey, and the Family Expenditure Survey before that; we refer to it as the LCFS). We use data from 1978 to 2009 (the survey switched from calendar to financial in 1993-94 and back to calendar year in 2006). The main purpose of the LCFS is to provide data on household spending patterns to inform the derivation of price indices. It aims to collect a comprehensive measure of household spending with a two-week diary, in which respondents are asked to record everything they purchase, supplemented by a questionnaire in which respondents are asked about any spending on infrequently purchased items over the past number of months.<sup>14</sup> In Appendix A we discuss the extent of imputation in the LCFS and how it is carried out. The analysis in this paper retains those households whose responses contain imputed data. However, in Section 4 where we look for evidence of underreported income and compare the correlation of income and consumption with measures of material well-being, it is particularly important that we are comparing genuine, non-imputed, outcomes *for the same household*, and we have redone the analysis in these sections dropping households which we know contain imputed data. None of the results presented in section 3 are sensitive to the exclusion of these households.

## **2.3 Constructing measures of income, expenditure and consumption**

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<sup>14</sup> The number of months varies between items on the questionnaire. For example, respondents are asked to record any spending on motor vehicles in the past 12 months, but any spending on household fuel in the past 3 months.

In this section, we detail how we construct the measures of expenditure and consumption, and the different concepts of income; at the end, we discuss how we adjust these to account for differences in household composition, and for price changes over time.

### **Expenditure and consumption**

Our basic measure of expenditure, or cash outlays, simply records all spending by a household in a given period. As is standard in work with the LCFS, this is based on information in a two-week diary, supplemented by a questionnaire in which respondents are asked about any spending on infrequently purchased items. Clearly, this measure of cash outlays need not equal consumption, as some elements of cash outlays might reflect investments, and a household will derive consumption from its stock of durables.

To derive our measure of consumption, we begin with the measure of cash outlays, subtract spending on vehicles and housing (viewing these outlays as investments<sup>15</sup>), and add in an imputed consumption value for these two items.

We use the rental value of the property as a measure of the consumption value of living in that property.<sup>16</sup> This quantity is clearly observed in the data for those households who rent their property from a private landlord. But we do not observe a rental value for owner-occupiers, and, for tenants of “social landlords”, we observe a rent which will typically be less than the market rent.<sup>17</sup> We therefore need to estimate the rent that owner-occupiers and social tenants would pay for their property if they rented it on the private market. Our approach essentially imputes a rent for each property based on the geographical region, the number of rooms and the local taxation bill.<sup>18</sup> We take households who rent an unfurnished property privately in all years of data, and

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<sup>15</sup> In other words, mortgage interest payments, capital payments and rent are not included as consumption, on the basis that they are not indicative of any housing consumption over and above the measure of consumption we impute.

<sup>16</sup> Our data does not record the value of the properties, making a user cost approach unappealing.

<sup>17</sup> These landlords mostly comprise local government, or housing associations (these are private, non-profit-making organisations that provide low-cost housing; they are independent of government, but regulated by the state and often receive public funding: [http://en.wikipedia.org/wiki/Housing\\_association](http://en.wikipedia.org/wiki/Housing_association)).

<sup>18</sup> There were three different local taxation regimes through the period covered by our data: rates (until 1988 in England and Wales, 1989 in Scotland), the Community Charge (between the abolition of rates and 1993) and council tax (from the abolition of the Community Charge to the present). Rates and council tax both varied (positively) with the value of the property, but the Community Charge did not.

split them into three groups defined by the education of the head of household.<sup>19</sup> For each group, we estimate a median regression of the log of rent on a quadratic in local tax payments interacted with a dummy for the local tax regime (we do not allow the imputed rent of households to vary with the Community Charge), indicators for government office region, indicators for the number of rooms in the property, and indicators for financial year. For all households, we then calculate a measure of imputed (log) housing consumption as the prediction from this median regression plus a draw from the empirical distribution of the regression residuals (the draw for a particular household is a random draw from the sample comprising the residuals for all households surveyed in the same year and with the same education level).<sup>20</sup>

For vehicles, we assign each household the average expenditure on vehicles by those with the same number of cars and in the same decile of non-durable expenditure. This expenditure will be taken over the positive values of those who have purchased a car in the previous 12 months and the zero values of those who consume but have not purchased a vehicle in the previous 12 months.

We are not able to impute credibly the consumption flow from other durables, as we do not have a comprehensive record of other durables owned. Instead, we make assume that expenditure on other durables equals consumption.<sup>21</sup> We do not remove from consumption spending on childcare, out-of-pocket medical expenses, or education expenses.<sup>22</sup>

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<sup>19</sup> The three groups are: those who left school at or before age 16, those who left at age 17 or 18 and those who left at or after the age of 19. The fact that we estimate separate regressions for the three groups is to take account partially of the fact that those at different points in the permanent income distribution might have different quality of housing that cannot be captured by the data that we observe.

<sup>20</sup> Brzozowski and Crossley (2010) write that “Imputed (or predicted) rents and service flows are typically not very variable (because they are based on a small number of measured characteristics of the stocks). Including them substantially reduces the variability of the consumption bundle.” Our procedure does not suffer from this concern, as the (conditional-on-observables) variability in our imputed measure is, by construction, identical to that in the observed data. On the other hand, our approach implicitly assumes that this unobserved component of housing quality is uncorrelated not only with the few observables but also with income and other components of consumption.

<sup>21</sup> An alternative (and in our view less preferred) approach is to subtract spending on other durables, without adding back an estimated consumption flow. Taking this approach, however, would make very little difference to our measure of consumption - the ratio of durable expenditure for which we cannot credibly impute associated consumption to our measure of total consumption has a mean (median) of only 5% (2%).

<sup>22</sup> This is mostly because, as the UK has a free-at-the-point-of-use health service, and free education for children aged 5-18, we think that any out-of-pocket spending on these items is likely to be discretionary and thus more like consumption spending than investment spending. In any case, medical and education expenses are very low in the

We note that the way in which we have added an imputed income from housing to our measures of broad income and consumption is valid only if the markets for housing and other consumer durables for which an income is imputed) are frictionless (so that we can conclude that households have equalized their marginal utility across consumption choices).<sup>23</sup> In the case of housing, there are clear transaction costs (certainly financial and arguably psychological) to moving house. But we also note that this issue remains un-acknowledged in many papers which routinely construct a measure of income including the imputed income from housing.

## **Income**

We use three different measures of income in this paper.

Our first is a measure of “cash income”. We use this mostly to compare with our measure of expenditure (cash outlays), as the difference between cash income and cash outlays has to equal net saving plus net measurement error in the two series.

Second, we derive the usual measures of HBAI income before housing costs.<sup>24</sup> We noted above that the official statistics on HBAI income used the LCFS and its predecessors before 1994-95 but since 1994-95 have been based on a different survey (the Family Resources Survey). In our data, we use the official data on HBAI measure of income for the early (pre 1994-95) years, and derive our own measure for the later years based on the current definition of HBAI income. This definition differs from the older one in that payments into personal pensions and maintenance payments are now deducted from the measure of income, whereas in the years pre 1994-95, they were not.

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UK (certainly compared to the US). The argument that spending on childcare should be treated as an investment is perhaps a little stronger, but the spending on childcare has not been collected in a consistent manner across the four decades; our approach of leaving it as part of consumption at least prevents us from introducing inconsistencies over time.

<sup>23</sup> We are very grateful to Tom Crossley for this point.

<sup>24</sup> This differs from our measure of cash income in that includes the imputed value of free school meals for households containing children who receive them; the cash value of a free TV licence for those elderly households who are entitled to it; housing benefit that is paid direct to the landlord (the value of which is therefore not included in a household's *cash* income) and excludes council tax payments, payments into personal pensions, maintenance payments to those in other households and student loan repayments. The definition of income used in the official analyses of poverty further deducts contributions by parents to any children they have who are students living outside the household, but our data does not allow us to do this.

In Table 1, we compare the distribution of income in the LCFS and FRS for all financial years since 1994/95; in 1994/95, the two datasets gave very similar estimates of the income distribution, but in recent years, the estimate from the LCFS has been higher than that from the FRS across the distribution. The estimated Gini coefficients from both surveys are very similar, though.<sup>25</sup>

Finally, we create a broad measure of income (called “broad income”) that is intended to be comparable to our measure of consumption. To do this, we start with a measure of HBAI income and make two adjustments: we subtract payments made to students from the Student Loan Company (these are loans, but for some reason are treated identically to income in the HBAI income measure), and we add an estimate of the consumption (or income) flow from housing and motor vehicles the cash payments made on the same. The second of these adjustments takes account of the fact that ownership of a particular durable can be considered to yield an imputed flow of income just as it can be considered to yield an flow of consumption benefits. We therefore make exactly the same adjustments to the income measure that we make when moving from expenditure to consumption. This partly addresses Bavier’s (2008) concern with some of MS’s papers. Bavier argues that one should not compare consumption only to the measure of income used in the official analysis of poverty but to the “best” measure of income that can be derived. As the derivation of a consumption measure typically starts with expenditure data and makes adjustments in keeping with theoretical and empirical evidence about how best that data can be used to predict deprivation, then the odds are stacked against income predicting living standards better than consumption unless a similar process is carried out to the income data.

### **Adjusting for price changes and household composition**

We express all financial values in 2009 pounds, and use price indices based on the RPI to achieve this.<sup>26</sup> We do not use the actual RPI to deflate every series, but instead make slight

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<sup>25</sup> The estimated Gini coefficient for the FRS incorporates an adjustment to the incomes of approximately the richest 1% of households which has not been done for the LCFS households: see DWP (2011) for details.

<sup>26</sup> MS (2009) pay particular attention to how the choice of deflator materially affects conclusions about trends in living standards towards the bottom of the distribution. The UK has two main official measures of price inflation: the Retail Prices Index and the Consumers Prices Index: these differ in their formula and the coverage (for a summary of the differences, see Office for National Statistics (2011)). There are a number of reasons for our use of the RPI and variants thereof rather than the CPI for our price adjustments. These include the fact that it has been existence for the entirety of the period we consider (unlike the CPI); the fact that its coverage is broader (in

adjustments to reflect that our different measures of income, spending and consumption and constructed in different ways and measuring different things. In particular:

- To deflate measures of cash income and cash outlays, we use the RPI
- To deflate measures of HBAI income measured before housing costs, we use an official the variant of the RPI which disregards changes in the price of local taxation and housing depreciation (both of which are included in the headline measure of the RPI).
- To deflate measure of consumption and broad income, we use our own variant of the RPI which disregards changes in the price of mortgage interest, and includes changes in the price of rent, with the latter weighted in keeping with the budget share of imputed rent.

We construct measures of income, spending and consumption at the level of the household, and then adjust for household composition using the modified OECD scale; this clearly embodies the assumption that the same equivalence scale is applicable for our different measures of income, spending and consumption.<sup>27</sup> The convention in the official publications is to conduct analysis of the income distribution or poverty status at the level of the individual, having assigned to each individual (including children) their household's equivalised household income; unless stated otherwise, we follow that convention.<sup>28</sup>

### **Periodicity of income and spending**

Both the measure of spending and income in the LCFS are and measured over relatively short periods (and, because of this, conventionally reported as expressed in weekly terms). As mentioned earlier, spending on most items is collected through diaries which cover a fortnight, but this is supplemented with estimates of the weekly spend on infrequently-purchased items, which are based on respondents' total spend over a longer period and given in response to survey

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particular it includes housing, which is omitted from the CPI), and the fact that the official poverty analyses produced by the UK government use the RPI rather than the CPI. Both the official RPI and CPI series are single indices for the whole of the UK, and disregard the considerable variation in the cost of living that exists within the UK, especially in the price of housing.

<sup>27</sup> This is usually expressed as giving a weight of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child. We follow usual UK practice and re-base so that a two-adult household has a weight of 1, meaning that the scale becomes 0.67 for a single adult, 0.33 for each extra adult or child aged 14 or more, and 0.2 for every child aged under 14.

<sup>28</sup> This is numerically equivalent to having household-level data on equivalised household income, and weighting by the number of people in the household. It clearly assumes that all individuals in the household have equal access to that household's resources.



questions. The concept of income in the LCFS is “usual weekly income”: this is typically based on participants’ most recent wage or salary payments (and equivalent for the other income sources), but this is then replaced with the “usual” wage or salary payment if the last payment was deemed by the respondent to be “unusual”.<sup>29</sup> So both income and spending are measured over much shorter periods (as well as periods that are similar to each other), than in the main US data (which measures income over the previous year, and spending over the previous quarter), but it is not the case that income and spending are collected for the same period of calendar time, as occurs, for example, in the Canadian FAMEX/SHS surveys.<sup>30</sup>

An implication of income and spending being measured over similar periods is that we do not need to consider adjusting the variance of either series to make them comparable with each other (as MS do in some of their papers). But the relatively short period means that our measures of income and spending will show greater volatility than if the periods had been longer.<sup>31</sup>

### **3 Discrepancies between income, spending and consumption**

In this section, we examine cash outlays and cash income for the same households using the LCFS. We find that households with a low reported income are particularly likely to have a higher reported cash outlays. This difference, though, is consistent with under-recorded income, over-recorded spending, or consumption-smoothing (in this case, running down assets or increasing debt, or “dissaving” for short). We review the evidence to support or refute these three (not-mutually-exclusive) hypotheses by comparing data from the LCFS to other sources, and reviewing what (little) is known about the asset holdings of those with a low cash incomes and/or outlays in the UK. We assess the quality of the spending data in the LCFS by comparing the estimates of total household income and consumption implied by the microdata with those reported in the UK National Accounts. We then ask which of “having low reported

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<sup>29</sup> So, for workers paid every month or 4 weeks, the measure of earnings is effectively usual monthly/4-weekly earnings expressed as a weekly equivalent. For workers paid weekly, the measure of earnings is usual weekly earnings.

<sup>30</sup> See Brzozowski and Crossley (2011). The Canadian surveys also make use of a balance edit, where participants are probed if they report annual spending and income figures that are too dissimilar.

<sup>31</sup> Using home scanner data, Leicester (2011) reports how the variance of spending on groceries, as well as food commodity budget shares falls (unsurprisingly) as data is collected over longer periods.

consumption” or “having low reported income” is a better guide to being a household with low living standards.

### **3.1 Comparing cash incomes with cash outlays: are households dis-saving, under-reporting income, or over-reporting spending?**

#### **The relationship between low recorded income and low recorded expenditure**

Figure 1 plots, for all households in our sample in the four most recent years of our data (2006/07-2009), the median household spending (cash outlays, as defined in Section 3) given household income (cash income, as defined in Section 3), and the median household income given household spending.<sup>32</sup> The clear pattern is that households with very low reported cash income (below £50 a week, say) have reported cash outlays associated with households with a weekly income of around £400 (above median income) – that is the relationship between reported income and median (and indeed mean) reported expenditure has a ‘tick’ (or for Americans a ‘check’) pattern. But this pattern does not hold when reversed: households with very low spending do seem to have very low income. As MS argue, the sample of households with a low reported income in such an analysis has been, in part, selected on having negative measurement error, but the fact that the levels of income for those with low recorded spending look more plausible than the levels of spending for those with low recorded income suggests that, amongst these households, there is more measurement error in income than spending.

This pattern (that those on the lowest incomes have high levels of spending) is not confined to a particular family type (Figure 2) or work status (Figure 4) or education attainment (Figure 5), but the phenomenon is less obvious amongst pensioner households (Figure 3).<sup>33, 34</sup>

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<sup>32</sup> Similar analysis exists, for countries other than the UK or covering a subset of the years used in this study in MS, 2003; Brewer, Goodman and Leicester, 2006; Brewer, O’Dea, Paull and Sibieta, 2009; Brzozowski and Crossley, 2011.

<sup>33</sup> We have checked, and confirmed, that the ‘tick’, where shown, is statistically significant. That is, we run a median regression of reported spending on a set of indicator variables for £50 income bands. The reported expenditure of those in the lowest income group (£0-£50) is statistically-significantly lower than each of the next seven income groups (that is groups representing households with equivalised reported income of less than £400). The ‘tick’ is significant (in this sense) for each work-status group (employed, self-employed, workless), for each education group, and for each *non-pensioner* household type, but not for pensioner households.

<sup>34</sup> Figure 6 shows striking differences by a household’s work status, with households whose head is self-employed having higher spending, on average, than families with the same income but a different work status. Brewer, O’Dea,

Figure 6 shows the 25<sup>th</sup> and 75<sup>th</sup> percentiles of expenditure (with median expenditure from Figure 1 reproduced) conditional on level of reported income. The ‘tick’ that we previously described is also present at each of these percentiles, and it is also the case that the variance of spending increases at low levels of income.

Figure 7 shows the median (real) expenditure conditional on (real) reported income for five-year periods starting in each of 1978, 1983, 1987, 1993, 1998 and 2003. In each of the periods the ‘tick’ is evident, though its magnitude has been growing (i.e. median expenditure at the bottom of the reported income distribution has been growing). Figure 8 looks a little more closely at this pattern – it shows the median expenditure *as a proportion of the overall median expenditure* conditional on income in the period, and does this for those in centiles 1 through 8 of the income distribution.

### **What evidence is there that income or spending are mis-measured?**

MS argue that the large degree of under-reporting of income from welfare benefits in the Consumer Expenditure Survey, and the extent to which reported values of earnings and hours in the Consumer Expenditure Survey are inconsistent with minimum wage rules, suggest under-reporting of income from cash transfers and earnings are likely explanations for the observed mismatch between reported cash income and report cash outlays. Both phenomena can be seen in the UK data. Table 2 shows the fraction of employees whose implicit hourly wage – usual weekly earnings divided by usual hours – is below the national minimum wage, although we cannot tell whether earnings have been under-reported or hours worked over-reported.<sup>35</sup> More importantly, Table 3 shows the fraction of the amount that the government says that it pays out in various state benefits that is recorded in the LCFS (having grossed up the survey to give population estimates). Coverage rates are high for the two benefits which are universal or close to it – child benefit and the basic state pension – and note that there are legitimate reasons why

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Paull and Sibieta, 2009 explore this in some detail (for households with children only). They show that the U-shaped relationship exists even if income is measured over a three-year period (and thus suggesting that volatility or temporary measurement error in income cannot be the sole explanation). The results are certainly consistent with the self-employed consistently under-reporting their income; the authors note that the LCFS interview does encourage self-employed respondents to consult their tax returns when reporting their income to the survey interviewers.

<sup>35</sup> There has been a nationally-set, legally-binding, minimum wage in the UK since 1999. There are very few exemptions (although employers can count the value of some employer-provided benefits). Lower rates apply to younger workers.

the fraction captured should be below 100% (some benefits are paid to people outside the UK, and some are paid to people in the UK who do not live in private households, and who would therefore be outside the sampling frame of the LCFS). But coverage rates are much lower for the two main means-tested cash benefit programmes (68% for income support and pension credit, and 50% for tax credits), and also low (58%) for the large category known as “other non-contributory benefits”, which mostly comprises benefits paid to disabled people or those requiring care in their own homes. Figure 9 plots trends in the amount of “missing” income from state benefits as a fraction of total household income, and shows that the importance of this “missing” benefit income has been rising gradually over the past decade even though the importance of benefit income overall as a share of household income has hardly changed.<sup>36</sup> It is not clear whether this low (and declining) coverage is due to differential patterns of non-response to the LCFS that is going uncorrected when grossing weights are calculated, or whether it is due to incorrect item response amongst households who are genuinely receiving benefits, or whether it is due such households reporting that they receive benefits, but under-reporting the amounts. However, we do know that the phenomenon of under-recording the total spend on cash benefits is not unique within the UK to the LCFS: Brewer et al (2008) report that, in 2006-7, around one third of government spending on child and working tax credits was not captured in the main UK household survey used for recording income (the FRS), and 43% of spending on the pension credit – the main means-tested programme for pensioners – was missing (see Bound et al (2001) for a general discussion and see Lynn et al (forthcoming) for what little is known from UK survey data that has been linked to administrative data).

The other explanation is that households with low resources could be over-reporting their spending. It is very hard to assess this claim, as there is no other reliable source of data on household spending. Certainly we find it hard to think of a story explaining why such a matter would arise. Brzozowski and Crossley (2011) argue that over-reporting of spending is unlikely to be a contender for Canadian data, and the proportion of aggregate household expenditure in the national accounts evident in the microdata (see section 6) is sufficiently low to make over-reporting of spending an unlikely explanation in UK too. In earlier work, though, (Brewer et al.,

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<sup>36</sup> Manipulation of the same data (Tables 13 & 14 in Barnard et al (2011) and earlier editions) shows that benefit spending as a share of total household income has risen only very slightly, from 20 to 21 per cent, over the same period.

2009), we have shown (for households with children) that the tick-shaped (or hump-shaped) pattern between income and other measures of living standards exists when using many measures of (or proxies for) living standards (and when looking at income measured in four different British household surveys); this strongly suggests that over-recording of spending is not an important cause of the pattern depicted in Figure 1.

### **What do we know about asset holdings, debt and saving flows amongst households with low reported income or spending?**

Unlike the Consumer Expenditure Survey in the US, the LCFS has no direct measure of net saving flows, and so we cannot investigate in detail the extent to which households whose reported spending far exceeds their reported income are dis-saving or borrowing.<sup>37</sup> Indeed, even considering other UK data sources, we have a remarkably imprecise impression of the stock of net assets held by households with a low reported income or spending, let alone the net saving flows: the household surveys that measure income reasonably well collect information only on gross financial assets – which are certainly very low amongst the majority of households with a low reported income (Figure 10).<sup>38</sup> But Figure 11 plots the relationship between net assets and reported household income in 2005, based on the British Household Panel Study.

Our (weak) inference from this is that the majority of households whose low reported income is less than their cash outlays will not be running down savings (as they don't have any), but a minority could be; and we certainly have little way of assessing the extent to which the gap between reported income and reported outlays is being matched by growing levels of debt.<sup>39</sup>

But there is evidence that not all of the mismatch between income and spending evident in Figures 1 to 8 can be due to temporary fluctuations in income (and thus short-run periods of dis-saving). Figure 12 uses longitudinal data and plots the link between reported household income

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<sup>37</sup> Aguiar and Bils, 2011 construct a measure of spending from the US Consumer Expenditure Survey equal to reported income less reported saving.

<sup>38</sup> Information on net assets is available in two surveys, but one is small-scale (the British Household Panel Study), and the other lacks a detailed measure of household income (the Wealth and Assets Survey).

<sup>39</sup> Recent years of the LCFS asked households how they were able to fund their expenditure, and Carrera (2010) reports the results for households who (in 2007-8) reported spending levels at least twice as great as income. However, she concludes that the data is “only indicative, as they are based on the respondent’s opinions. Furthermore, these data are not exclusive as many high expenditure households did not provide any answer” (p21).

and a measure of material deprivation using income measured in one wave (and so a comparable measure to that in the LCFS) but also income averaged over three consecutive waves.<sup>40</sup> Were the mismatch between reported income and living standards all due to income fluctuations and dissaving, then one would expect the relationship between income and living standards to be more likely to be monotonic when one measures income over a longer period. But this is not what we find: as material deprivation is measuring low living standards, the tick shape is inverted to become a hump-shaped, but, crucially, the hump-shape does not go away when income is averaged over three years: those households with a very low reported income in the medium-run (which is our interpretation of this 3-wave-averaged income) still have a living standard considerably higher than those who report slightly higher but still very low incomes.

### **Comparing cash incomes with cash outlays: Assessment**

We have shown the significant differences between income and spending for households at the bottom of the reported income distribution: not only do households in the bottom 2 per cent of the income distribution spend considerably more than their reported income, they also spend substantially more than households with slightly higher reported income, and this pattern is found amongst households with different ages, different employment statuses and different compositions. Of the three (non-mutually-exclusive) hypotheses which could explain this, we have very little idea whether the amount of dissaving implied by the discrepancy between income and spending is plausible. But we consider it unlikely that over-reporting of spending is very important, and think it highly likely that low-income households are under-reporting their income from state benefits.

### **3.2. Comparing expenditure recorded in the household budget survey with National Accounts**

Previous studies have noted the gap between total expenditure captured by the UK's household budget survey, and consumption as measured in the UK National Accounts (see especially Deaton, 2005; Attanasio et al., 2006). The levels of expenditure, income and saving implied by the LCFS can be grossed (using population grossing weights) to an aggregate level and

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<sup>40</sup> This is taken from Brewer et al., 2009, which contains similar analyses using a different longitudinal survey and other proxy measures of living standards.

compared to similarly-defined aggregates shown in the National Accounts<sup>41</sup>, and these comparisons are shown in Figures 13 and 14 (taken from Crossley and O’Dea, 2010). The ratio of total expenditure in the LCFS (grossed to national population levels using survey weights) to the total published in the National Accounts (we refer to these as expenditure and income ‘coverage’) has been falling steadily since at least the early 1990s, whereas that for income has been relatively stable.<sup>42</sup> As Deaton (2005) points out, a declining coverage rate for expenditure is equivalent to having estimated rates of consumption growth from household surveys being considerably lower than estimate rates of consumption growth from National Accounts data. The fact that expenditure coverage has declined by more than income coverage also means that the implied rate of saving (where “saving” can be measured in a household budget survey as the excess of cash income over cash outlays) will be growing faster if one looks at the household budget survey than it will if one uses data from National Accounts. Figure 37 presents the two series: the divergence since the early 1990s in both level and trend is remarkable, with the correlation coefficient over the whole period being -0.7.

To probe this further, Figures 15 to 17 show how coverage for individual categories of expenditure. has evolved over the sample time period.<sup>43</sup> Figure 15 shows three components, food, household fuel and the running costs associated with motoring, where the coverage remains reasonably high (i.e. above 75%). Figure 16 shows five categories (catering, alcohol, tobacco, clothing and public transport) where the coverage ratio is lower (and, in the last three, the current coverage ratio is very low, around 40%). Figure 17 shows some components (household services, personal services, vehicle purchases and durable leisure goods) where the coverage ratio has been quite volatile, perhaps due to sampling variation combined with purchase infrequency (in the case of large consumer durables). In the case of each of these categories the microdata coverage in 2009 was between 55% and 80%.

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<sup>41</sup> The National Accounts series is not the headline household saving ratio published regularly by the ONS, but one to which we have made two adjustments to increase its degree of comparability with the LCFS data (see Appendix A), meaning that our comparison should be a more meaningful one than that offered in Deaton (2005), who did not attempt to correct either series to account for their differences in scope.

<sup>42</sup> Deaton (2005) shows that this lack of coverage seems to be a fairly universal phenomenon. It is certainly well-established for the US budget survey (see, for example, Meyer and Sullivan, 2010; Barrett et al., 2011).

<sup>43</sup> The components that we show do not cover all of household expenditure. In some cases, it has not been possible to generate categories in the microdata that closely match those in the aggregate data in a consistent manner over time.

Table 4 shows budget shares for these (non-exhaustive) categories across the spending distribution in the most recent data, and Table 5 shows the budget share for the “top three” categories (ie the categories with the highest coverage rates: food, fuel and motoring costs; not that we do not consider housing costs) over time. As in the US case (shown in Meyer and Sullivan, 2010)), those categories of spending which make up a large fraction of spending of low-spending households tend to have high coverage rates, suggesting that the LCFS is giving us a better impression of the spending levels and patterns of low-spending households than it is for high-spending households.

Another way of assessing the plausibility of the data on spending in the LCFS is to look at the distribution of net saving rates (where “saving” is defined as the excess of cash income over cash outlays). Figure 18 shows median saving rates from the LCFS (calculated as income less expenditure divided by the former) by equivalised income quintile. The median saving rate for those in the top income quintile has been rising continuously since the early 1990s and in the most recent year shown (2007) is almost 30%. Crossley & O’Dea (2010) look at longitudinal data on changes in household wealth between 2000 and 2005 using data from the British Household Panel Survey and note that the very high saving rates shown in Figure 8 are inconsistent with (ie too high given) the observed wealth accumulation over the same period.

Overall, then, the picture is one of the LCFS under-recording spending relative to the national NA, doing so more substantially than is the case with income, and doing so at an increasing rate. But it seems that this affects high-spenders more than low-spenders, and we remain confident that consumption as measured in household budget surveys is good indicator of the living standards of those with low resources, but less confident of its accuracy for those with high resources.

### **3.3 Comparing consumption and income as correlates of low living standards**

Section 3.1 showed the mismatch between expenditure and income that occurs amongst households with a low recorded income, and our suspicion that most of the mismatch is due to under-recorded income. As income-based measures of poverty have a considerable role in political debate and in discussions of social policy in the UK, in this sub-section we ask whether consumption (as recorded by a household survey) is better correlated with other measures of low



living standards than income (as recorded by a household survey). We do this using an approach suggested by MS (2003). We define four groups  $Inc_{low}$ ,  $Inc_{notlow}$ ,  $Con_{low}$  and  $Con_{notlow}$ , where the subscript *low* refers to those households lying in the bottom 10 per cent of the consumption or income distribution, and *notlow* to those households lying in the upper 90 per cent of the distribution in question, and *Inc* and *Con* refer to broad income and consumption respectively.<sup>44</sup> We also define  $X(-)$  as the mean outcome for the group defined in parentheses. We then calculate a difference-in-difference type measure:

$$[X(Con_{low}) - X(Con_{notlow})] - [X(Inc_{low}) - X(Inc_{notlow})]$$

This will be negative if being in the bottom decile group of reported consumption is a better indicator of poor outcomes than being in the bottom decile group of reported income.

We calculate this measure for ownership of various consumer durables (dishwasher, washing machine, central heating, computer, DVD player, access to the internet at home, a TV, subscription TV), having health insurance, owning one or more cars, owning their own house, and the number of rooms in the house. The measure of consumption used here does not include any spending on durables. This is to avoid the generation of mechanical relationships between the measure of consumption and ownership of durables. The measure of income we use is our broadest, ‘best’ measure of income.

The results are shown in Table 6. All but one of the statistics have a negative sign and are statistically significant; the exception is owning one’s own house. Tables 7 to 9 show the results of this analysis carried out on sub-groups defined (in turn) by family type, work status, and education group. A handful of estimates are positive for some measures for some family types, but the vast majority of the estimates are either negative and significant, or insignificantly different from zero. Although the LCFS provides a limited number of alternative measures of living standards, overall we conclude emphatically that having a low recorded consumption is a better guide to who has a low living standard than having a low reported income.

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<sup>44</sup> As discussed in section 3, our measure of income here includes the imputed rental value of owning a property or vehicle less the cash outlays on housing or vehicles. The same quantity is included in consumption as a measure of the consumption flow yielded from owning these durables.

## **4 Poverty and inequality risks and trends: do consumption and income tell different stories?**

In this section, we describe what different impressions we get about trends in the level and inequality of living standards in Great Britain, and about the characteristics associated with being a household with low standard of living, using five different measures: cash outlays (or expenditure), consumption, cash income, HBAI income, and broad income (all defined in Section 2).<sup>45</sup> As discussed in Section 3, all income and spending/consumption measures are equivalised for household structure using the modified OECD equivalence scale, and expressed in December 2009 prices using the RPI or variants thereof. We analyse data at the household level, and use the household weights supplied by the data (that gross up to the total household population), but multiplied by the number of people in the household.

### **4.1 Trends in income, expenditure and consumption for the whole population**

#### **Levels and growth of income and consumption across the distribution**

To get a broad overview of the differences in the 5 distributions, Table 10 reports, for a selection of years, the vingtiles and means of the 5 distributions (we report results for all 5 series in tables in Appendix B, and for the three main series – HBAI income, broad income and consumption – in figures). In all 4 years, mean broad income exceeds mean cash income, which in turn exceeds mean HBAI income; similarly, mean consumption exceeds mean cash outlays. That broad income (consumption) is higher than other forms of income (cash outlays) reflects that an imputed income (consumption) from housing has been included in the former, and that this source of income (consumption) has grown in importance over time. Broad income slightly exceeds consumption at the mean in 1979 and 1989, but considerably exceeds it in 1999 and 2009: this is driven by differences at the top of the distribution; at the bottom end of the distributions, consumption exceeds broad income in 1989, 1999 and 2009.

To probe these differing trends, Figures 19 to 22 show the 10<sup>th</sup> percentile, the median, the 90<sup>th</sup> percentile and the mean of our three main measures of income and consumption (Appendix

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<sup>45</sup> Data from Northern Ireland is not available consistently over time for all of the datasets that we use and so we exclude Northern Ireland from our analysis.

Tables B1 & B2 repeat these, and also include the 30<sup>th</sup> and 70<sup>th</sup> centiles).<sup>46</sup> At the 10<sup>th</sup> centile, HBAI income is broadly flat through the 1980s, rising only from the mid 1990s. Broad income and consumption, though, both of which impute consumption/income from housing, begin to grow in the mid 1980s. The three series show similar trends at the 50<sup>th</sup> (and 30<sup>th</sup>) centile, all moving broadly in line with the economic cycle, but broad income grew substantially more than HBAI income and consumption from the early 2000s. And the three series also show similar trends at the 70<sup>th</sup> and 90<sup>th</sup> centiles until the early 2000s; after this point, consumption falls slightly, and broad income and HBAI income rise. Indeed, the 90<sup>th</sup> centile of consumption in 2009 is just 1.6% higher than it was in 2002, whereas the 90<sup>th</sup> centile of broad income is 7.0% higher, and is clearly related to the declining coverage rate of spending, and the increasing saving rate implied by the household budget survey, both shown in Section 3.2.

### **Have trends in income and consumption been inequality increasing or reducing?**

Figure 23 shows growth incidence curves (GIC) over the period (using data pooled in 1978 to 1980, and 2007 to 2009) for the three main measures. Except for the bottom 5% and top 10%, broad income grew faster than HBAI income, largely reflecting the growing (over time) importance of imputed income from housing. It should be noted that this is **not** simply a direct result of the fact that rental prices have been increasing at a faster rate than economy-wide prices. It is certainly the case that the greater importance of rent in the broad income series relative to the HBAI income series (because of its importance in the imputation of housing) and the rise in the relative price of rent would, together, mean that the value of the former series would increase faster than the latter. However, we deflate values of broad income and consumption using a variant of the RPI that weights the change in the price of rent by the budget share of imputed rent. Unsurprisingly, prices measured using this variant of the RPI have risen faster than using the variant used to deflate HBAI income. This means that the faster growth of broad income relative to HBAI income across most of the income distribution cannot simply be due to the fact that rental prices rose faster than the conventional RPI: it must reflect a rise in the net housing assets owned by UK households.

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<sup>46</sup> Section 2.3 described how we used slightly different variants of the RPI to deflate the three series.

In the bottom 90% of the distribution, growth in all series looks to be inequality-increasing, but growth in consumption looks to be the least inequality-increasing. Growth in the two measures of income in the top 10<sup>th</sup> of the distribution also looks to be inequality-increasing.

Figures 24-26 show the GICs for the three sub-periods. In the first sub-period (1979-1988), inequality increased in all series, but by less in consumption thanks to much stronger growth rates at the bottom of the distribution than in the two income series. Broad income grew more quickly than HBAI income across most of the distribution. In the second sub-period (1988 - 1998), growth in the two income series was inequality-increasing other than at the very bottom, but growth in consumption shows no clear pattern. This is also the only sub-period where broad income grew more slowly than HBAI income across most of the distribution; consumption grew by less than income at the top of the distribution. In the third sub-period (1998 - 2008), the pattern growth is neither clearly inequality increasing nor decreasing, broad income grew by about 0.3 ppts faster than HBAI income across the distribution, but consumption grew by less (between 0.5 to 0.8 ppts) than the two income series across the whole distribution.

### **Summary measures of inequality, and measures of relative income poverty**

Figures 27 to 30 examine summary measures of inequality – the Gini coefficient, the 50:90 and 10:50 ratios, and a measure of relative income poverty (where an individual is considered to be in relative poverty if it lives in a household whose income is below 60% of the national median<sup>47</sup>) - using the three measures of household resources (Appendix Tables B3 to B7 show the same, plus the coefficient of variation, and the 10:90, plus standard errors, and the equivalent results for measures of cash income and cash outgoings). The Figures highlight, within each year, whether inequality in consumption or broad income is statistically-significantly different from inequality in HBAI income (with full results for these pairwise comparisons shown in Appendix Tables B9 to B11).

In 1978, there were few substantial differences in inequality in the three measures of household resources (consumption was slightly less equally distributed than HBAI and broad income according to the Gini and the 50:90 ratio, but slightly more equally distributed than HBAI and

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<sup>47</sup> We view this as a measure of inequality at the bottom. In any case, it exhibits very similar trends to the 50:10 ratio.

broad income according to 10:50 ratio). By 2009, though, HBAI and broad income were considerably (and statistically-significantly) less equally distributed than consumption. As previous studies have noted, the differing trends are most evident during the 1980s, where inequality in consumption grew by much less than inequality in HBAI and broad income. Similarly, relative poverty increased in all series throughout the 1980s and into the early 1990s, but grew the least if measured using consumption. Since then, relative poverty measured using the two income measures has fallen slightly, and has shown little trend measured using consumption measures.

Except for the 10:50 ratio, broad income is more equally distributed (and implies a lower relative poverty rate) than HBAI income in the most recent years, presumably indicating that income from housing is more equally distributed than HBAI income. In every year, relative poverty has been the lowest if measured using consumption, and relative poverty measured using consumption has been statistically-significantly lower than that using HBAI income in all but two years of our series.

On the assumption that the samples in each year are independent, one can easily assess the statistical significance of changes over time in inequality using a given measure of household resources using the information in Appendix Tables B3 to B12.<sup>48, 49</sup> We look at three questions, examining two statistics (the Gini coefficient, and the measure of relative poverty), focusing on the different impressions given by using the different measures of income or consumption.

First, how does inequality in the latest year of data compare with the past? Using the Gini coefficient as our measure of inequality, we would conclude that inequality in HBAI income (and broad income) in 2009 was statistically significantly higher than in 1978 to 1986 and 1995. But consumption tells a different story: inequality in consumption in 2009 was statistically significantly higher than only 1978, and statistically significantly lower than in 1986 to 1993,

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<sup>48</sup> Full calculations are available on request. In the most recent years, the EFS and LCFS have been based on calendar years, and so independence may be violated – depending on how the Office for National Statistics spread their sample throughout the country throughout the 12 months of sampling – for some comparisons of adjacent years.

<sup>49</sup> One theme is that the standard error of an estimate of the year-on-year difference in a measure of inequality is usually quite high – as the samples in each year are independent of each other – and certainly a lot higher than the standard error of the estimate of the difference, in a given year, in the measure of inequality between different measures of resources – where the samples are identical.

1996 to 2000, 2002 to 2003, and 2005 to 2006. Relative poverty in HBAI income in 2009 was statistically significantly higher than in 1978 to 1985 but lower than in 1988 to 1993 and than in 1996 to 2001; relative poverty in broad income tells a similar story, being statistically-significantly higher than in 1978 to 1986, but lower than in 1990 to 1993, 1995 to 1997, and 1999. But consumption tells a slightly different story: relative consumption poverty in 2009 was statistically significantly higher than in 1978, 1982 to 1983, and 1985 to 1986, and statistically significantly lower than in 1991 to 1992, 1995, 1997, 1999 to 2000.

Second, did inequality rise during the 1980s? Using the Gini coefficient, inequality in HBAI income in 1988 was statistically significantly higher than in 1978 to 1986, and in 1995, but was statistically significantly lower than it was in 1999; the same is true for inequality in broad income, but inequality in consumption in 1988 was statistically significantly higher than in 1978 to 1985, but also than in 1989, 1993 to 1995, 1997, 1999, 2001 to 2004 and 2009. Here, all measures of income and consumption confirm that inequality grew between the late 1970s and 1980s; but inequality in consumption then fell, whereas inequality in HBAI or broad income fell less convincingly. All three series give very similar impressions about whether relative poverty rose during the 1980s: relative poverty in 1990 using HBAI income, broad income or consumption is statistically-significantly higher than almost all the 11 years which preceded it. However, we get a different impression from the three series if we look forward from 1990: relative income poverty (using either measure) in 1990 was statistically-significantly higher than in almost all the years which succeeded it, but relative consumption poverty in 1990 is statistically-significantly higher than no year that succeeds it, and was statistically-significantly lower in 1990 than in 1997. 1990, then, was very clearly a peak for relative income poverty, but not for relative consumption poverty.

Third, what happened to inequality between 1997 and 2009, broadly the period corresponding to the previous Labour government in the UK. Again using the Gini coefficient, inequality in HBAI income (and broad income) in 1997 was statistically-significantly lower than in 1999 – so there was a period where inequality rose – but is statistically-insignificantly different from inequality in every other year. Inequality in consumption in 1997 is statistically-significantly lower than in 2005, but statistically-significantly lower than in 2009. Accordingly, we could conclude that inequality fell if we looked at consumption, but would not be able to detect a statistically-

significant change using either measure of income. However, all three measures tell a similar story of relative poverty being lower in 2009 than in 1997 (indeed, relative poverty in HBAI income, broad income and consumption in 1997 was statistically-significantly higher than in most of the years since 2000).

## **4.2 Who is most at risk of having low living standards?**

Given the mismatch between income and consumption amongst households at the bottom of the income distribution shown in Section 4, and the different trends in inequality of consumption and income, it is possible that our assessment of the relative living standards of different sub- groups, and the composition of households with low levels of living standards in some general sense, will differ according to how these are proxied.<sup>50</sup> We investigate this thoroughly in this section, focusing on three sub-groups: children, working-age adults and pensioners (albeit using a framework which assigns the same level of living standards to all members of a given household); this is a common approach in policy debate about living standards in the UK. We then break down some of the analysis by age and cohort. Finally, we compare the risk factors for having a low income and having a low consumption.

### **Levels and growth of income and consumption across the distribution by sub-group**

Figure 31 show a variant to Figure 23 – the average annual growth rates for each centile point of the distribution – separately for children, working-age adults, and pensioners. In general, the patterns of growth are very similar for children and working-age adults, but very different for pensioners. For children and working-age adults, the measures clearly suggest increasing inequality over almost all of the income distribution. For children, growth at the bottom is higher in HBAI income than in broad income, but from the 40<sup>th</sup> centile, there is little difference between the growth rates of the two measures of income. But the two measures of income show faster growth rates than consumption over almost all the distribution. For working-age adults, there is little difference in growth rates of the two measures of income. Consumption grows faster than income at the bottom, but slower than income from about the 25<sup>th</sup> centile. For pensioners, growth

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<sup>50</sup> This issue is not examined by MS, perhaps because their earlier work focuses on lone mothers with low levels of education, but it is examined in detail in chapters 8 and 9 of Brewer, O’Dea, Paull and Sibieta (2009) for households with children.

in consumption is consistent with (slightly) declining inequality, and growth in the other series suggests no clear change in inequality. Growth in broad income exceeds growth in HBAI income by between 0.6 ppt and 1 ppt a year across the income distribution. Consumption grows at roughly the same speed as broad income, although with a different pattern across the distribution.

### **Relative poverty by sub-group**

Figure 32 to 34 show trends in a measure of relative poverty separately for children, working-age adults, and pensioners (an individual is considered to be in relative poverty if it lives in a household whose income is below 60% of the whole-population median).<sup>51</sup> Again, they show that, in general, changes in relative poverty are quite different for pensioners compared with for children and working-age adults. For pensioners, poverty fluctuated wildly (and pro-cyclically, falling in the recession and rising in the boom) in the 1980s, but has clearly been on a downward trend since. For children and working-age adults, relative poverty also grew throughout the 1980s, but there is no convincing sign that it fell in the 1990s, or, for working-age adults, that it fell in the 2000s either. Amongst children, relative poverty increased in all series throughout the 1980s and into the mid to late 1990s. Since then, relative poverty measured using the income measures has fallen slightly, and has shown little trend measured using consumption measure. In every year, relative poverty has been lower if measured using consumption than using either of the two measures of income. Amongst working-age adults, relative poverty increased in all series throughout the 1980s, but grew more if measured using income than consumption. Since 1990, relative poverty seems to have changed little if measured using income, and risen slightly if measured using consumption, but, in both cases, shows considerably volatility. In every year, relative poverty has been the lowest if measured using consumption. Amongst pensioners, relative poverty had a cyclical pattern with little trend throughout the 1980s and 1990s. Since 1990, relative poverty has been on a downward trend (although the slope varies across the measures), with a small cyclical response to the mini-boom in the late 1990s. At the start of the period, all measures given similar impressions of the extent of relative pensioner poverty, but the series have since diverged so that poverty rates vary striking across the measures; since 1987,

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<sup>51</sup> We have not yet tested the statistical significance of the differences, within a given year, of measures of relative poverty based on the different measures of household resources.



poverty is the highest according to HBAI income, and the lowest under a broad measure of income.

### **Composition of the bottom decile group**

Figures 35 to 37 show the changing composition of the bottom decile group (classifying individuals into children, working-age adults, and pensioners) according to the three measures of household resources.<sup>52</sup> All three measures of household resources show similar trends: the fraction of the bottom decile group who are children has remained broadly constant (with a small rise in the early 1990s and a small fall in the late 1990s or early 2000s), the fraction of the bottom decile group who are working-age adults has increased, and the fraction who are pensioners has fallen (this is the least clear for HBAI income). But the series can give quite different impressions on the composition of the bottom decile group: for example, the fraction of the poorest tenth who are pensioners in 2008 was just 6% if assessed using broad income, 21% using HBAI income and 15% using consumption. The series suggest that children comprise from 33% (HBAI income), 32% (broad income) to 23% (consumption) of the bottom decile group. The fraction who are working-age adults lies between 62% (broad income) and 52% (consumption).

It is clear, then, that the extent to which having a low standard of living is skewed to the young or the old, and trends in the incidence of low living standards for the young and the old, both change when we use consumption, rather than income, to assess living standards. Figures 38 to 39 show the risk of falling into the bottom decile group by age separately for HBAI income, broad income and consumption, and using data from 1978 – 1982 and 2003 – 2009. In 1978-1982, the relation between an individual's age and the risk of a (relatively) low living standard was almost identical when assessed with HBAI income, broad income or consumption: all three measures suggest a U-shaped profile, with the risk of a low living standard reaching a low point for those aged around 50, and then rising sharply for older individuals. By the latest year of data, this U-shaped profile had become one that increases monotonically with an individual's age if considering HBAI income, one that decreases monotonically with an individual's age if

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<sup>52</sup> We have not tested for the statistical significance of any changes over time (for a given measures of resources), nor differences between the three sub-groups (within a given year), nor differences between the three measures of resources (within a given year).

considering broad income, and one that is still U-shaped, but with a turning point at age 60, and a much less rapid rise in the risk of a low living standards as we consider older individuals if we consider consumption.

Finally, we can consider “true” age profiles for successive pseudo-cohorts, as shown in Figures 40 to 42. Using HBAI income, we could conclude that the risk of a (relatively) low living standard falls through working life until around age 45-55, and then rises, and we would conclude that this holds true for all cohorts. When looking at broad income, although the risk of a (relatively) low living standard generally falls through working life, it is less clear that age 45-55 marks a turning point: the risk of falling into the bottom decile does rise slightly as individuals age from 50 to 60, but it then falls at some point thereafter. There are also considerable differences between the age profiles of the older cohorts, with each successive cohort of adults aged (say) 65 being less likely to be in the bottom decile group than their predecessors. And we get another different picture when using consumption to measure living standards. First, the age profile is moderately S-shaped, with the risk of a (relatively) low living standard rising as individuals age from 20 to 30, falling as they age from 30 to 50, and then rising (or remaining constant). Second, we again see differences between cohorts mostly for the older cohorts, with each successive cohort of adults aged 65 being less likely to be in the bottom decile group than their predecessors.

One small puzzle is why the risk of having a low living standard tends to rise with age for those aged over 60 when measured using consumption, but falls with age when measured using broad income.<sup>53</sup> Figure 43, taken from Crossley and O’Dea (2010), partially addresses this: it shows the median saving rate by age implied by the same LCFS data as we analyse here.<sup>54</sup> The savings rates implied by LCFS rise strongly with age for those aged over 60; equivalently, many elderly households report cash spending levels considerably lower than their cash income. This seems counter-intuitive (at least if one has in mind a simple lifecycle model of asset accumulation and decumulation). Finch and Kemp (2006), analysing the same data that we use, concluded that

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<sup>53</sup> This is the case for the true age profiles produced with pseudo-cohorts in Figure 40 to 42 as well as for the profile produced using the most recent data showing the risk of a low living standard for individuals of different ages in Figure 39.

<sup>54</sup> For each household, the savings rate is calculated as cash income less cash expenditure divided by cash income. See Section 6 for more discussion.

“although the evidence has been far from conclusive, low spending amongst pensioner households appears to reflect an inter-related set of factors associated with increasing frailty and declining mobility, leading to reducing social participation and contracting social networks.” Put more crudely, they found no evidence that the data was under-recording spending, and attributed the low levels of spending to a declining ability (or need) to spend money as older people’s health deteriorated. Using qualitative research, Dominy and Kempson (2006) found considerable evidence of saving going on amongst the elderly, much of which would probably be considered as precautionary saving for unexpected, lumpy items of spending. In the absence of high-quality longitudinal data on household wealth, more research is needed before we can conclude whether the LCFS is offering a correct impression of the savings behaviour of the elderly, and if so, what economic explanation lies behind it. Until, we need to be mindful that broad income and consumption do give differing impressions of the living standards of the elderly in ways which may be different from conventionally assumed.

**When are the risk factors for having a low living standard statistically-significant between measures of living standard?**

Table 11 reports results from logit models (using pooled data from 2006 to 2009) of whether a household is in the bottom decile group separately for broad income and consumption. The models use a range of household demographic characteristics as explanatory factors, and are estimated separately for single adult and couple families to allow us to control more cleanly for employment status and number of workers. The Table also reports the results of a test of whether the risk factors are significantly different when using broad income and consumption to define the bottom decile group.<sup>55</sup>

Amongst single adults (with or without children), almost all the odds ratios are significantly different for income and consumption. The risk of being in the bottom decile group of consumption shows a steeper gradient in the number of children, and in years of full-time education, compared with the risk of being in the bottom decile group of income. There is one

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<sup>55</sup> A test of the equality of coefficients from two different logit equations is nonsensical as the magnitude of the coefficient in a logit are not identified and therefore subject to arbitrary scale normalisation which can be different across equations (see, for example, Mroz and Zayats (2008)). Our test, rather, is a test of the significance of the difference of marginal effects.

factor – having a self-employed head of household – where the sign of the underlying coefficient changes: compared with having a non-working head of household, having a self-employed head of household increases the risk of being in the bottom decile group of income but reduces the risk of being in the bottom decile group of consumption. The estimated implied age profile reported in Table 11 matches the raw data shown in Figures 39: for broad income, the risk of being in the bottom decile group falls monotonically with an individual’s age, whereas it bottoms out for individuals in their 60s when considering consumption. The right-hand panel of Table 11 reports a similar story for those in two adult families. In summary, in the most recent years of data, broad income and consumption give statistically-significantly- and substantively-different impressions of whether older individuals are worse off than their younger peers, whether those with large families are worse off than those with small families, and whether the self-employed are worse off than others.

## **5 Summary and conclusions**

The extent to which having a low income identifies households with low material living standards has been documented thoroughly in the US, particularly by Bruce Meyer and James Sullivan, but is particularly pertinent in the UK, as there are four statutory measures of child poverty against which the United Kingdom government of the day has to report progress annually (and, ideally, “eradicate” by 2020-21; see Brewer et al (2011)), all of which define “poverty” in terms of a low household income. Similar targets exist at the level of the European Union and it is clear that these policy-makers do pay attention to these targets.

This paper has done four things. First, it documented thoroughly the mis-match in the UK’s budget survey between reported income and reported spending for households with low resources, and presented evidence suggesting this is more likely due to under-recording of income than either of over-recording of spending or consumption-smoothing. Second, although there is a high (and growing) under-recording of expenditures in the main UK expenditure survey, the evidence suggests that spending reported by low-spenders is more likely to be accurately recorded than that of high-spenders, giving us confidence that consumption is a good indicator of the living standards of those with low resources; this is backed up with evidence that consumption is a better metric than income to use when identifying which households have a low

level of resources. Third, we described what different impressions we get about trends in the level and inequality of living standards in Great Britain when we use consumption, rather than the semi-official measure of “net disposable income” (near-cash income), and when we use an augmented measure of income which includes imputed income from housing. Fourth, we described what different impressions we get about the composition of household with low living standards if we identify such with consumption, rather than income.

We find that adding the imputed income or consumption from housing to our measure of household resources makes a substantial difference to average annual growth rates in living standards, even after an appropriate correction to the price deflator, and particular so for elderly households. Inequality and relative poverty grew less rapidly when measured with consumption, partly because consumption at the bottom grew more strongly than income in the 1980s, and because consumption at the top grew less strongly than income in the 1990 and 2000s. In recent years (but not in 1978 and the early 1980s), the relative position of elderly households in the distribution of living standards improves markedly if we assess living standards by consumption or (especially) broad income, compared to the usual measure of near-cash income. There are clear cohort effects amongst the elderly when considering broad income and consumption, with each successive cohort of adults aged 65 being less likely to be in the bottom decile group of living standards than their predecessors, but these are not present when considering HBAI income. In the most recent data, broad income and consumption give statistically-significantly- and substantively- different impressions of whether older individuals are worse off than their younger peers, whether those with large families are worse off than those with small families, and whether the self-employed are worse off than others.

What should policy makers do? The finding which we would stress the most is that one comes to substantively different (and, we would argue, more insightful) conclusions about whether the old are better off than the young, or whether more recent cohorts are better off than older cohorts, when one values the income or consumption from housing; this is due to the increase in the household sector’s net ownership of housing, and the strong age- and cohort- trends in home ownership. We therefore recommend that official measures of the relative living standards, or of inequality or relative poverty in the UK, should take account of the value of housing, either by imputing the income stream or consumption flow. This in turn may require the UK statistical

authority and other organisations to collect better information about the quality – and, ideally, value – of housing in UK household surveys. And this should be informed by further consideration of how one should value housing (in welfare terms) given the existence of large financial and, arguably, psychological transaction costs to moving house.

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## Tables

**Table 1. Comparing income distributions in LCFS and FRS, 1994-2009**

	5th	15th	25th	35th	45th	55th	65th	75th	85th	95th	mean	Gini
LCFS												
1994	136	179	217	257	302	349	403	471	573	814	383	0.3200
1995	143	187	226	267	314	357	416	491	594	842	395	0.3140
1996	146	188	225	270	323	371	429	504	622	897	412	0.3270
1997	147	193	236	281	329	383	449	533	643	909	428	0.3310
1998	145	195	234	281	332	382	448	530	644	952	437	0.3450
1999	153	204	248	299	353	411	478	560	696	1016	467	0.3500
2000	153	213	258	303	357	414	481	566	687	994	463	0.3340
2001	164	229	279	333	391	451	521	611	747	1078	511	0.3460
2002	178	238	286	340	399	462	534	623	761	1050	510	0.3260
2003	180	243	294	344	401	457	521	607	737	1058	519	0.3360
2004	182	247	303	354	408	467	536	626	763	1110	525	0.3260
2005	174	248	298	350	404	470	543	635	779	1141	528	0.3340
2006	174	241	292	342	400	463	546	642	786	1164	532	0.3440
2007	176	248	302	356	410	470	535	628	779	1143	558	0.3650
2008	172	241	291	346	401	461	531	628	772	1131	523	0.3370
2009	182	254	308	356	414	472	546	648	802	1177	542	0.3350
FRS												
1994	137	181	216	255	299	350	408	477	578	825	390	0.3326
1995	137	184	218	256	300	349	405	474	586	836	392	0.3332
1996	140	186	224	266	312	363	421	493	600	853	405	0.3333
1997	139	189	228	271	320	369	428	503	611	872	416	0.3405
1998	142	192	232	276	324	377	440	518	632	921	430	0.3484
1999	144	199	239	283	333	386	448	529	641	932	439	0.3461
2000	147	208	250	295	345	399	460	544	664	963	458	0.3529
2001	158	219	263	312	363	417	479	562	693	1003	479	0.3486
2002	158	224	269	318	369	426	490	571	697	1019	485	0.3458
2003	157	225	272	319	370	425	492	575	699	1012	483	0.3414
2004	161	231	276	324	374	427	494	578	705	1028	490	0.3416
2005	158	231	278	324	375	434	500	586	714	1053	496	0.3468
2006	152	228	278	327	379	434	499	588	719	1051	500	0.3526
2007	151	227	278	327	378	437	503	590	724	1077	506	0.3589
2008	152	230	282	331	384	440	510	596	738	1082	511	0.3576
2009	160	238	288	335	385	443	513	599	736	1104	519	0.3581

Notes. LCFS = Expenditure and Food Survey and Living Cost and Food Survey. FRS= Family Resources Survey. All equivalised for household size and expressed in December 2009 prices. See text for other details.

**Table 2. Proportion of employees aged 23 and over reporting implied hourly earnings below the national minimum wage**

	<b>Coverage</b>
<b>2001</b>	5.9
<b>2002</b>	6.8
<b>2003</b>	6.7
<b>2004</b>	8.0
<b>2005</b>	7.0
<b>2006</b>	8.5
<b>2007</b>	8.6
<b>2008</b>	8.8
<b>2009</b>	10.5

Source: Authors' calculation from LCFS what year. Implied hourly earnings calculated by usual gross pay/usual hours.

**Table 3. Coverage in LCFS of spend on cash benefit programmes**

	<b>Coverage</b>	<b>Spend (£m/yr)</b>
<b>Retirement pension</b>	95%	66,480
<b>“Other”</b>	52%	27,970
<b>Working and child tax credits</b>	50%	21,270
<b>Rent rebates and allowances</b>	83%	18,930
<b>Income support &amp; pension credit</b>	68%	16,580
<b>Child benefit</b>	96%	11,880
<b>Incapacity benefit</b>	74%	6,670
<b>Maternity/Statutory maternity pay</b>	119%	1,900
<b>Jobseekers allowance</b>	80%	1,200
<b>War pensions</b>	33%	1,020
<b>Student support</b>	236%	970

Source: Authors' calculation using Tables 13 and 14 of Barnard (2011).

**Table 4. Budget shares by decile group of household expenditure, 2008**

<b>Decile group of household expenditure</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>Food</b>	0.252	0.192	0.179	0.165	0.140	0.126	0.114	0.102	0.087	0.057
<b>Catering</b>	0.043	0.047	0.049	0.049	0.054	0.057	0.056	0.051	0.050	0.042
<b>Alcohol</b>	0.025	0.026	0.028	0.033	0.032	0.031	0.031	0.033	0.032	0.024
<b>Tobacco</b>	0.028	0.021	0.019	0.017	0.017	0.011	0.010	0.006	0.005	0.004
<b>Clothing</b>	0.033	0.035	0.041	0.038	0.047	0.043	0.048	0.050	0.046	0.042
<b>Domestic fuel</b>	0.111	0.085	0.068	0.060	0.052	0.047	0.043	0.037	0.033	0.023
<b>Household services</b>	0.015	0.019	0.026	0.023	0.026	0.025	0.029	0.035	0.033	0.044
<b>Furniture and furnishings</b>	0.019	0.024	0.019	0.021	0.024	0.032	0.031	0.035	0.043	0.058
<b>Other household equipment</b>	0.034	0.027	0.030	0.030	0.026	0.030	0.031	0.028	0.028	0.032
<b>Petcare</b>	0.007	0.006	0.007	0.011	0.010	0.007	0.008	0.006	0.006	0.006
<b>Postage</b>	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
<b>Phone services</b>	0.048	0.037	0.036	0.029	0.029	0.027	0.025	0.023	0.020	0.014
<b>Personal goods</b>	0.025	0.025	0.024	0.026	0.025	0.027	0.029	0.028	0.025	0.026
<b>Personal services</b>	0.007	0.007	0.008	0.008	0.010	0.011	0.011	0.014	0.013	0.013
<b>Vehicle purchases</b>	0.004	0.010	0.017	0.022	0.032	0.039	0.045	0.051	0.055	0.064
<b>Vehicle running costs</b>	0.025	0.049	0.062	0.071	0.078	0.075	0.082	0.076	0.073	0.056
<b>Public transport</b>	0.017	0.020	0.022	0.019	0.021	0.024	0.022	0.023	0.029	0.063
<b>Durable leisure goods (audio-vision equipment)</b>	0.005	0.005	0.005	0.004	0.005	0.012	0.011	0.012	0.013	0.014
<b>Other leisure goods</b>	0.029	0.032	0.034	0.033	0.030	0.030	0.027	0.034	0.027	0.030
<b>Other</b>	0.218	0.279	0.274	0.280	0.274	0.281	0.278	0.274	0.294	0.276

Source: LCFS, 2008. The denominator is a measure of expenditure representing spending on the items included in the basket of goods and services used in the derivation of the Retail Prices Index.

**Table 5. Budget shares of “best three” (food, domestic fuel and motoring) by decile group of household expenditure**

	1	2	3	4	5	6	7	8	9	10
1977	0.510	0.467	0.433	0.403	0.387	0.363	0.343	0.339	0.305	0.222
1978	0.502	0.448	0.415	0.396	0.362	0.348	0.329	0.311	0.281	0.209
1979	0.497	0.436	0.404	0.374	0.352	0.329	0.317	0.297	0.272	0.194
1980	0.488	0.422	0.404	0.370	0.356	0.333	0.318	0.291	0.273	0.195
1981	0.470	0.429	0.401	0.376	0.360	0.346	0.316	0.305	0.272	0.197
1982	0.473	0.422	0.389	0.367	0.357	0.343	0.315	0.298	0.268	0.191
1983	0.533	0.453	0.406	0.375	0.349	0.329	0.305	0.297	0.266	0.199
1984	0.533	0.449	0.395	0.365	0.346	0.328	0.306	0.280	0.261	0.187
1985	0.526	0.437	0.397	0.365	0.341	0.319	0.294	0.279	0.242	0.178
1986	0.513	0.433	0.378	0.342	0.315	0.298	0.276	0.256	0.231	0.152
1987	0.507	0.407	0.369	0.335	0.313	0.293	0.269	0.246	0.217	0.152
1988	0.473	0.402	0.356	0.326	0.303	0.275	0.261	0.234	0.204	0.131
1989	0.465	0.382	0.337	0.311	0.283	0.266	0.255	0.224	0.189	0.130
1990	0.456	0.376	0.341	0.298	0.278	0.259	0.245	0.222	0.193	0.137
1991	0.454	0.379	0.344	0.303	0.290	0.267	0.252	0.225	0.200	0.138
1992	0.446	0.376	0.331	0.305	0.285	0.261	0.240	0.224	0.192	0.127
1993	0.451	0.374	0.337	0.302	0.285	0.270	0.250	0.240	0.207	0.151
1994	0.447	0.369	0.338	0.307	0.293	0.270	0.243	0.225	0.198	0.142
1995	0.443	0.376	0.333	0.311	0.292	0.272	0.247	0.229	0.201	0.147
1996	0.435	0.368	0.330	0.314	0.283	0.267	0.251	0.221	0.207	0.149
1997	0.412	0.352	0.306	0.292	0.267	0.260	0.231	0.211	0.192	0.137
1998	0.410	0.343	0.313	0.288	0.261	0.241	0.227	0.202	0.183	0.128
1999	0.391	0.327	0.297	0.272	0.258	0.232	0.220	0.208	0.178	0.126
2000	0.386	0.321	0.282	0.264	0.247	0.232	0.223	0.200	0.172	0.123
2001	0.363	0.316	0.286	0.262	0.247	0.223	0.202	0.192	0.167	0.119
2002	0.369	0.317	0.279	0.264	0.237	0.218	0.202	0.185	0.169	0.123
2003	0.366	0.306	0.277	0.249	0.248	0.224	0.193	0.189	0.164	0.118
2004	0.361	0.299	0.273	0.251	0.236	0.218	0.205	0.191	0.166	0.123
2005	0.360	0.317	0.281	0.251	0.242	0.231	0.212	0.190	0.171	0.126
2006	0.374	0.299	0.286	0.265	0.252	0.240	0.210	0.201	0.180	0.124
2007	0.370	0.312	0.287	0.266	0.261	0.239	0.221	0.206	0.185	0.125
2008	0.387	0.326	0.309	0.296	0.270	0.248	0.239	0.215	0.193	0.136
2009	0.387	0.334	0.308	0.300	0.274	0.257	0.234	0.229	0.191	0.146

Source: LCFS, various years. The denominator is a measure of expenditure representing spending on the items included in the basket of goods and services used in the derivation of the Retail Prices Index.

**Table 6. The relationship between low consumption, low income and other outcomes, all households**

	(1) X(Inc <sub>low</sub> )	(2) X(Inc <sub>notlow</sub> )	(3) (1)-(2)	(4) X(Con <sub>low</sub> )	(5) X(Con <sub>notlow</sub> )	(6) (4)-(5)	(7) (6)-(3)	N
Wsh. Mch.	0.92	0.96	-0.04	0.84	0.96	-0.12	-0.083***	52,796
Cent. Heat.	0.92	0.94	-0.03	0.89	0.95	-0.06	-0.030***	52,796
Dishwash.	0.20	0.36	-0.16	0.06	0.37	-0.31	-0.151***	52,796
DVD	0.59	0.61	-0.03	0.42	0.63	-0.22	-0.189***	52,796
TV	0.98	0.99	-0.01	0.98	0.99	-0.01	0.002	52,796
Pay TV	0.30	0.39	-0.09	0.18	0.40	-0.22	-0.134***	52,796
PC	0.54	0.64	-0.10	0.24	0.68	-0.44	-0.335***	52,796
Internet	0.41	0.56	-0.15	0.15	0.59	-0.44	-0.286***	52,796
Car	0.53	0.78	-0.25	0.24	0.82	-0.57	-0.321***	52,796
Two cars	0.14	0.33	-0.19	0.02	0.34	-0.32	-0.130***	52,796
Own hse.	0.37	0.74	-0.38	0.32	0.75	-0.43	-0.055***	52,796
No. rooms	4.97	5.38	-0.41	4.50	5.44	-0.94	-0.528***	52,796
Health ins.	0.05	0.13	-0.08	0.02	0.13	-0.12	-0.036***	52,796

Data: authors' calculation using Expenditure and Food Survey/Living Costs and Food Survey 2001/02- 2009  
Notes: \*\*\* indicates significant at the 1% level, \*\* indicates significant at the 5% level, \* indicates significant at the 10% level. Confidence intervals are calculated by bootstrapping with 999 replications.

**Table 7. The relationship between low consumption, low income and other outcomes, non-pensioner households**

	Single male	Single female	Lone Parent	Couple, no kids	Couple, kids
Wsh. Mch.	-0.114***	-0.041**	-0.021***	-0.027*	-0.01
Cent. Heat.	-0.039**	-0.01	0.00	-0.025*	-0.036***
Dishwash.	-0.106***	-0.072***	-0.110***	-0.172***	-0.135***
DVD	-0.123***	-0.077**	-0.064***	-0.098***	-0.02
TV	-0.022*	0.019*	-0.01	0.01	0.00
Pay TV	-0.100***	-0.048**	-0.055***	-0.116***	-0.062**
PC	-0.262***	-0.268***	-0.174***	-0.307***	-0.156***
Internet	-0.253***	-0.223***	-0.171***	-0.271***	-0.159***
Car	-0.325***	-0.232***	-0.194***	-0.328***	-0.295***
Two cars	-0.060***	-0.025***	-0.021***	-0.254***	-0.190***
Own hse.	-0.226***	-0.141***	-0.134***	-0.224***	-0.200***
No. rooms	-0.601***	-0.144**	-0.355***	-0.467***	-0.385***
Health ins.	-0.044***	-0.027**	-0.011**	-0.081***	-0.055***
N	4,188	2,957	3,436	9,675	10,478

Data: authors' calculation using Expenditure and Food Survey/Living Costs and Food Survey 2001/02- 2009  
Notes: \*\*\* indicates significant at the 1% level, \*\* indicates significant at the 5% level, \* indicates significant at the 10% level. Confidence intervals are calculated by bootstrapping with 999 replications.

**Table 8. The relationship between low consumption, low income and other outcomes, pensioner households**

	<b>Pensioner Single male</b>	<b>Pensioner, Single female</b>	<b>Pensioner couple</b>
<b>Wsh. Mch.</b>	-0.02	-0.049**	-0.025**
<b>Cent. Heat.</b>	-0.03	-0.006	-0.029*
<b>Dishwash.</b>	-0.142***	-0.132***	-0.164***
<b>DVD</b>	-0.093**	-0.073***	-0.033
<b>TV</b>	-0.01	0.001	-0.001
<b>Pay TV</b>	-0.048*	-0.038**	-0.048*
<b>PC</b>	-0.195***	-0.122***	-0.160***
<b>Internet</b>	-0.147***	-0.096***	-0.175***
<b>Car</b>	-0.264***	-0.257***	-0.313***
<b>Two cars</b>	-0.042**	-0.006***	-0.154***
<b>Own hse.</b>	0.02	-0.066**	0.001
<b>No. rooms</b>	-0.283**	-0.342***	-0.342***
<b>Health ins.</b>	-0.056***	-0.042***	-0.029**
<b>N</b>	2,799	5,859	6,449

Data: authors' calculation using Expenditure and Food Survey/Living Costs and Food Survey 2001/02- 2009

Notes: \*\*\* indicates significant at the 1% level, \*\* indicates significant at the 5% level, \* indicates significant at the 10% level. Confidence intervals are calculated by bootstrapping with 999 replications.

**Table 9. The relationship between low consumption, low income and other outcomes by education and workstatus**

	<b>Age left full-time education</b>			<b>Employment status</b>		
	<b>&lt;=16</b>	<b>17/18</b>	<b>19+</b>	<b>Employed</b>	<b>Self- employed</b>	<b>Workless</b>
<b>Wsh. Mch.</b>	-0.087***	-0.075***	-0.055***	-0.057***	0.00	-0.084***
<b>Cent. Heat.</b>	-0.033***	-0.027*	0.00	-0.037***	-0.076**	-0.025***
<b>Dishwash.</b>	-0.144***	-0.166***	-0.145***	-0.105***	-0.238***	-0.133***
<b>DVD</b>	-0.199***	-0.121***	-0.135***	-0.093***	-0.089*	-0.173***
<b>TV</b>	-0.007***	0.00	0.01	-0.01	0.01	0.00
<b>Pay TV</b>	-0.145***	-0.129***	-0.077***	-0.088***	-0.175***	-0.103***
<b>PC</b>	-0.293***	-0.311***	-0.275***	-0.214***	-0.244***	-0.278***
<b>Internet</b>	-0.244***	-0.294***	-0.292***	-0.192***	-0.311***	-0.226***
<b>Car</b>	-0.326***	-0.346***	-0.277***	-0.258***	-0.224***	-0.276***
<b>Two cars</b>	-0.124***	-0.129***	-0.167***	-0.118***	-0.226***	-0.063***
<b>Own hse.</b>	-0.077***	-0.143***	-0.100***	-0.062***	-0.06	-0.029**
<b>No. rooms</b>	-0.509***	-0.694***	-0.508***	-0.368***	-0.285**	-0.468***
<b>Health ins.</b>	-0.034***	-0.030**	-0.065***	-0.041***	-0.092***	-0.023***
<b>N</b>	31,833	8,532	10,087	29,204	6,031	17,561

Data: authors' calculation using Expenditure and Food Survey/Living Costs and Food Survey 2001/02- 2009

Notes: \*\*\* indicates significant at the 1% level, \*\* indicates significant at the 5% level, \* indicates significant at the 10% level. Confidence intervals are calculated by bootstrapping with 999 replications.



**Table 10. Vingtiles of HBAI income, broad income and consumption, selected years**

		5 <sup>th</sup>	10 <sup>th</sup>	15 <sup>th</sup>	20 <sup>th</sup>	25 <sup>th</sup>	30 <sup>th</sup>	35 <sup>th</sup>	40 <sup>th</sup>	45 <sup>th</sup>	50 <sup>th</sup>	55 <sup>th</sup>	60 <sup>th</sup>	65 <sup>th</sup>	70 <sup>th</sup>	75 <sup>th</sup>	80 <sup>th</sup>	85 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	mean
<b>1979</b>	<b>HBAI income</b>	125	143	158	173	187	201	215	229	242	256	272	289	307	328	351	376	407	446	513	282
	<b>Broad income</b>	144	162	179	195	212	228	241	257	272	288	306	323	342	365	390	419	455	502	582	316
	<b>Consumption</b>	127	150	168	185	198	211	225	237	250	265	281	299	318	336	360	390	429	482	600	303
	<b>Cash income</b>	129	149	164	182	198	213	231	244	260	275	292	312	331	355	380	407	438	483	566	303
	<b>Cash outlays</b>	113	136	153	170	184	199	213	226	242	259	274	293	312	335	360	394	434	502	614	298
<b>1989</b>	<b>HBAI income</b>	125	147	165	183	202	223	247	269	290	313	335	361	390	419	458	499	548	620	751	364
	<b>Broad income</b>	140	175	199	223	244	265	289	309	332	355	378	406	436	467	506	553	615	685	833	407
	<b>Consumption</b>	161	187	210	230	252	268	286	304	322	342	364	389	414	445	482	523	580	662	810	400
	<b>Cash income</b>	118	137	161	189	215	241	267	290	312	334	361	388	419	451	486	530	586	669	800	386
	<b>Cash outlays</b>	117	144	171	195	218	239	259	282	304	325	350	376	406	440	481	529	596	690	872	393
<b>1999</b>	<b>HBAI income</b>	153	183	204	226	248	273	299	325	353	382	411	443	478	515	560	619	696	792	1016	467
	<b>Broad income</b>	161	204	232	261	286	316	342	371	398	429	458	490	525	565	616	675	754	852	1058	510
	<b>Consumption</b>	179	213	242	268	292	316	336	360	385	411	435	462	493	527	567	612	678	764	950	466
	<b>Cash income</b>	126	149	188	219	249	279	307	337	367	398	428	462	499	535	584	646	722	830	1061	480
	<b>Cash outlays</b>	122	155	184	216	245	273	304	331	358	387	415	443	474	513	557	613	683	789	985	448
<b>2009</b>	<b>HBAI income</b>	182	225	254	280	308	333	356	385	414	444	472	505	546	594	648	713	802	926	1177	542
	<b>Broad income</b>	198	255	295	331	364	392	421	454	487	520	551	585	626	675	730	806	900	1010	1324	611
	<b>Consumption</b>	203	239	269	295	320	341	364	385	408	434	463	493	522	561	596	647	720	815	980	496
	<b>Cash income</b>	159	200	233	270	305	336	363	396	428	463	492	528	570	620	676	748	840	963	1230	556
	<b>Cash outlays</b>	139	176	211	240	264	291	315	342	366	394	422	454	490	529	574	629	697	800	991	459

Notes. Authors' calculations using LCFS, various years. All equivalised for household size and expressed in December 2009 prices. See text for details

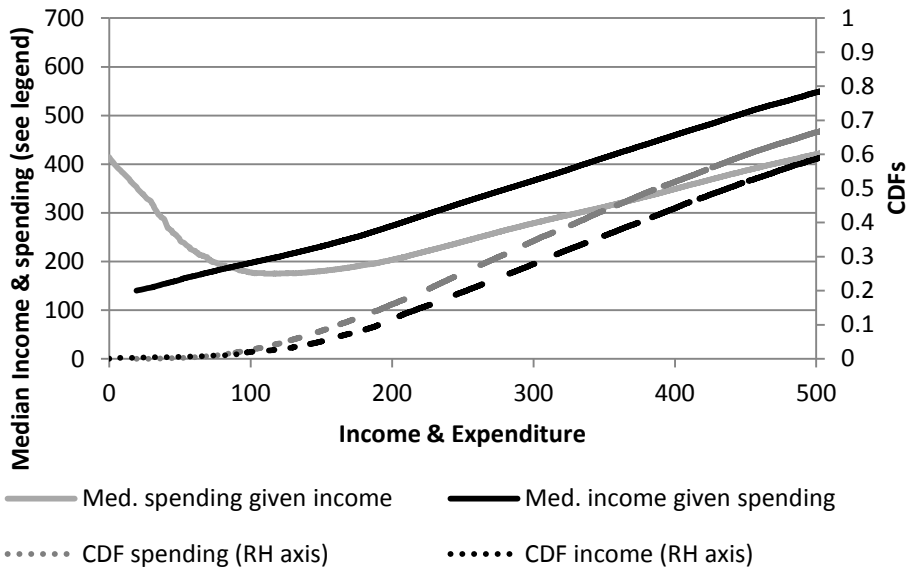
**Table 11. Risk factors for having low income and low consumption**

	Singles			Couples		
	(1) In bottom income decile group	(2) In bottom cons'n decile group	(3) (1)/(2)	(4) In bottom income decile group	(5) In bottom cons'n decile group	(6) (1)/(2)
One in work (rel. none)	0.40***	0.37***	1.09	0.50***	0.42***	1.19
Two in work (rel. none)	-	-	-	0.12***	0.13***	0.92
One child (rel. none)	1.23**	1.55***	0.79	1.12	1.84***	0.61***
Two children (rel. none)	1.57***	2.14***	0.73**	1.05	2.15***	0.49***
Three+ children (rel. none)	1.84***	3.18***	0.58***	1.41***	3.07***	0.46***
Female (rel. male)	0.83***	0.70***	1.19***	-	-	-
Self-emp. (rel. not)	1.48***	0.71***	2.09***	1.28***	0.72***	1.78***
Age 30s (rel. 20s)	0.66***	0.62***	1.07	0.58***	0.43***	1.34**
Age 40s (rel. 20s)	0.62***	0.54***	1.14	0.51***	0.31***	1.62***
Age 50s (rel. 20s)	0.62***	0.50***	1.26	0.47***	0.33***	1.41**
Age 60s (rel. 20s)	0.19***	0.25***	0.74	0.16***	0.15***	1.08
Age 70s (rel. 20s)	0.11***	0.29***	0.38***	0.06***	0.21***	0.29***
Age 80s (rel. 20s)	0.10***	0.53***	0.20***	0.08***	0.56***	0.14***
Left educ. <=16 (rel. 17/18)	1.39***	1.95***	0.71***	1.24***	1.72***	0.72**
Left educ. 19+ (rel. 17/18)	0.96	0.82	1.17	0.94	0.9	1.04

Source: authors' calculations using Expenditure and Food Survey/Living Costs and Food Survey 2006 - 2009

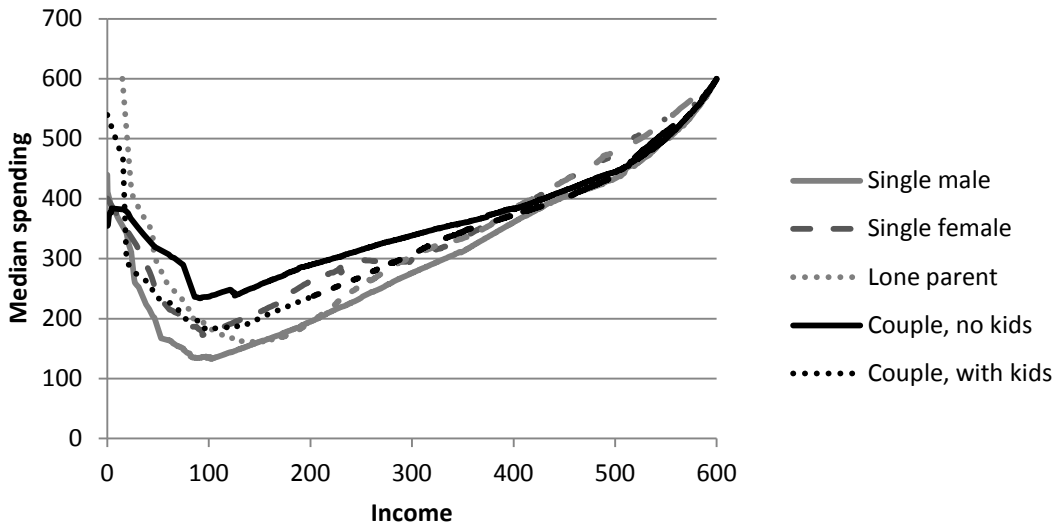
Notes: \*\*\* indicates significant at the 1% level, \*\* indicates significant at the 5% level, \* indicates significant at the 10% level. Also included are year and government office region dummies. Significance in columns 3 and 6 indicates whether the ratio is significantly different from 1 – that is whether the coefficients on the risk of having a low income and consumption poverty are statistically different from each other.

**Figure 1. Median expenditure by income, and median income by expenditure (equivalised £/wk)**



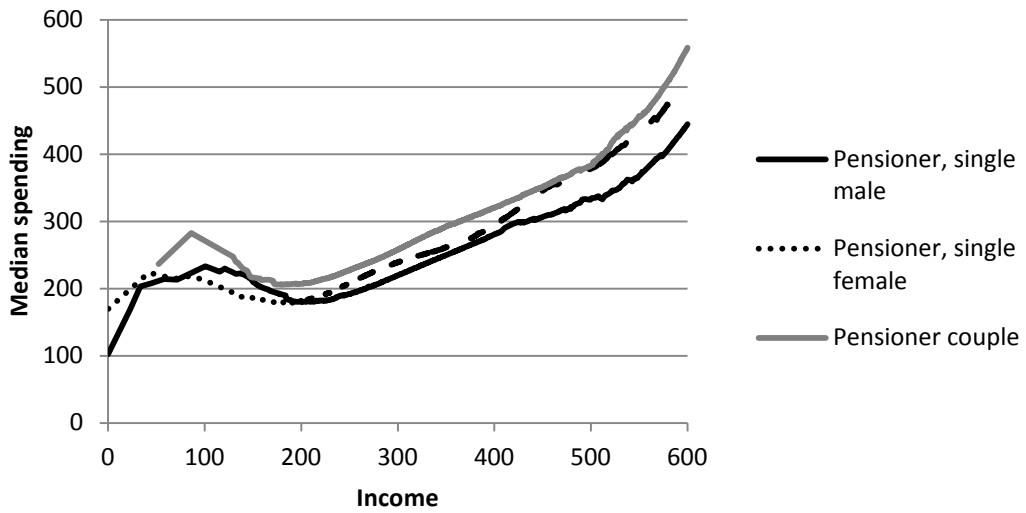
Notes: Graph shows median spending given income, and median income given spending, both drawn using a locally-weighted median regression. Data: Living Costs and Food Survey 2006/07-2009 as described in Section 3.

**Figure 2. Median expenditure by income by family type (working-age households; equivalised £/wk)**



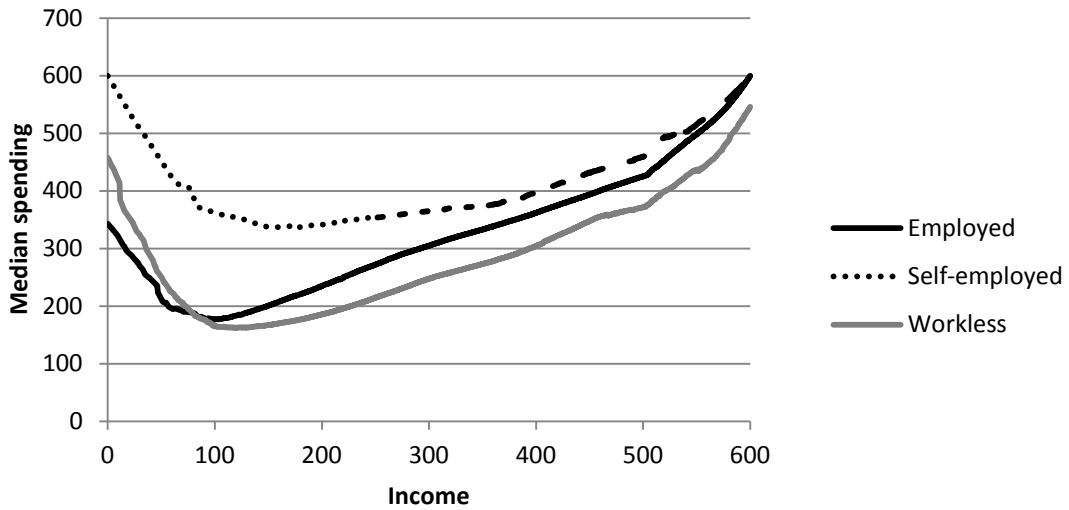
Notes: As in Figure 1

**Figure 3. Median expenditure by income for pensioner families (equivalised £/wk)**



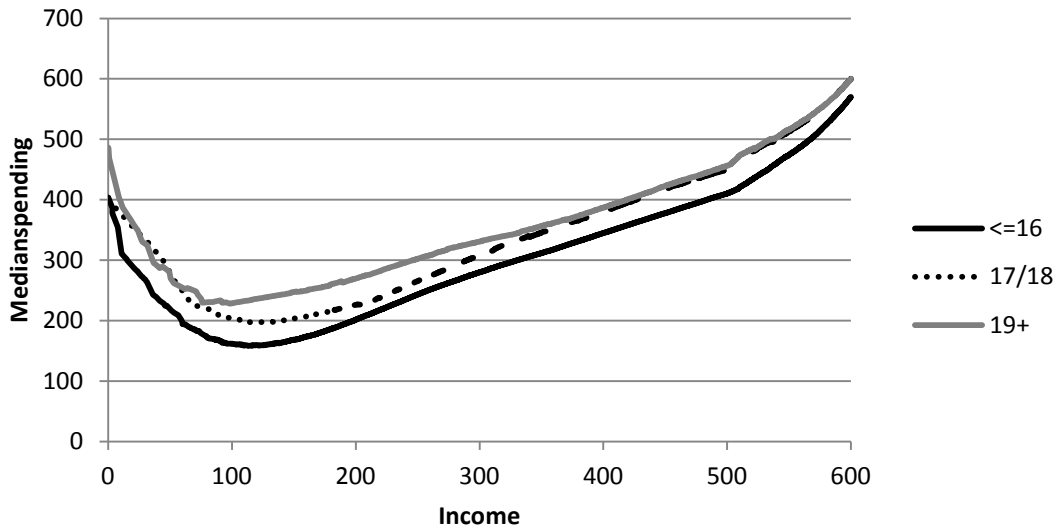
Notes: As in Figure 1

**Figure 4. Median expenditure by income by work status of head of household (working-age households; equivalised £/wk)**



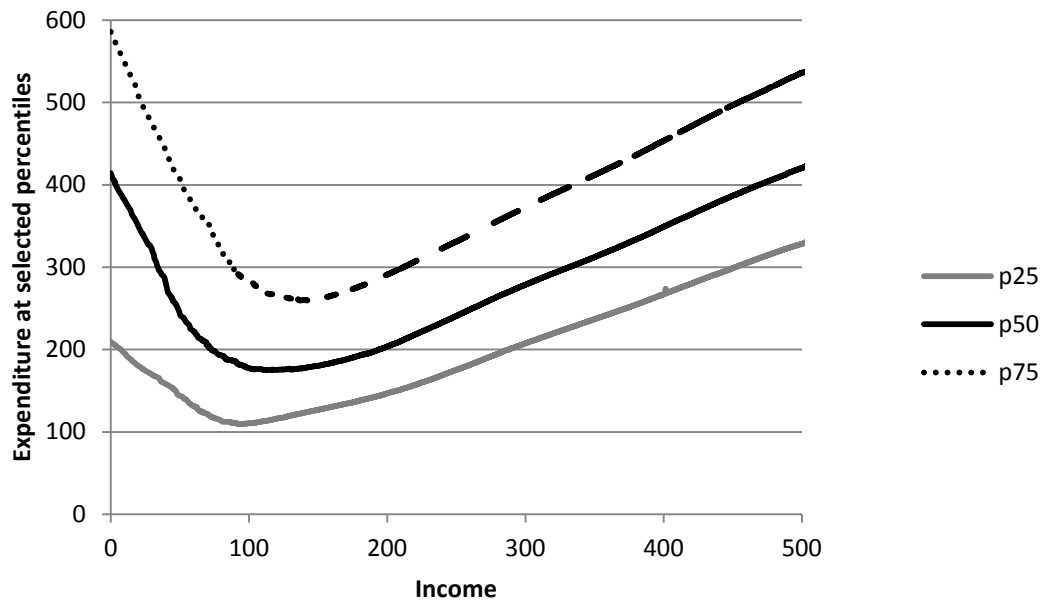
Notes: As in Figure 1

**Figure 5. Median expenditure by education group (equivalised £/wk)**



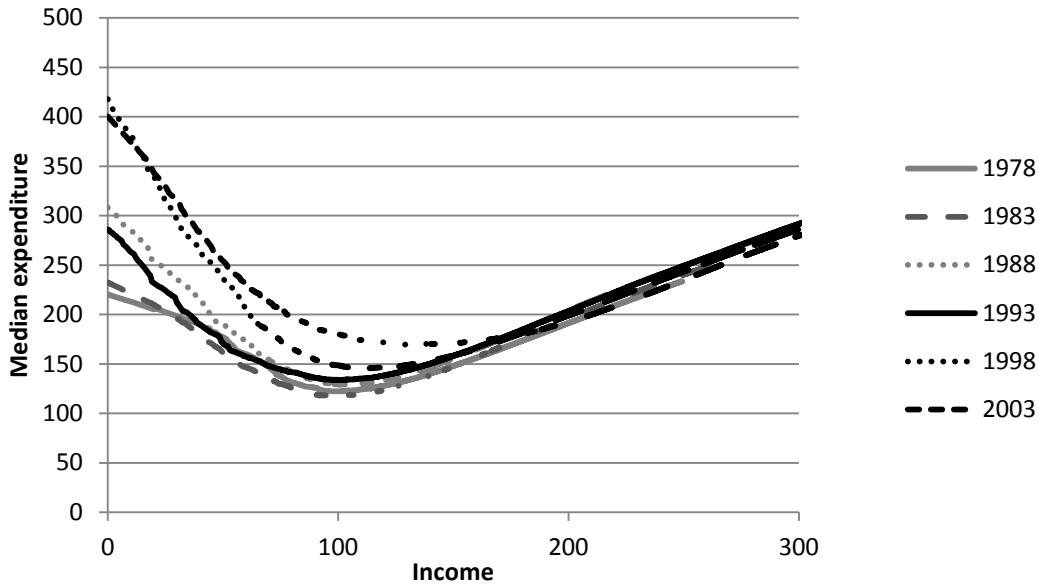
Notes: As in Figure 1

**Figure 6. Expenditure at selected percentiles by income (equivalised £/wk).**



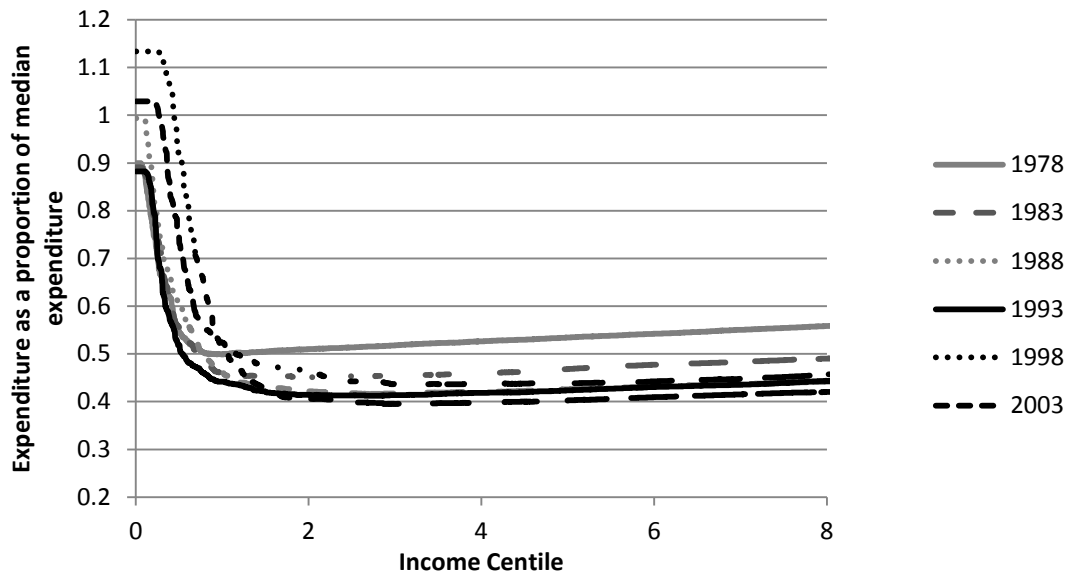
Notes: Graph shows spending at the 25<sup>th</sup>, 50<sup>th</sup> (median) and 75<sup>th</sup> percentile given income all drawn using a locally-weighted quantile regression. Data: Living Costs and Food Survey 2006/07-2009 as described in Section 3.

**Figure 7. Median expenditure by income (equivalised real £/wk), 5 year averages**



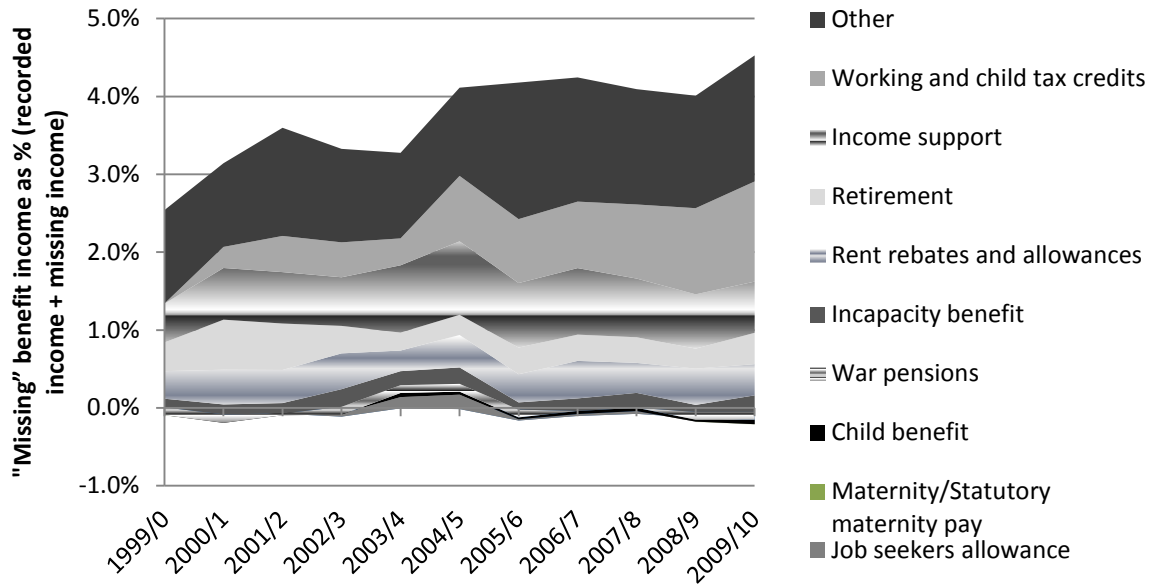
Notes: Graph shows median spending given income for 5-year samples (the 5 year period starts with the year shown in the legend). Data: Living Costs and Food Survey 1978-2009 as described in Section 3.

**Figure 8. Median normalised expenditure by centiles of equivalised real income**



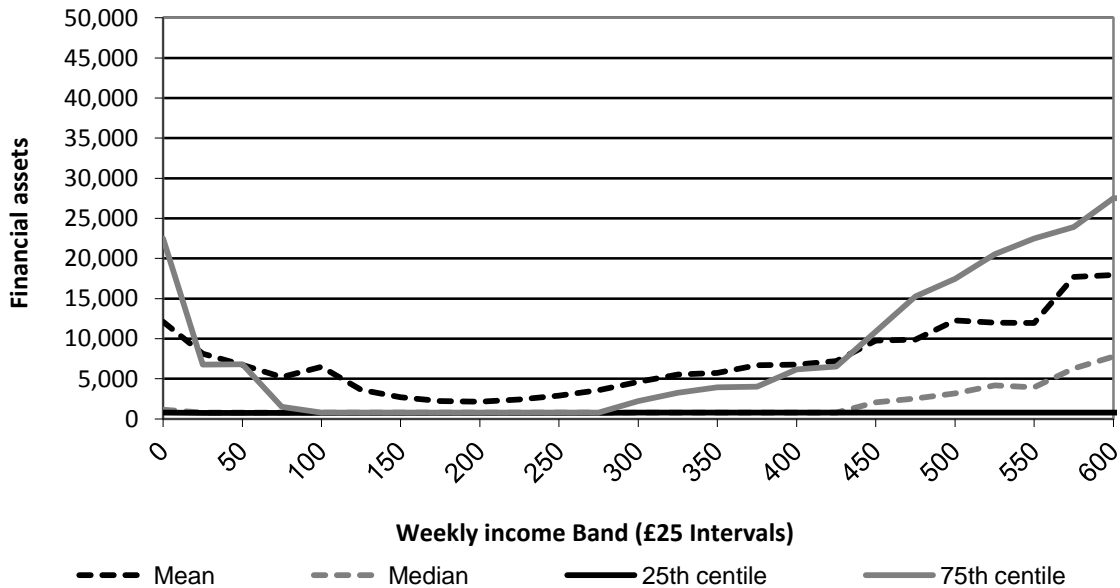
Notes: Y-axis shows median expenditure at the centile shown on the x-axis divided by median expenditure across the entire income distribution for the period in question. The 5 year period starts with the year shown in the legend . Data: Living Costs and Food Survey 1978-2009 as described in Section 3.

**Figure 9. “Missing” income from cash benefits as % of total household income**



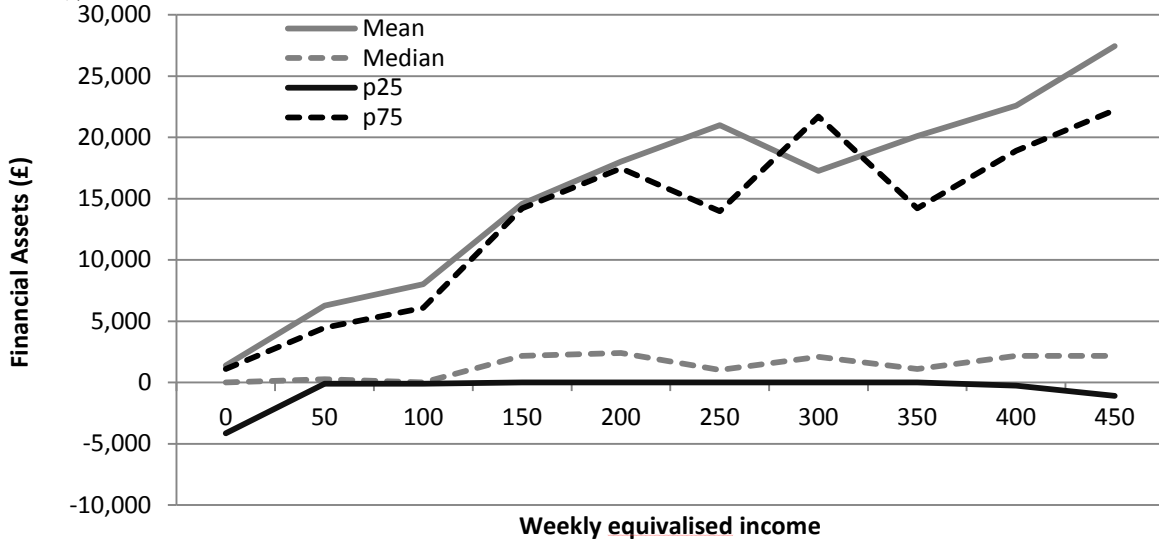
Source: Authors’ calculation using Tables 13 and 14 of Barnard (2011) and previous versions.

**Figure 10. Distribution of financial assets by £25 income bands amongst households with children (FRS), 2004-05 to 2006-07**



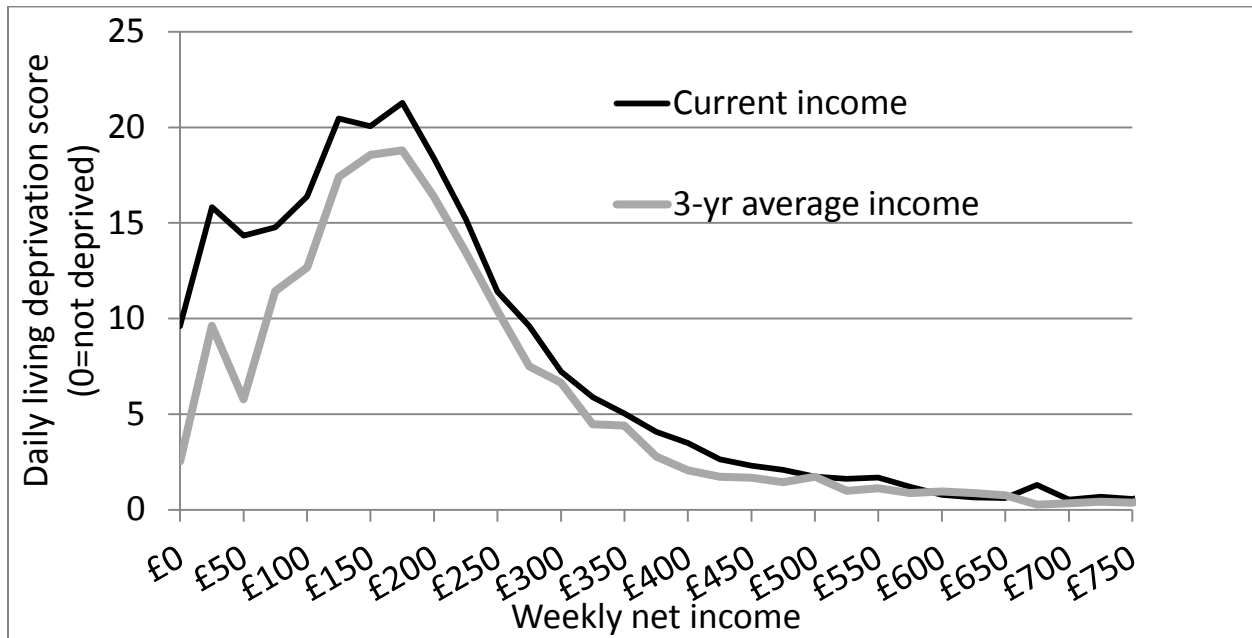
Base: all children in UK. Sample size: 25,249 families.  
 Source: FRS, 2004-05 to 2006-07. Taken from Brewer, O’Dea, Paull and Sibieta (2009).

**Figure 11. Distribution of financial assets by £50 income bands amongst all households (BHPS), 2005**



Notes and sources: Authors' calculations using British Household Panel Survey 2005

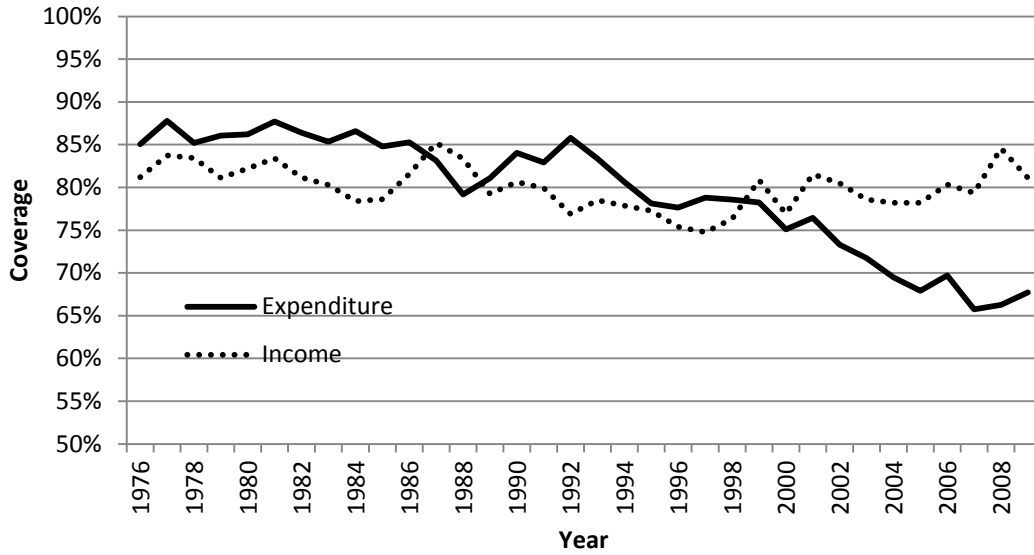
**Figure 12. Relationship between current income and three-year-average income and daily living deprivation, households with children**



Source: From Brewer et al. (2009). Uses data from Families and Children Survey, 2001-2005. Three year average income is the average of usual income recorded in three consecutive annual survey waves.

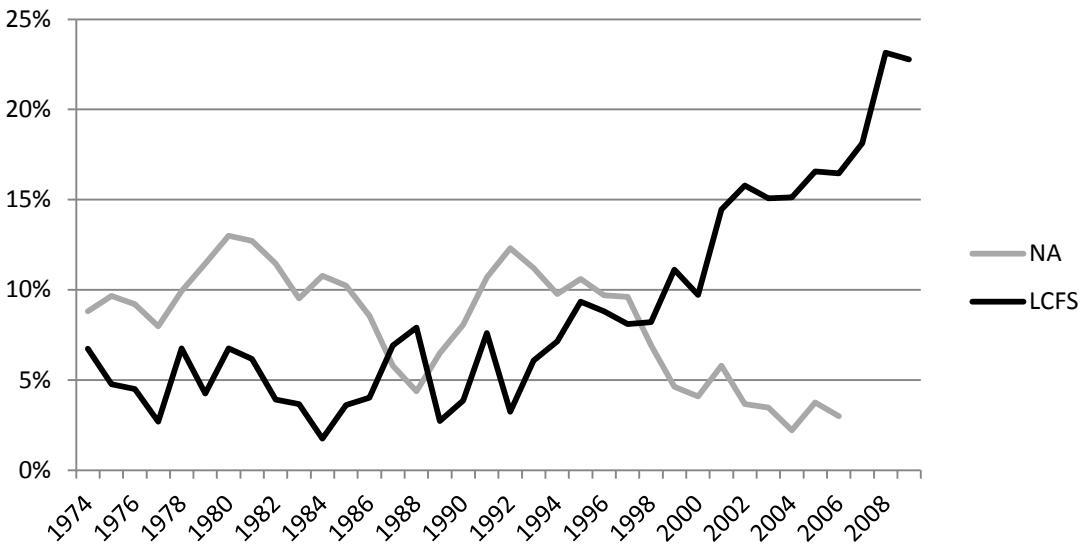


**Figure 13. Income and Expenditure Coverage of UK National Accounts Data**



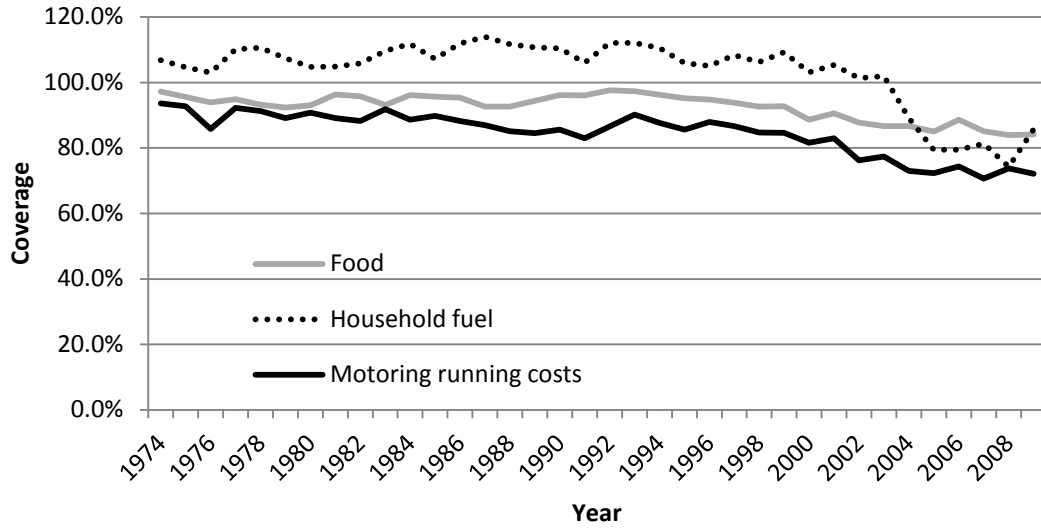
Source: from Crossley and O’Dea, 2010.

**Figure 14. Estimates of the household savings ratio**



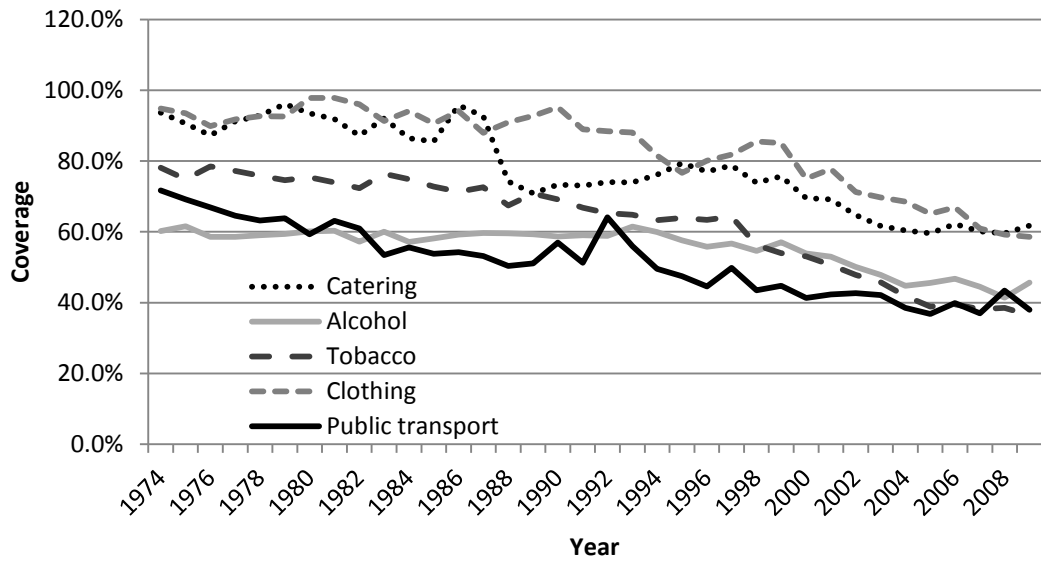
Source: from Crossley and O’Dea, 2010

**Figure 15 Expenditure Coverage, by Category (1)**



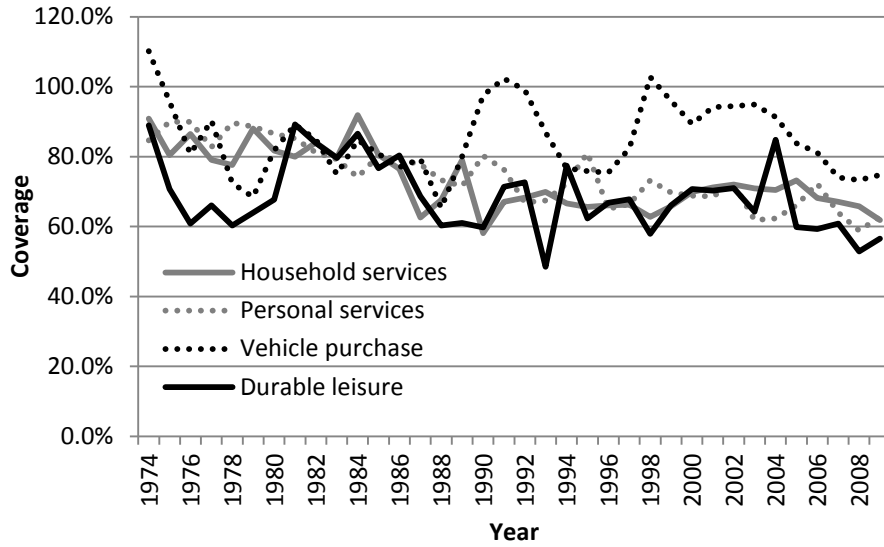
Source: from Crossley and O’Dea, 2010

**Figure 16 Expenditure Coverage, by Category (2)**



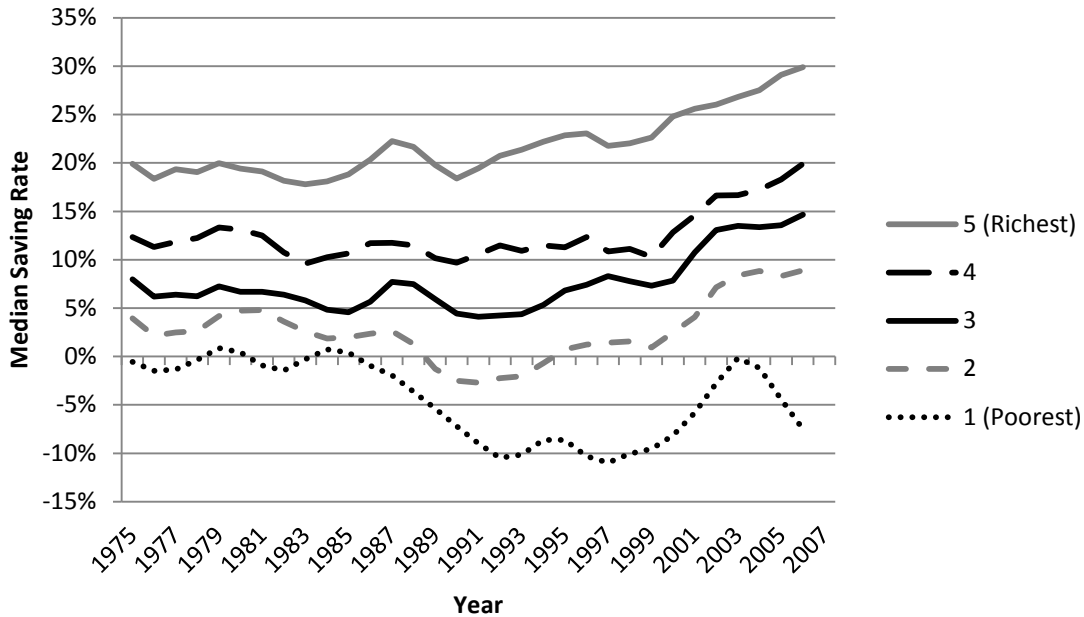
Source: from Crossley and O’Dea, 2010

**Figure 17 Expenditure Coverage, by Category (3)**



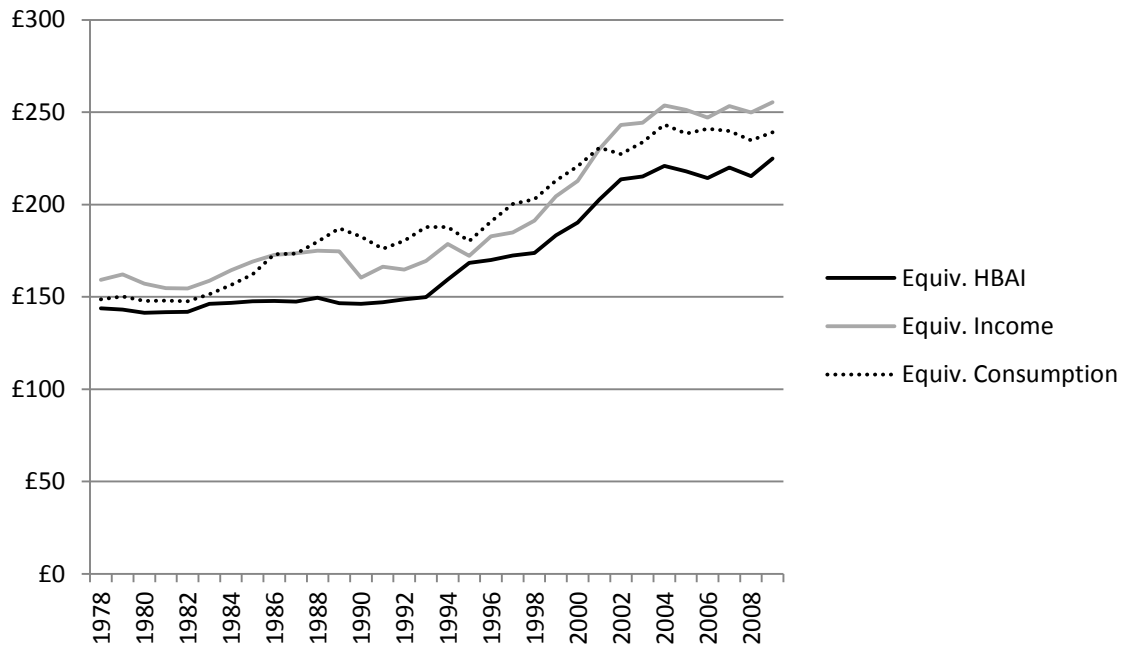
Source: from Crossley and O’Dea, 2010

**Figure 18. Median savings rates, by income quintile**



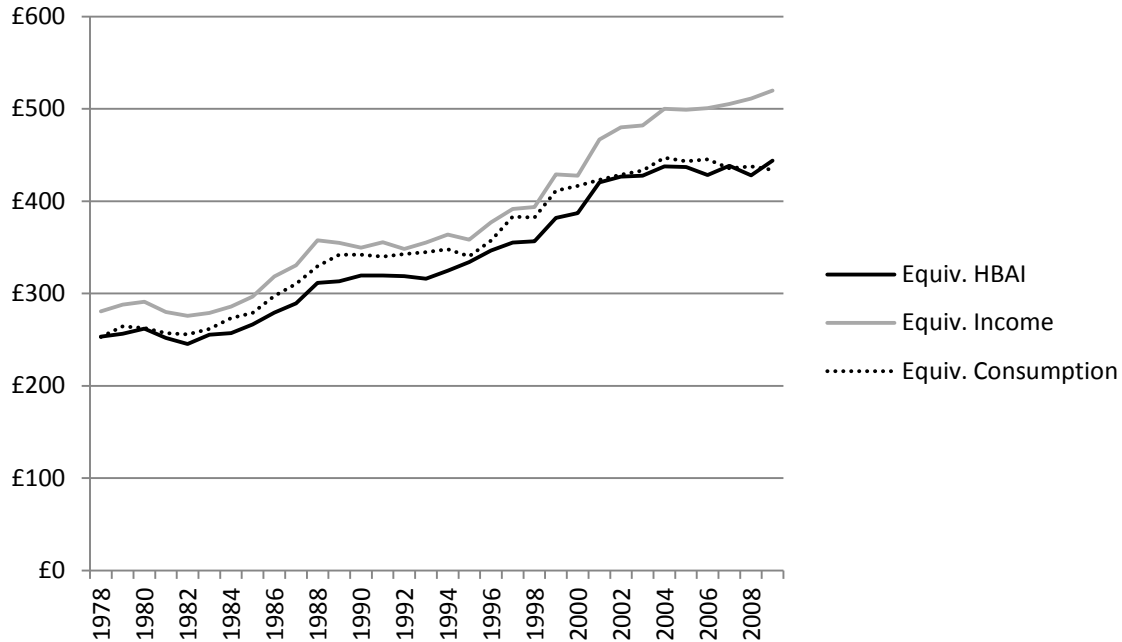
Notes from Crossley and O’Dea, 2010

**Figure 19. Growth in 10<sup>th</sup> centile of income and consumption, 1978-2008, whole population**



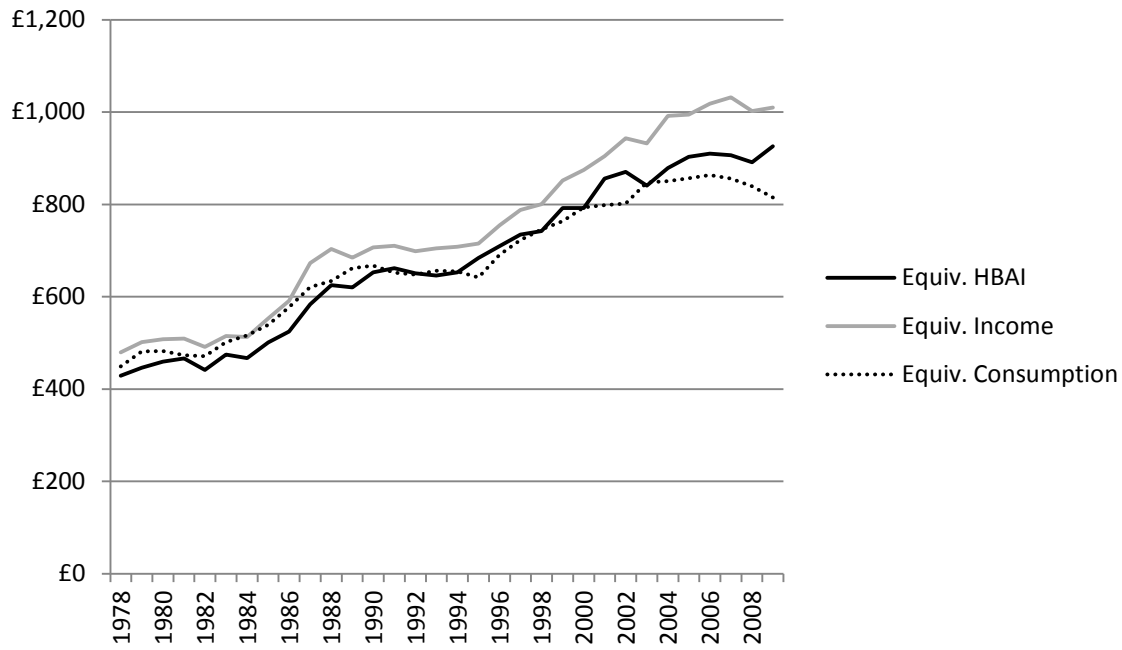
Source: Authors' calculations using LCFS, various years.

**Figure 20. Growth in 50<sup>th</sup> centile of income and consumption, 1978-2008, whole population**



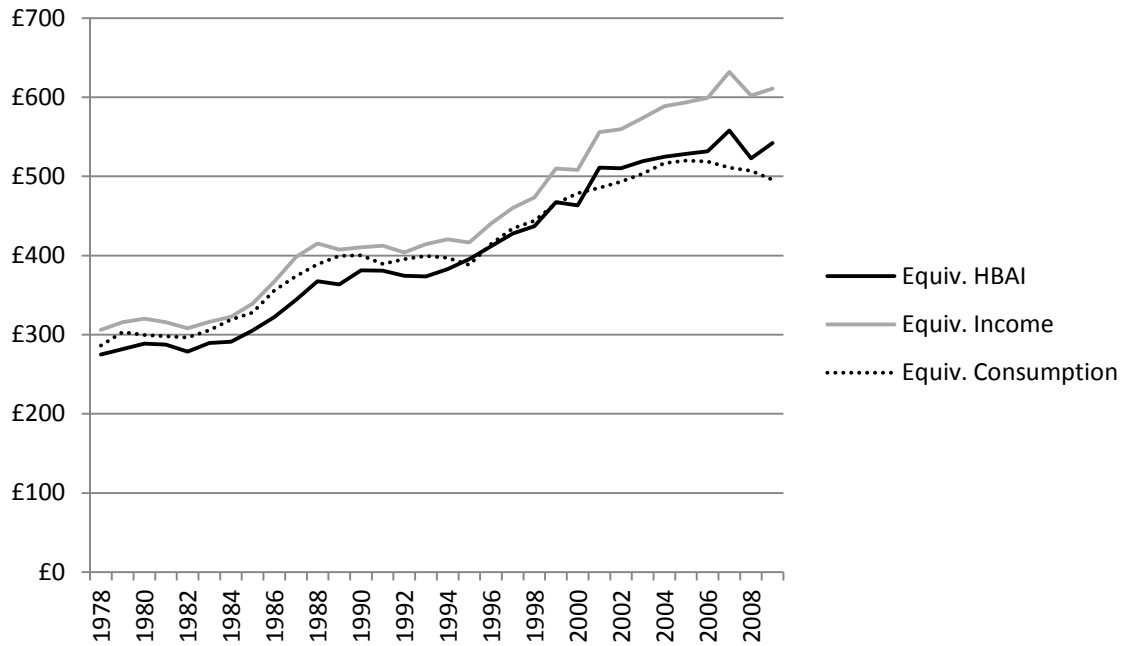
Source: Authors' calculations using LCFS, various years.

**Figure 21. Growth in 90<sup>th</sup> centile of income and consumption, 1978-2008, whole population**



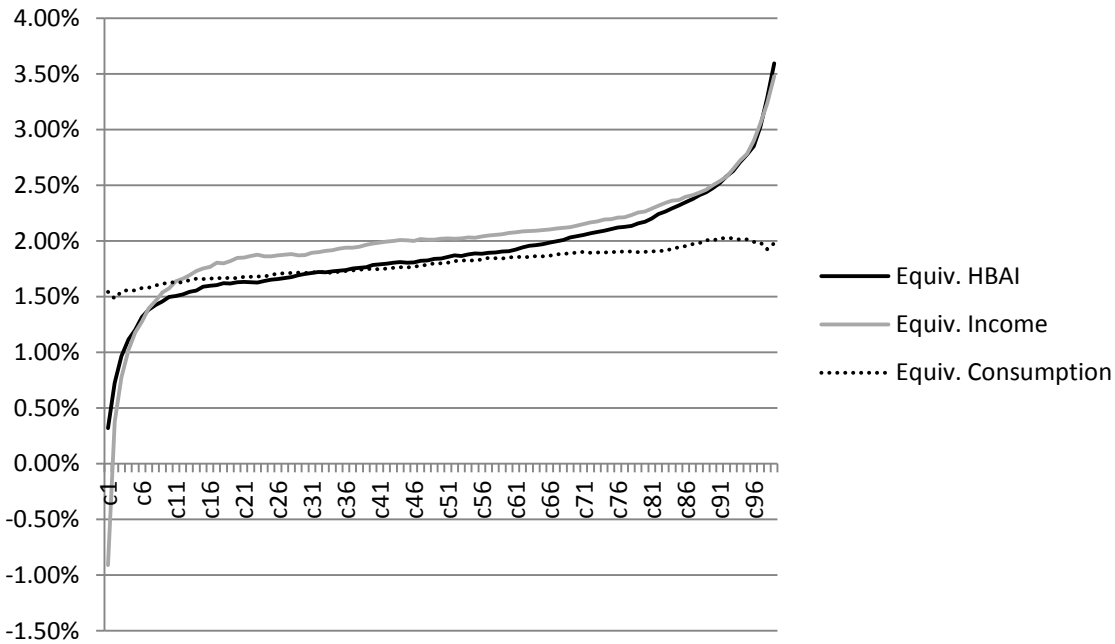
Source: Authors' calculations using LCFS, various years.

**Figure 22. Growth in mean of income and consumption, 1978-2008, whole population**



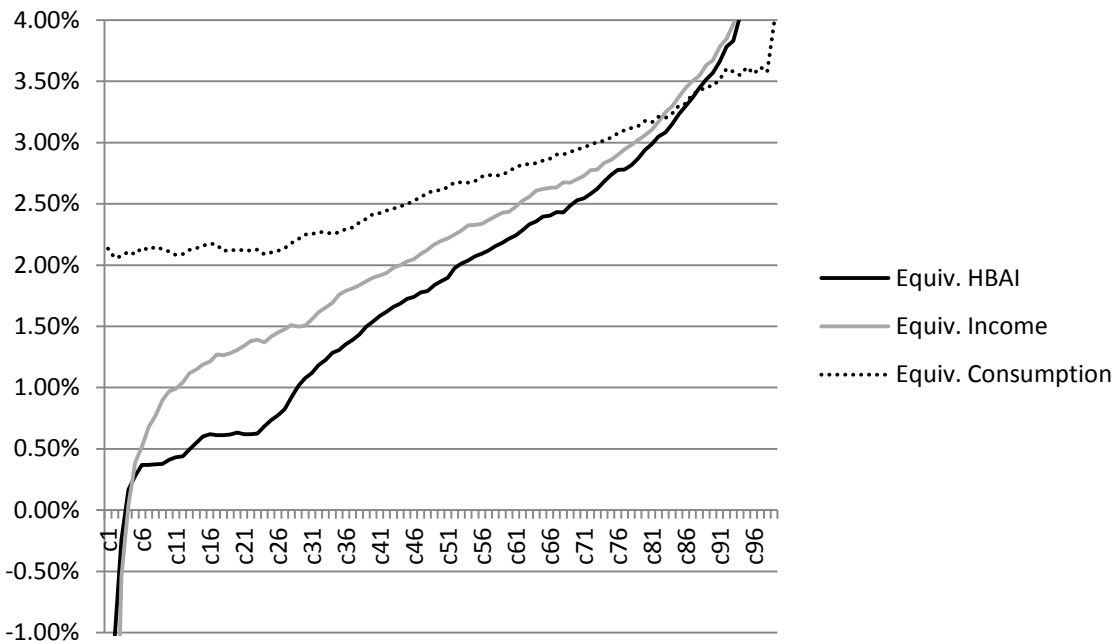
Source: Authors' calculations using LCFS, various years.

**Figure 23. Average annual growth of income and consumption, whole population, 1978-1980 to 2007-2009 (equivalised £/wk)**



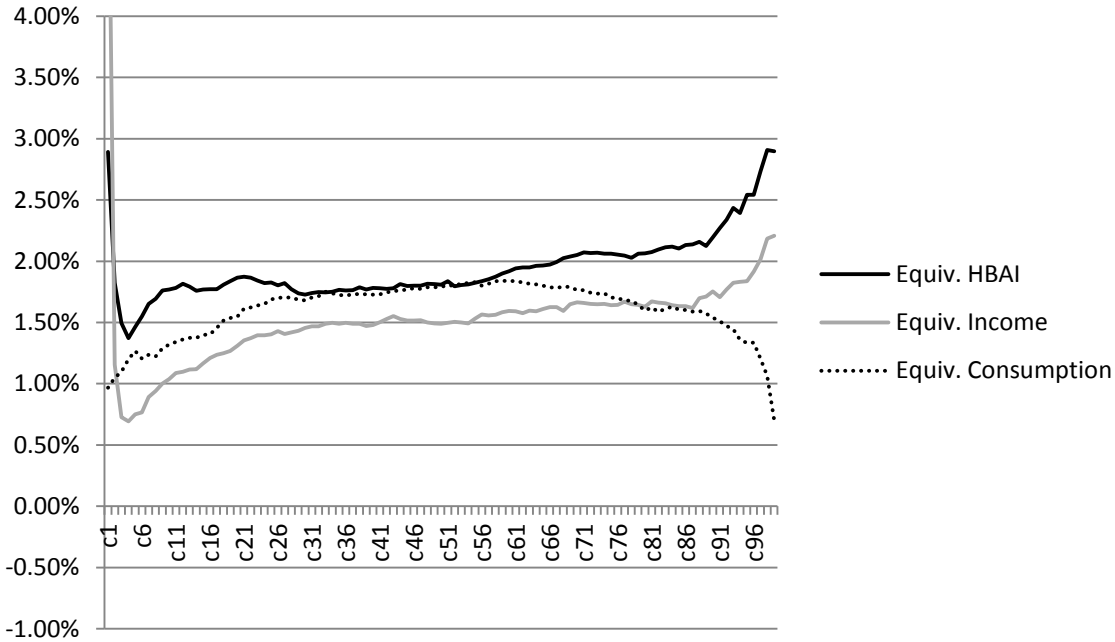
Source: Authors' calculations using LCFS, various years.

**Figure 24. Average annual growth of income and consumption, whole population, 1978-1980 to 1987-1989 (equivalised £/wk)**



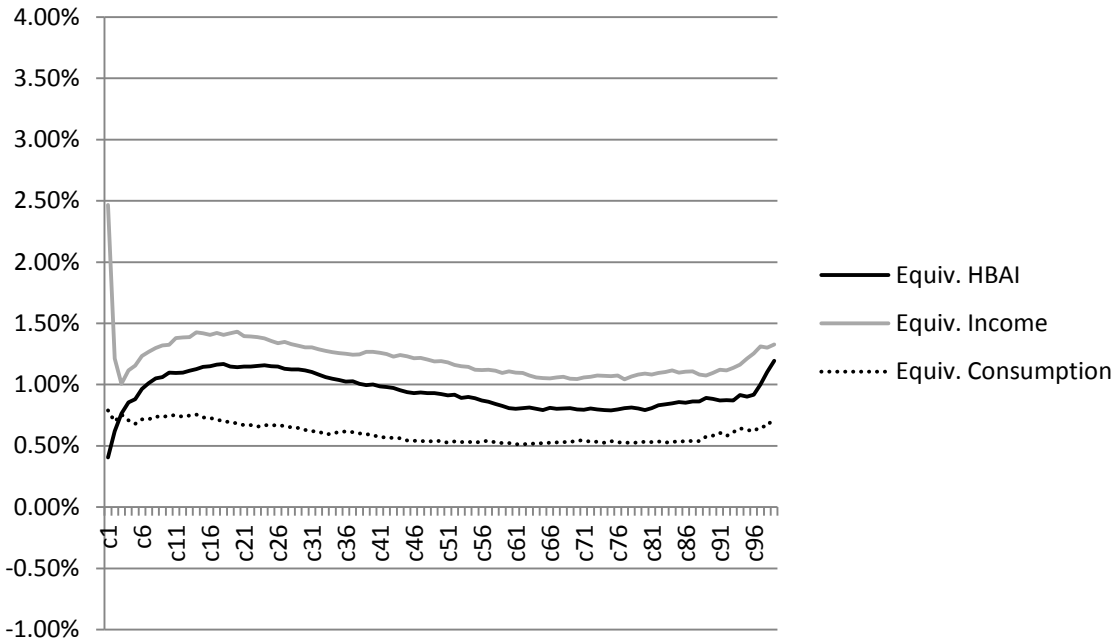
Source: Authors' calculations using LCFS, various years.

**Figure 25. Average annual growth of income and consumption, whole population, 1987-1989 to 1997-1999 (equivalised £/wk)**



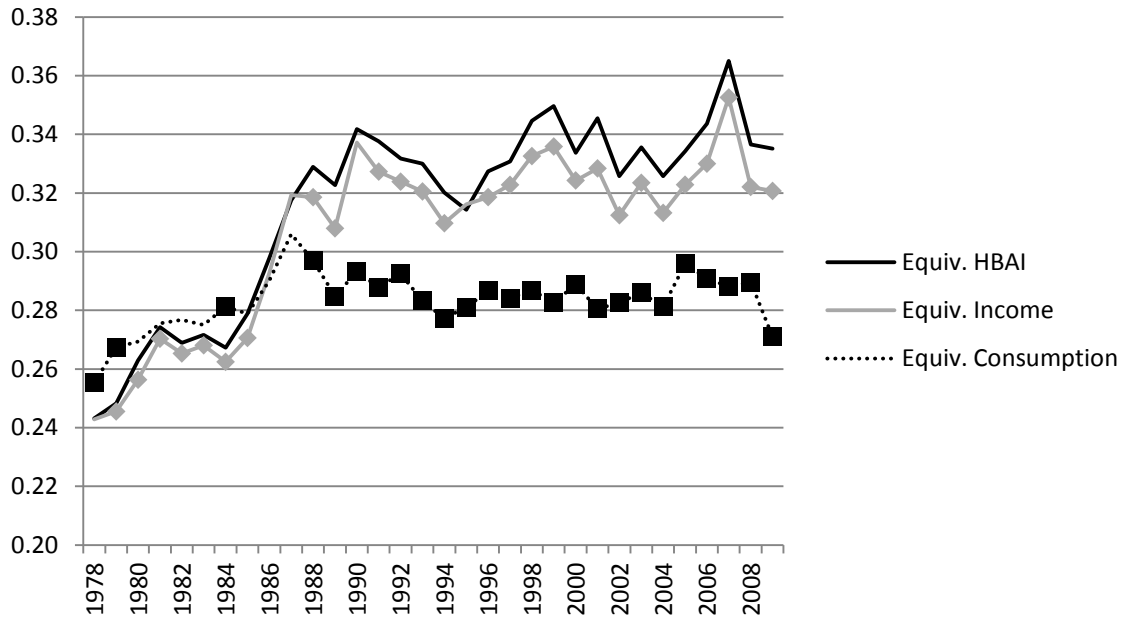
Source: Authors' calculations using LCFS, various years.

**Figure 26. Average annual growth of income and consumption, whole population, 1997-1999 to 2007-2009 (equivalised £/wk)**



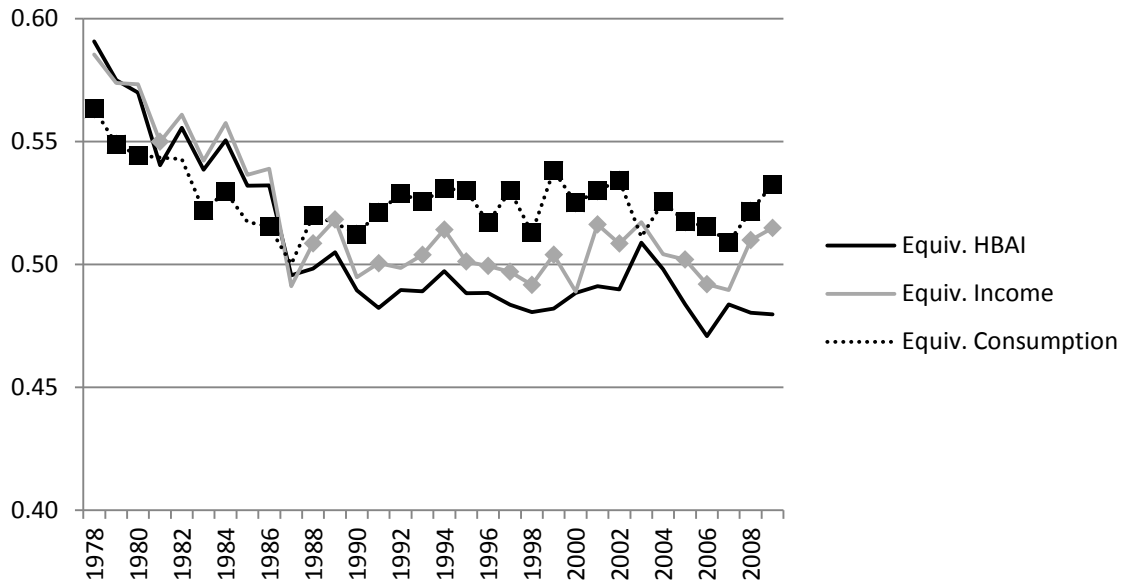
Source: Authors' calculations using LCFS, various years.

**Figure 27. Inequality (Gini coefficient) in income and consumption, 1978-2008, whole population**



Source: Authors' calculations using LCFS, various years.

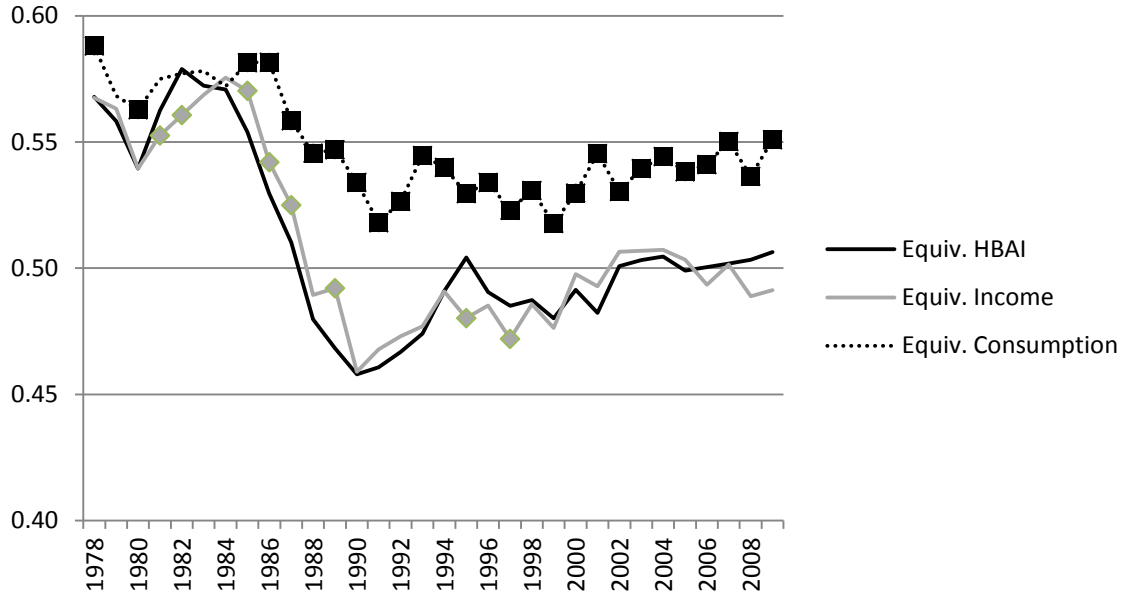
**Figure 28. Inequality at the top (50-90) in income, spending and consumption, 1978-2008, whole population**



Source: Authors' calculations using LCFS, various years.

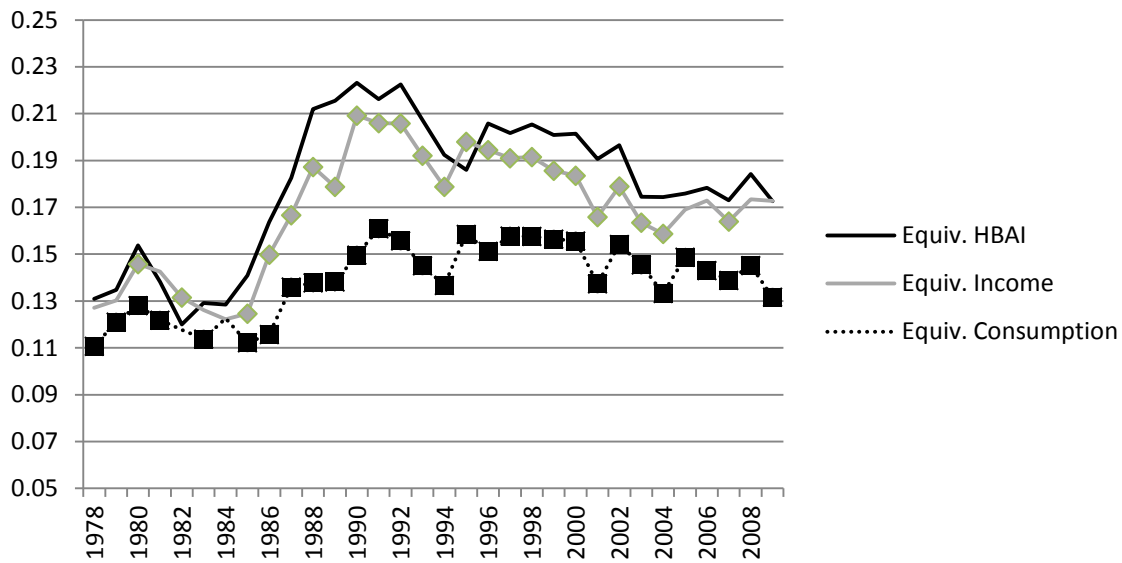


**Figure 29. Inequality at the bottom (10-50) in income, spending and consumption, 1978-2008, whole population**



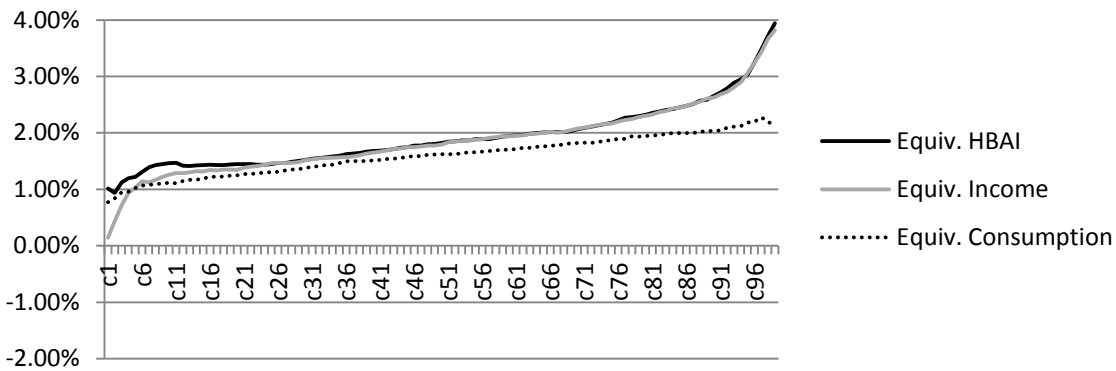
Source: Authors' calculations using LCFS, various years.

**Figure 30. Relative measures of poverty using income, spending and consumption, 1978-2008, whole population**

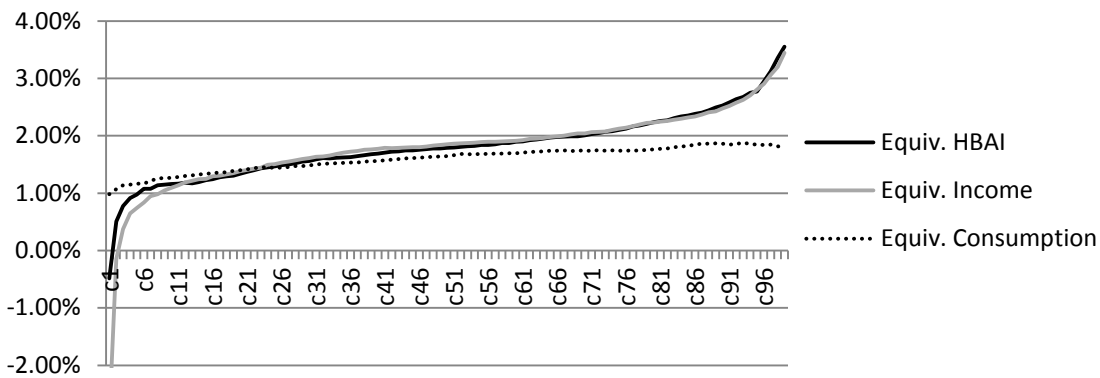


Source: Authors' calculations using LCFS, various years.

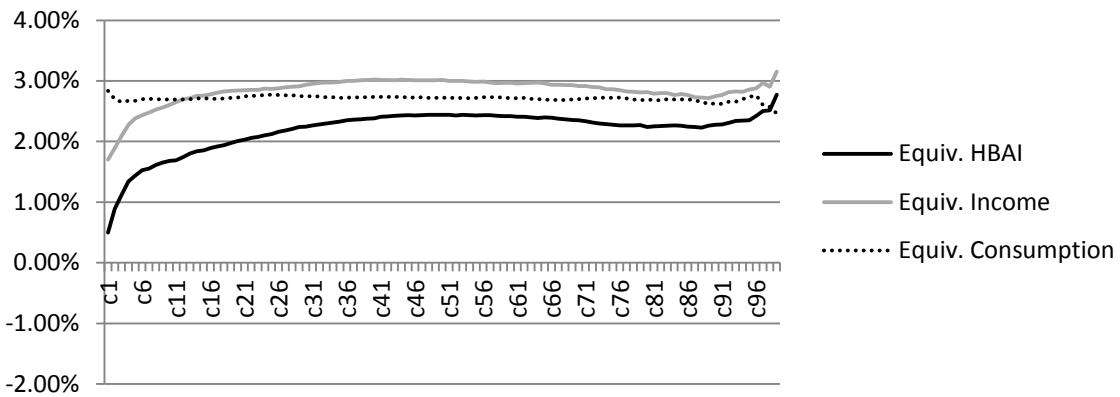
**Figure 31. Average annual growth of income, 1978-1980 to 2007-2009, spending and consumption, children, (equivalised £/wk)**



**Average annual growth of income, 1978-1980 to 2007-2009, spending and consumption, working-age adults, (equivalised £/wk)**

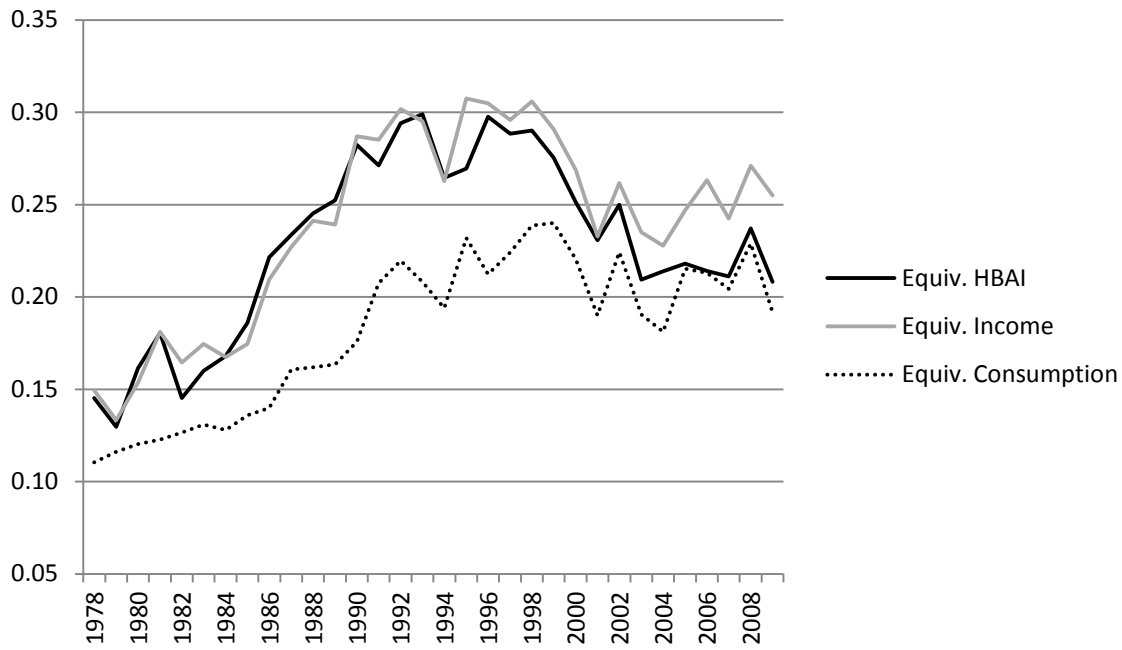


**Average annual growth of income, 1978-1980 to 2007-2009, spending and consumption, adults over state pension age, (equivalised £/wk)**



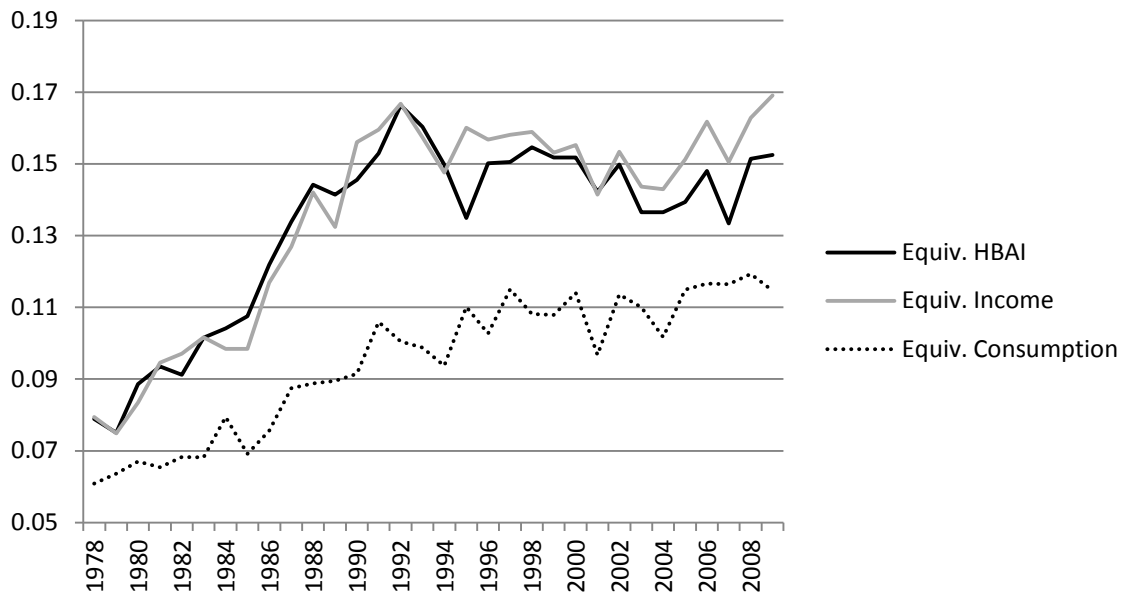
Source: Authors' calculations using LCFS, various years.

**Figure 32. Relative measures of poverty using income and consumption, 1978-2008, children**



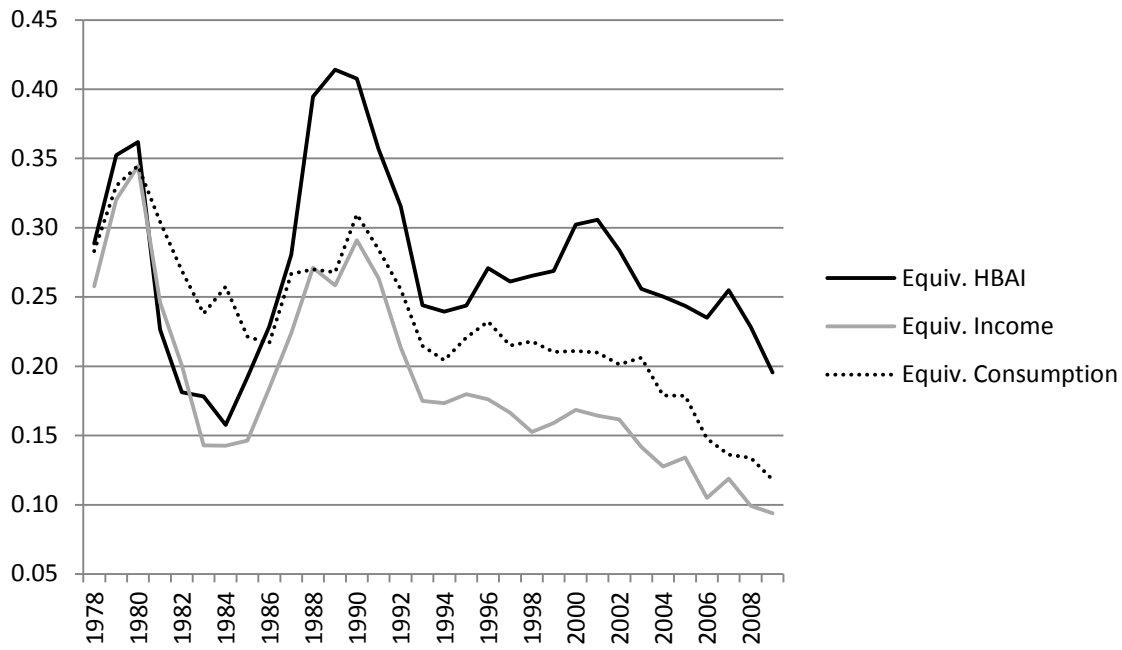
Source: Authors' calculations using LCFS, various years.

**Figure 33. Relative measures of poverty using income and consumption, 1978-2008, working-age adults**



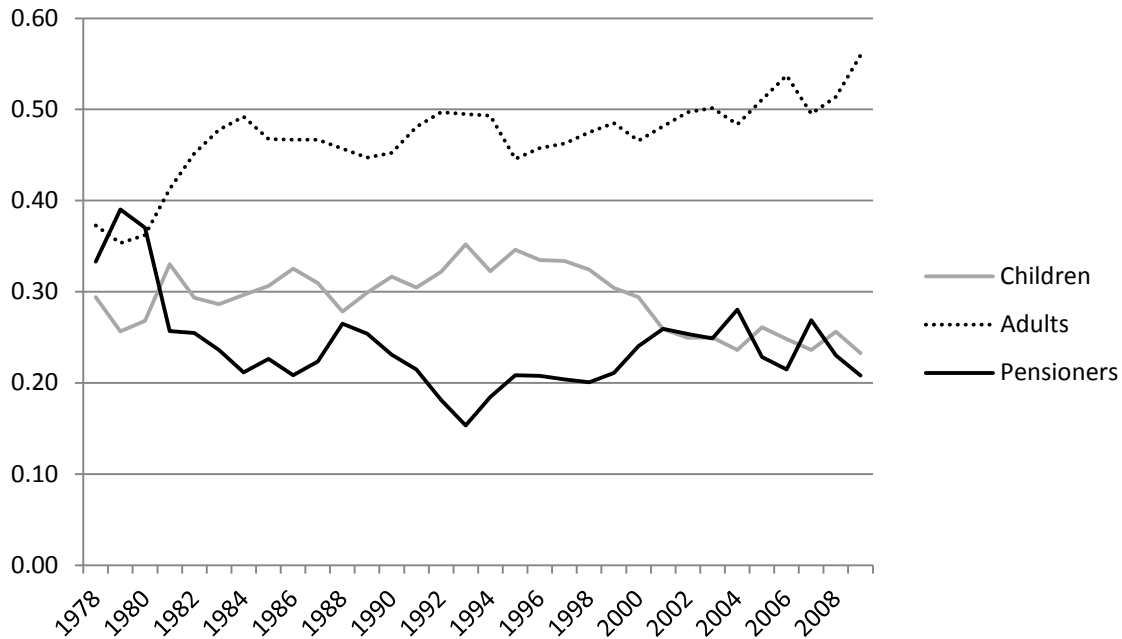
Source: Authors' calculations using LCFS, various years.

**Figure 34. Relative measures of poverty using income, spending and consumption, 1978-2008, adults over state pension age**



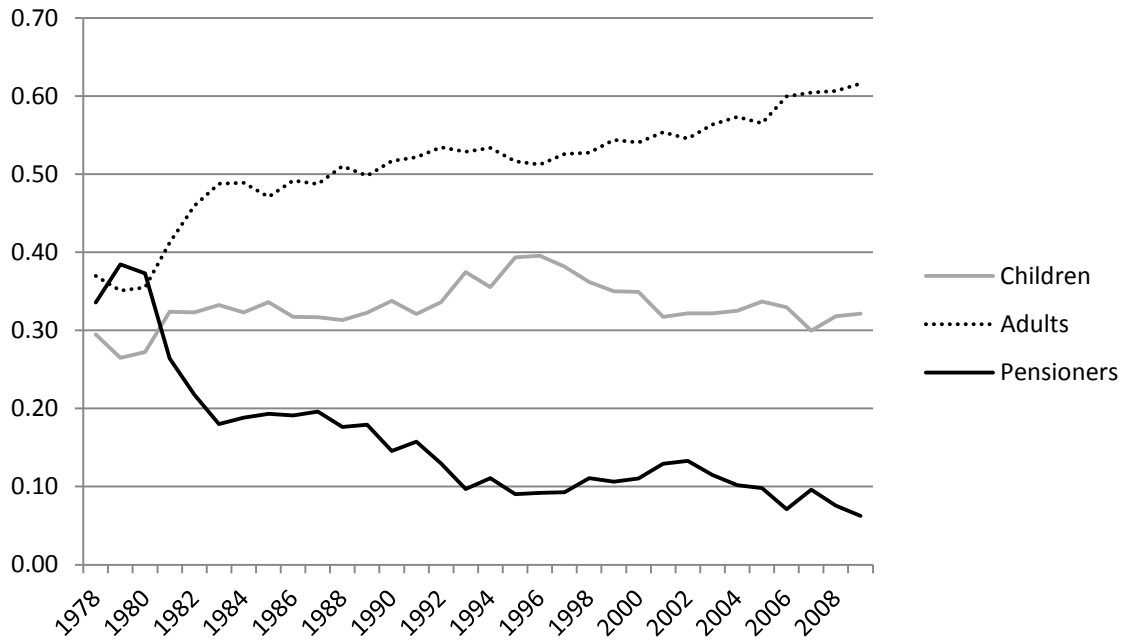
Authors' calculations using LCFS, various years.

**Figure 35. Composition of bottom decile group, 1978-2009, HBAI income**



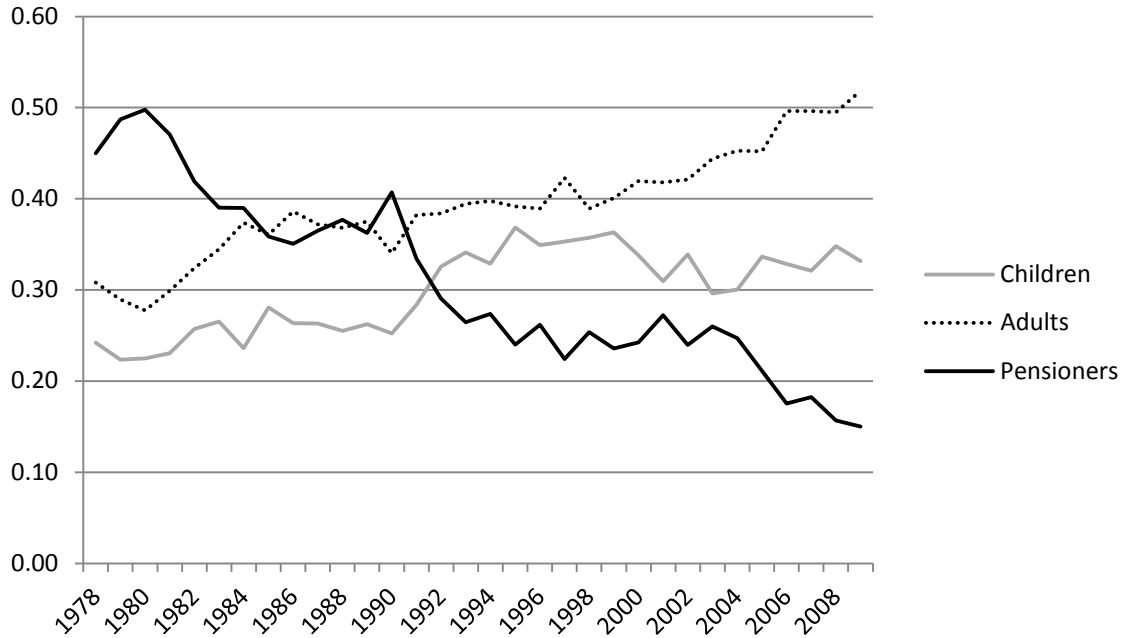
Authors' calculations using LCFS, various years.

**Figure 36. Composition of bottom decile group, 1978-2009, broad income**



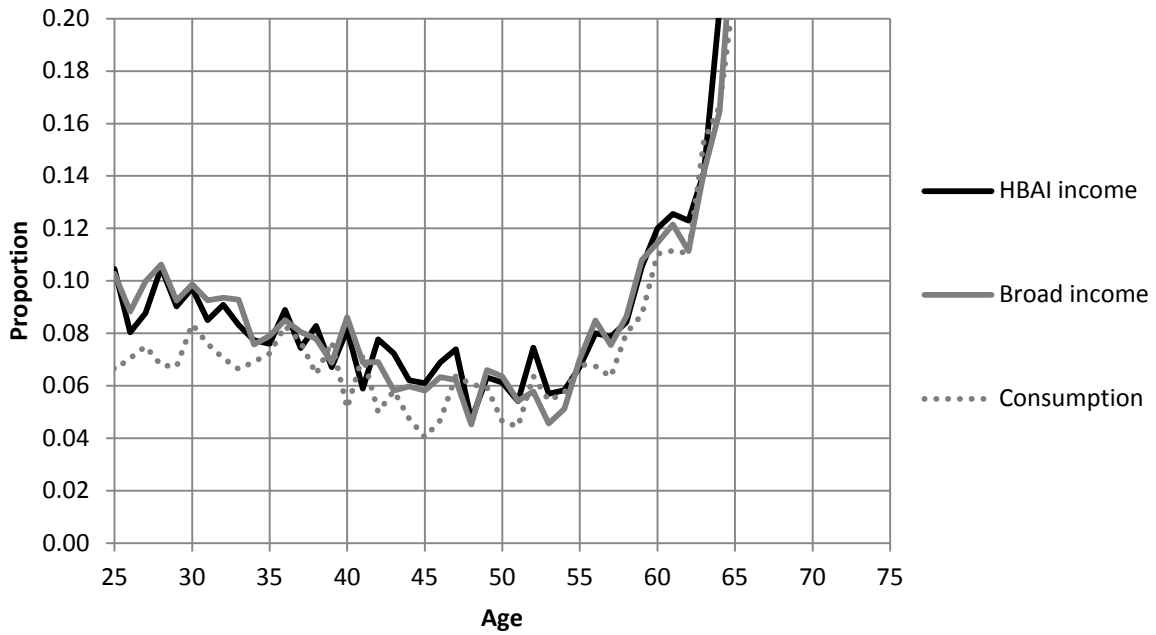
Authors' calculations using LCFS, various years.

**Figure 37. Composition of bottom decile group, 1978-2009, consumption**



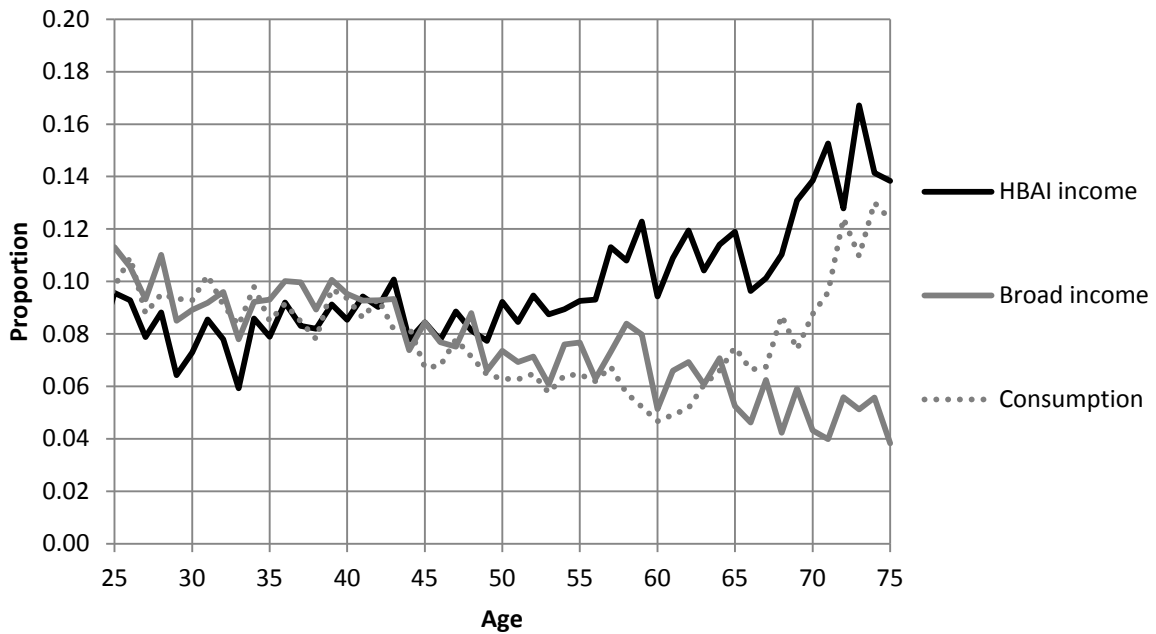
Authors' calculations using LCFS, various years.

**Figure 38. Risk of falling into bottom decile rate by age, 1978 - 1982**



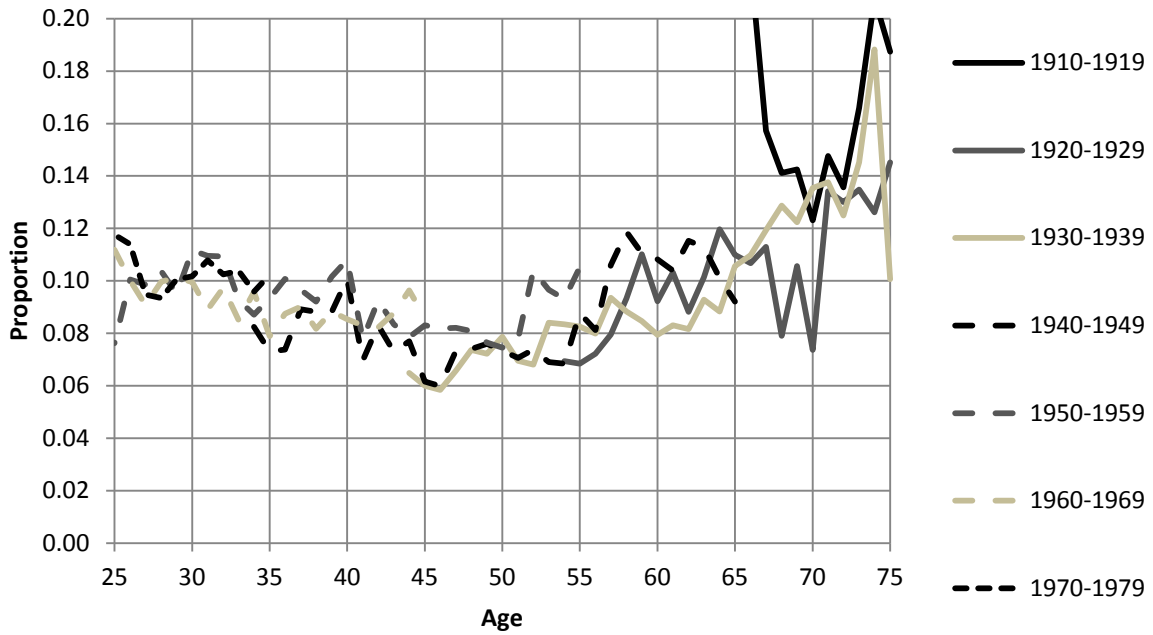
Authors' calculations using LCFS, various years.

**Figure 39. Risk of falling into bottom decile rate by age, 2003 - 2009**



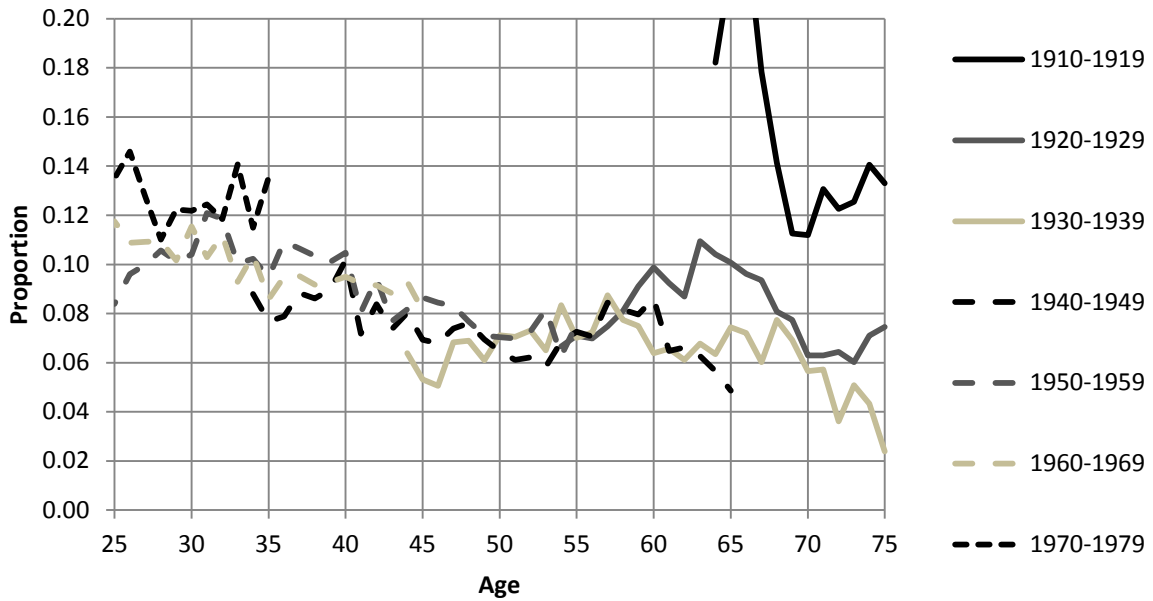
Authors' calculations using LCFS, various years.

**Figure 40. Risk of falling into bottom decile rate by age and cohort, HBAI income**



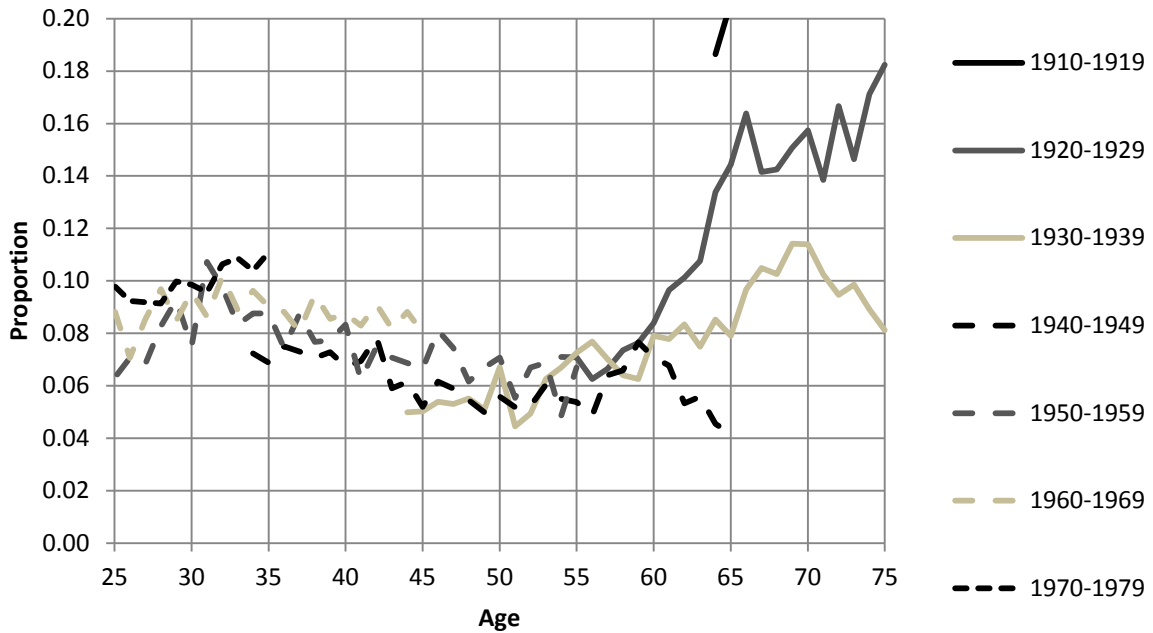
Authors' calculations using LCFS, various years.

**Figure 41. Risk of falling into bottom decile by age and cohort, broad income**



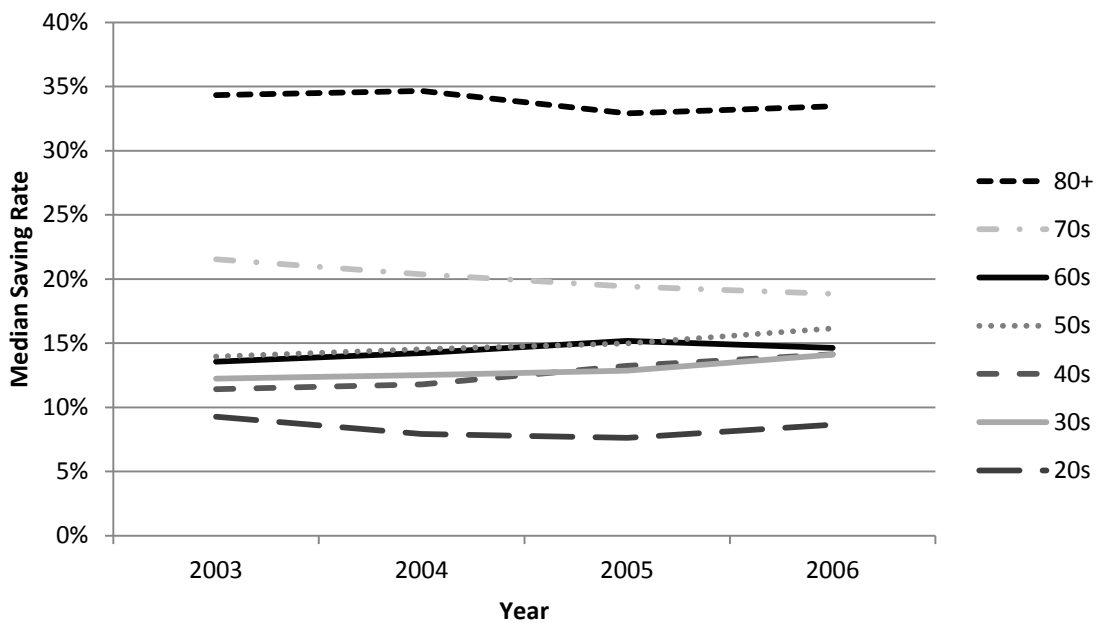
Authors' calculations using LCFS, various years.

**Figure 42. Risk of falling into bottom decile by age and cohort, consumption**



Authors' calculations using LCFS, various years.

**Figure 43. Median savings rates, by age**



Notes from Crossley and O'Dea, 2010



## **Annex A: Data issues**

### **A1 Self-employment income in the LCFS 56**

Individuals who reveal that they have self-employment income (either from their main occupation or a subsidiary one) are asked whether they have submitted accounts to HMRC. Where they have, the respondents are asked for their share of the profit or loss figure shown in the most recent accounts submitted. The interviewer prompts the respondent to consult the accounts before giving an answer, so that LCFS aims to record income as it has been submitted to the tax authorities.<sup>57</sup> Finally, respondents are asked for how many weeks these accounts cover, enabling us to calculate an average weekly or annual income for self-employed individuals. In over 95 per cent of cases, the period in question was a year. As a result of this, variability in self-employment income within a twelve-month period cannot explain any of our results. Where do accounts have been submitted to HMRC, self-employed individuals are asked for their average weekly or monthly income from the job or business over the previous twelve months.

### **A2 Imputation of data in the LCFS**

There are two broad types of imputed data in the LCFS. These are:

1. Whole diary imputation. A refusal by a member of the household to fill out a diary does not result in the household being left out of the sample unless that member is the “main shopper” (the household member most responsible for the most important regular trip to a supermarket). If any other individual does not return a diary, then their diary is imputed by selecting the diary of someone else similar (in a manner described below) in the sample (in a different household) and using the values reported by that individual.

The matching is done on the basis of considering every possible donor and selecting the match that has the highest ‘score’. The scoring system involves granting 8 points if the donor and the individual for whom imputation is needed have the same age, an additional

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<sup>56</sup> Some of this is taken from Brewer, O’Dea, Sibieta & Paull (2009)

<sup>57</sup> In 2006, 28 per cent of self-employed consulted some document before answering the questions. This accounts for just under than 40 per cent of those who had actually submitted accounts to HMRC (who in turn are 75 per cent of self-employed).

4 points if they have the same relationship to the Household Reference Person<sup>58</sup>, a further 2 points if they have the same employment status and a final point if they were sampled in the same month.<sup>59</sup>

Prior to 2003 no variable was included that allowed the user to identify households that had had an entire diary imputed. Since that year, a flag has been included that gives the number of diaries in each household that have been imputed. In each year, approximately 2% of households have at least one diary imputed in this manner.

2. The second type of imputation occurs when individual questions on the questionnaire are not answered. Answers to those questions are imputed. The imputation can occur in a variety of ways. In the case of some benefits or council tax payments the survey authorities can establish what the correct answer should have been and can use that. In the case of earnings, missing income is imputed from the reports of the employee's occupation and industry (income from self-employment is not imputed – if a self-employed individual doesn't report their earnings then the household to which they belong is ejected from the sample). When a 'small' number of expenditure questions (usually no more than 6) have not been answered, households are assigned the mean value for their gross income band.

Unfortunately, it is not possible to conclusively establish which households had data imputed. However, since 2004, imputation flags have been introduced for questions where the answers are "frequently imputed". Approximately 10% to 15% of respondent households are recorded as having at least one element of their response imputed.

### **A3 Constructing a "household savings ratio" from the National Accounts**

To construct a household savings ratio from the National Accounts which we can compare to the LCFS, we start with the headline household saving ratio, but then:

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<sup>58</sup> Previous to 2001 the Household Reference Person was known as the Head of the Household.

<sup>59</sup> We are grateful to Laura Keyse and Karen Watkins of the Office for National Statistics for supplying us with this information

- exclude imputed rent from the income and expenditure aggregates used to derive the saving ratio.
- Remove, from 1987, saving done by ‘non-profit institutions serving households’ (NPISH) (we are not able to remove this saving for years before 1987).

#### **A4 Definition of income in Households Below Average Income (HBAI)<sup>60</sup>**

The income measure used in HBAI is weekly net (disposable) equivalised household income. This comprises total income from all sources of all household members including dependants.

Income is adjusted for household size and composition by means of equivalence scales, which reflect the extent to which households of different size and composition require a different level of income to achieve the same standard of living. This adjusted income is referred to as equivalised income. The equivalence scale is set out in Table A2.1 of DWP (2011).

Income measured Before Housing Costs (BHC) includes the following main components:

- usual net earnings from employment;
- profit or loss from self-employment (losses are treated as a negative income);
- all Social Security benefits (including Housing Benefit, Social Fund, maternity, funeral and community care grants, but excluding Social Fund loans) and Tax Credits. For the full list, please see the ‘Other definitions used in HBAI’ section;
- income from occupational and private pensions;
- investment income;
- maintenance payments, if a person receives them directly;
- income from educational grants and scholarships (including, for students, top-up loans and parental contributions);
- the cash value of certain forms of income in kind (free school meals, Healthy Start vouchers and free school milk and free TV licence for those aged 75 and over).

Income is net of the following items:

- income tax payments;
- National Insurance contributions;
- domestic rates / council tax;
- contributions to occupational pension schemes (including all additional voluntary

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<sup>60</sup> Taken from DWP (2011).

contributions (AVCs) to occupational pension schemes, and any contributions to stakeholder and personal pensions);

- all maintenance and child support payments, which are deducted from the income of the person making the payment;
- parental contributions to students living away from home;
- student loan repayments.

Negative incomes BHC are reset to zero.

## **Annex B: Supplementary results**

**Appendix Table B1. Mean and quintile group medians of HBAI income, broad income and consumption, all years**

	10 <sup>th</sup>	10 <sup>th</sup>	10 <sup>th</sup>	10 <sup>th</sup>	10 <sup>th</sup>	30 <sup>th</sup>	30 <sup>th</sup>	30 <sup>th</sup>	30 <sup>th</sup>	30 <sup>th</sup>	50 <sup>th</sup>	50 <sup>th</sup>	50 <sup>th</sup>	50 <sup>th</sup>	50 <sup>th</sup>
	HBAI income	Broad income	Consumption	Cash income	Cash outlays	HBAI income	Broad income	Consumption	Cash income	Cash outlays	HBAI income	Broad income	Consumption	Cash income	Cash outlays
1978	144	159	149	148	136	198	222	205	211	195	253	281	253	271	245
1979	143	162	150	149	136	201	228	211	213	199	256	288	265	275	259
1980	141	157	148	148	135	202	229	209	217	201	262	291	263	281	259
1981	142	155	148	148	139	195	217	204	211	199	252	280	257	275	256
1982	142	155	148	146	138	190	212	202	204	195	245	276	256	268	254
1983	146	159	151	136	129	195	216	208	204	197	255	279	262	273	257
1984	147	165	156	134	125	198	225	217	209	200	257	286	273	278	266
1985	148	169	162	133	124	201	231	222	207	200	266	297	279	284	268
1986	148	173	173	137	134	208	242	237	220	215	279	319	297	304	288
1987	148	174	173	135	132	213	249	238	224	213	289	331	310	312	294
1988	150	175	180	139	137	226	266	255	241	226	312	358	330	333	309
1989	147	175	187	137	144	223	265	268	241	239	313	355	342	334	325
1990	146	160	183	135	146	226	252	266	243	248	319	350	342	347	341
1991	147	166	176	137	145	227	257	261	246	241	319	355	340	348	335
1992	149	165	180	135	144	223	253	262	237	240	319	348	343	340	332
1993	150	169	188	136	147	227	263	269	240	243	316	355	345	339	334
1994	159	179	188	141	144	235	272	270	246	243	325	364	348	345	335
1995	168	172	180	136	140	246	264	262	245	241	334	358	340	347	329
1996	170	183	191	138	143	246	273	276	246	245	347	377	357	360	342
1997	172	185	200	143	147	257	289	291	257	260	355	392	383	367	361
1998	174	191	203	142	147	257	296	297	257	255	357	394	382	370	362
1999	183	204	213	149	155	273	316	316	279	273	382	429	411	398	387
2000	190	213	221	157	156	283	319	317	288	279	387	428	417	401	393
2001	203	230	231	176	166	307	353	328	312	285	420	467	423	437	394
2002	214	243	227	185	169	313	360	333	316	284	427	480	429	444	403
2003	215	244	234	191	164	320	370	337	325	289	428	482	433	444	400
2004	221	254	243	198	175	330	384	349	338	300	438	500	447	454	413
2005	218	251	238	193	171	321	379	343	329	293	437	499	443	453	405
2006	214	247	241	191	176	316	376	342	322	293	428	501	445	448	409
2007	220	253	240	194	173	331	390	341	335	293	438	505	436	456	397
2008	215	250	235	194	170	317	383	340	319	280	428	511	438	448	393
2009	225	255	239	200	176	333	392	341	336	291	444	520	434	463	394

Notes. All equivalised for household size and expressed in December 2009 prices. See text for details

**Appendix Table B2. Mean and quintile group medians of HBAI income, broad income and consumption, all years**

	70 <sup>th</sup>	70 <sup>th</sup>	70 <sup>th</sup>	70 <sup>th</sup>	70 <sup>th</sup>	90 <sup>th</sup>	90 <sup>th</sup>	90 <sup>th</sup>	90 <sup>th</sup>	90 <sup>th</sup>	Mean	Mean	Mean	Mean	Mean
	HBAI income	Broad income	Cons- umption	Cash income	Cash outlays	HBAI income	Broad income	Cons- umption	Cash income	Cash outlays	HBAI income	Broad income	Cons- umption	Cash income	Cash outlays
1978	317	353	314	342	313	429	479	449	465	457	275	306	286	296	282
1979	328	365	336	355	335	446	502	482	483	502	282	316	303	303	298
1980	330	366	329	357	334	460	508	482	499	497	289	320	300	310	298
1981	326	359	327	355	333	466	509	473	507	494	287	316	298	311	301
1982	315	348	320	343	328	441	492	471	488	489	279	308	296	302	299
1983	329	359	335	352	340	474	515	502	511	524	289	316	306	306	303
1984	331	370	347	360	354	467	513	516	505	534	291	323	319	310	313
1985	351	387	359	376	356	501	553	539	534	556	305	339	328	320	317
1986	367	412	383	398	384	525	591	577	577	605	322	367	356	349	347
1987	386	445	403	421	399	584	673	621	638	618	344	398	374	370	357
1988	412	464	424	438	416	625	703	634	670	665	368	415	389	389	376
1989	419	467	445	451	440	620	685	662	669	690	364	407	400	386	393
1990	433	472	449	471	463	653	707	668	702	734	381	410	400	405	412
1991	435	475	440	465	449	662	710	652	705	701	381	412	389	405	397
1992	431	469	437	456	443	651	698	648	689	682	374	404	395	393	397
1993	428	474	447	458	444	646	705	656	690	679	374	414	399	398	395
1994	437	480	444	470	446	653	708	655	703	684	383	420	397	404	392
1995	452	482	435	469	440	684	715	642	708	670	395	416	388	402	383
1996	466	502	467	484	464	710	755	691	735	709	412	440	415	418	403
1997	490	528	492	508	488	734	788	723	765	742	428	460	434	437	422
1998	485	526	501	508	495	742	801	745	772	768	437	473	444	447	431
1999	515	565	527	535	513	792	852	764	830	789	467	510	466	480	448
2000	522	568	535	543	525	792	875	793	831	818	463	508	479	476	459
2001	564	619	549	587	535	856	904	798	888	828	511	556	485	525	468
2002	573	632	563	597	549	871	944	802	906	828	510	560	493	524	472
2003	560	625	565	585	550	841	932	847	884	848	519	574	503	532	478
2004	576	652	584	605	557	879	992	850	917	862	525	588	517	540	485
2005	583	661	576	610	549	903	994	856	937	846	528	593	520	543	486
2006	585	663	578	613	549	910	1018	864	951	850	532	599	519	547	483
2007	580	665	565	608	532	906	1032	856	948	823	558	632	511	573	469
2008	579	663	563	604	523	891	1002	839	931	806	523	602	507	538	460
2009	594	675	561	620	529	926	1010	815	963	800	542	611	496	556	459

Notes. All equivalised for household size and expressed in December 2009 prices. See text for details

**Appendix Table B3. Inequality (Gini coefficient) in HBAI income, broad income and consumption, all years**

	HBAI income		Broad income		Cons umption		Cash income		Cash outlays	
1978	0.243	0.003	0.243	0.003	0.255	0.003	0.249	0.003	0.275	0.003
1979	0.248	0.003	0.246	0.002	0.267	0.003	0.254	0.002	0.290	0.003
1980	0.263	0.003	0.256	0.003	0.269	0.003	0.262	0.003	0.288	0.003
1981	0.274	0.005	0.270	0.005	0.276	0.004	0.274	0.005	0.292	0.004
1982	0.269	0.007	0.265	0.006	0.277	0.004	0.272	0.006	0.297	0.004
1983	0.272	0.003	0.268	0.003	0.275	0.003	0.284	0.003	0.305	0.003
1984	0.267	0.003	0.262	0.003	0.281	0.005	0.283	0.003	0.318	0.005
1985	0.279	0.003	0.271	0.003	0.279	0.004	0.297	0.003	0.321	0.004
1986	0.298	0.004	0.293	0.005	0.290	0.005	0.317	0.005	0.333	0.004
1987	0.318	0.006	0.319	0.007	0.306	0.009	0.337	0.007	0.345	0.009
1988	0.329	0.006	0.319	0.006	0.297	0.005	0.335	0.006	0.346	0.005
1989	0.323	0.004	0.308	0.004	0.285	0.003	0.325	0.004	0.340	0.004
1990	0.342	0.006	0.337	0.006	0.293	0.003	0.343	0.006	0.344	0.004
1991	0.338	0.006	0.327	0.005	0.288	0.003	0.338	0.005	0.338	0.004
1992	0.332	0.004	0.324	0.004	0.292	0.008	0.337	0.004	0.341	0.008
1993	0.330	0.004	0.321	0.004	0.283	0.003	0.343	0.005	0.332	0.004
1994	0.320	0.005	0.310	0.004	0.277	0.003	0.335	0.004	0.332	0.004
1995	0.314	0.004	0.316	0.004	0.281	0.003	0.337	0.004	0.329	0.003
1996	0.327	0.005	0.319	0.005	0.287	0.004	0.349	0.005	0.335	0.004
1997	0.331	0.004	0.323	0.004	0.284	0.003	0.351	0.004	0.336	0.004
1998	0.345	0.008	0.333	0.007	0.287	0.003	0.364	0.007	0.345	0.004
1999	0.350	0.008	0.336	0.007	0.283	0.003	0.365	0.008	0.339	0.004
2000	0.334	0.006	0.324	0.005	0.289	0.004	0.350	0.006	0.341	0.004
2001	0.346	0.008	0.328	0.007	0.280	0.004	0.359	0.007	0.340	0.005
2002	0.326	0.006	0.312	0.006	0.283	0.004	0.340	0.006	0.341	0.005
2003	0.336	0.008	0.323	0.008	0.286	0.003	0.348	0.008	0.342	0.004
2004	0.326	0.006	0.313	0.006	0.281	0.003	0.337	0.006	0.334	0.004
2005	0.334	0.006	0.323	0.005	0.296	0.005	0.347	0.005	0.347	0.005
2006	0.344	0.007	0.330	0.007	0.291	0.004	0.355	0.007	0.340	0.005
2007	0.365	0.035	0.353	0.032	0.288	0.007	0.376	0.034	0.333	0.008
2008	0.337	0.009	0.322	0.009	0.290	0.004	0.349	0.009	0.335	0.005
2009	0.335	0.008	0.321	0.007	0.271	0.004	0.351	0.008	0.319	0.005

Notes. All equivalised for household size and expressed in December 2009 prices. See text for details



**Appendix Table B4. Inequality (coefficient of variation) in HBAI income, broad income and consumption, all years**

	HBAI income		Broad income		Cons umption		Cash income		Cash outlays	
1978	0.476	0.011	0.473	0.012	0.540	0.012	0.487	0.013	0.575	0.012
1979	0.475	0.009	0.467	0.008	0.563	0.014	0.481	0.008	0.599	0.013
1980	0.544	0.021	0.517	0.015	0.581	0.021	0.525	0.016	0.608	0.019
1981	0.726	0.127	0.696	0.118	0.641	0.039	0.694	0.114	0.666	0.037
1982	0.791	0.201	0.738	0.175	0.641	0.026	0.758	0.178	0.675	0.024
1983	0.575	0.025	0.563	0.021	0.599	0.018	0.586	0.020	0.643	0.017
1984	0.560	0.019	0.541	0.017	0.786	0.113	0.574	0.016	0.835	0.108
1985	0.568	0.014	0.548	0.013	0.622	0.025	0.592	0.014	0.686	0.022
1986	0.683	0.032	0.748	0.083	0.697	0.039	0.795	0.084	0.761	0.036
1987	0.845	0.138	0.919	0.189	1.028	0.228	0.962	0.202	1.084	0.220
1988	0.962	0.157	0.890	0.144	0.761	0.076	0.926	0.144	0.856	0.073
1989	0.705	0.025	0.647	0.019	0.616	0.020	0.686	0.020	0.742	0.019
1990	0.903	0.104	0.879	0.121	0.628	0.021	0.886	0.111	0.761	0.037
1991	0.892	0.120	0.820	0.102	0.605	0.019	0.859	0.108	0.719	0.020
1992	0.716	0.023	0.678	0.020	1.166	0.379	0.710	0.021	1.198	0.346
1993	0.729	0.031	0.723	0.038	0.605	0.016	0.772	0.038	0.710	0.016
1994	0.742	0.048	0.694	0.041	0.570	0.013	0.748	0.042	0.732	0.051
1995	0.667	0.020	0.662	0.020	0.578	0.013	0.701	0.020	0.672	0.013
1996	0.776	0.063	0.737	0.057	0.611	0.021	0.803	0.060	0.706	0.021
1997	0.742	0.027	0.708	0.024	0.590	0.017	0.772	0.026	0.697	0.018
1998	1.002	0.165	0.940	0.153	0.581	0.011	1.020	0.156	0.723	0.017
1999	1.086	0.206	1.009	0.191	0.578	0.015	1.095	0.194	0.707	0.018
2000	0.802	0.052	0.759	0.047	0.607	0.015	0.830	0.053	0.713	0.017
2001	1.025	0.130	0.946	0.117	0.667	0.076	1.032	0.122	0.784	0.071
2002	0.856	0.091	0.788	0.078	0.592	0.025	0.867	0.086	0.816	0.108
2003	0.988	0.085	0.905	0.074	0.588	0.013	0.988	0.081	0.717	0.017
2004	0.814	0.063	0.756	0.057	0.570	0.011	0.831	0.066	0.685	0.017
2005	0.811	0.049	0.762	0.042	0.696	0.071	0.824	0.046	0.801	0.067
2006	0.867	0.068	0.797	0.057	0.609	0.017	0.871	0.064	0.727	0.029
2007	2.106	0.806	1.889	0.719	0.653	0.072	2.062	0.782	0.772	0.092
2008	1.085	0.295	0.981	0.253	0.654	0.047	1.079	0.280	0.742	0.043
2009	0.847	0.091	0.774	0.076	0.549	0.015	0.858	0.086	0.643	0.017

Notes. All equalised for household size and expressed in December 2009 prices. See text for details

**Appendix Table B5. Inequality (10:90) in HBAI income, broad income and consumption, all years**

	HBAI income		Broad income		Cons umption		Cash income		Cash outlays	
1978	0.335	0.004	0.332	0.004	0.331	0.005	0.319	0.004	0.298	0.005
1979	0.321	0.004	0.323	0.004	0.312	0.005	0.308	0.004	0.271	0.005
1980	0.307	0.004	0.309	0.004	0.306	0.004	0.296	0.004	0.272	0.004
1981	0.304	0.004	0.304	0.004	0.313	0.004	0.291	0.004	0.281	0.004
1982	0.322	0.004	0.314	0.004	0.313	0.004	0.300	0.004	0.282	0.004
1983	0.308	0.004	0.308	0.004	0.302	0.005	0.265	0.004	0.247	0.004
1984	0.314	0.004	0.321	0.004	0.303	0.005	0.266	0.004	0.233	0.004
1985	0.295	0.004	0.306	0.004	0.301	0.005	0.248	0.004	0.222	0.004
1986	0.282	0.004	0.292	0.004	0.300	0.005	0.237	0.004	0.222	0.004
1987	0.253	0.004	0.258	0.004	0.279	0.004	0.212	0.003	0.213	0.004
1988	0.239	0.004	0.249	0.004	0.284	0.004	0.207	0.003	0.206	0.004
1989	0.236	0.004	0.255	0.004	0.283	0.004	0.205	0.003	0.208	0.004
1990	0.224	0.004	0.227	0.004	0.274	0.004	0.193	0.004	0.199	0.004
1991	0.222	0.004	0.234	0.004	0.270	0.004	0.194	0.004	0.206	0.004
1992	0.229	0.004	0.236	0.004	0.278	0.004	0.196	0.004	0.211	0.004
1993	0.232	0.004	0.240	0.004	0.286	0.004	0.198	0.004	0.217	0.004
1994	0.244	0.004	0.252	0.004	0.287	0.004	0.201	0.004	0.210	0.004
1995	0.246	0.004	0.241	0.004	0.281	0.004	0.193	0.004	0.209	0.004
1996	0.240	0.004	0.242	0.004	0.276	0.005	0.187	0.004	0.201	0.004
1997	0.235	0.004	0.235	0.004	0.277	0.005	0.186	0.004	0.198	0.004
1998	0.234	0.004	0.239	0.005	0.272	0.004	0.184	0.004	0.191	0.004
1999	0.231	0.004	0.240	0.004	0.279	0.004	0.180	0.004	0.197	0.004
2000	0.240	0.004	0.243	0.005	0.278	0.005	0.189	0.004	0.190	0.004
2001	0.237	0.004	0.254	0.005	0.289	0.005	0.199	0.004	0.201	0.004
2002	0.245	0.004	0.258	0.005	0.283	0.005	0.204	0.004	0.204	0.004
2003	0.256	0.005	0.262	0.005	0.276	0.005	0.216	0.005	0.193	0.005
2004	0.251	0.005	0.256	0.005	0.286	0.005	0.216	0.005	0.203	0.004
2005	0.241	0.005	0.253	0.005	0.278	0.005	0.206	0.005	0.202	0.005
2006	0.236	0.005	0.243	0.006	0.279	0.005	0.200	0.005	0.207	0.005
2007	0.243	0.005	0.245	0.006	0.280	0.006	0.204	0.005	0.210	0.005
2008	0.242	0.005	0.249	0.006	0.280	0.006	0.209	0.005	0.211	0.005
2009	0.243	0.006	0.253	0.007	0.293	0.007	0.207	0.006	0.220	0.006

Notes. All equivalised for household size and expressed in December 2009 prices. See text for details

**Appendix Table B6. Inequality (50:90) in HBAI income, broad income and consumption, all years**

	HBAI income		Broad income		Cons umption		Cash income		Cash outlays	
1978	0.591	0.006	0.585	0.005	0.563	0.006	0.582	0.005	0.535	0.007
1979	0.575	0.006	0.574	0.006	0.549	0.006	0.571	0.006	0.516	0.007
1980	0.570	0.006	0.573	0.006	0.544	0.006	0.563	0.006	0.521	0.006
1981	0.540	0.006	0.550	0.006	0.543	0.006	0.542	0.006	0.519	0.006
1982	0.556	0.006	0.561	0.006	0.543	0.006	0.549	0.006	0.520	0.006
1983	0.538	0.006	0.542	0.006	0.522	0.007	0.535	0.006	0.489	0.007
1984	0.550	0.006	0.558	0.006	0.530	0.007	0.551	0.006	0.497	0.007
1985	0.532	0.006	0.536	0.006	0.517	0.007	0.531	0.006	0.482	0.007
1986	0.532	0.006	0.539	0.006	0.515	0.007	0.526	0.006	0.475	0.006
1987	0.496	0.006	0.491	0.006	0.500	0.006	0.489	0.006	0.476	0.007
1988	0.498	0.006	0.509	0.006	0.520	0.006	0.497	0.006	0.466	0.007
1989	0.505	0.006	0.518	0.005	0.517	0.006	0.499	0.006	0.471	0.006
1990	0.489	0.007	0.495	0.007	0.512	0.006	0.494	0.007	0.465	0.007
1991	0.482	0.006	0.500	0.006	0.521	0.006	0.493	0.006	0.477	0.007
1992	0.490	0.006	0.499	0.006	0.529	0.006	0.494	0.006	0.487	0.006
1993	0.489	0.006	0.504	0.006	0.525	0.006	0.491	0.006	0.492	0.007
1994	0.497	0.006	0.514	0.006	0.531	0.006	0.492	0.007	0.490	0.007
1995	0.488	0.006	0.501	0.007	0.530	0.006	0.490	0.006	0.491	0.007
1996	0.488	0.007	0.499	0.007	0.517	0.007	0.490	0.007	0.482	0.007
1997	0.484	0.007	0.497	0.006	0.530	0.007	0.479	0.007	0.487	0.007
1998	0.481	0.007	0.492	0.007	0.513	0.006	0.480	0.007	0.471	0.007
1999	0.482	0.007	0.504	0.006	0.538	0.006	0.479	0.007	0.490	0.007
2000	0.488	0.007	0.489	0.007	0.525	0.007	0.483	0.007	0.481	0.006
2001	0.491	0.007	0.516	0.007	0.530	0.007	0.491	0.007	0.476	0.007
2002	0.490	0.007	0.508	0.007	0.534	0.006	0.491	0.007	0.487	0.007
2003	0.509	0.007	0.517	0.007	0.511	0.007	0.502	0.008	0.472	0.008
2004	0.498	0.008	0.504	0.007	0.526	0.007	0.495	0.008	0.479	0.007
2005	0.484	0.008	0.502	0.007	0.517	0.007	0.484	0.008	0.479	0.008
2006	0.471	0.008	0.492	0.008	0.515	0.007	0.471	0.008	0.481	0.008
2007	0.484	0.008	0.490	0.007	0.509	0.008	0.481	0.008	0.482	0.008
2008	0.480	0.008	0.510	0.008	0.522	0.008	0.481	0.008	0.487	0.008
2009	0.480	0.009	0.515	0.009	0.533	0.009	0.480	0.009	0.493	0.010

Notes. All equalised for household size and expressed in December 2009 prices. See text for details

**Appendix Table B7. Inequality (10:50) in HBAI income, broad income and consumption, all years**

	HBAI income		Broad income		Cons umption		Cash income		Cash outlays	
1978	0.568	0.005	0.567	0.006	0.588	0.006	0.548	0.005	0.556	0.006
1979	0.558	0.006	0.563	0.006	0.568	0.006	0.540	0.006	0.525	0.006
1980	0.539	0.005	0.539	0.006	0.563	0.006	0.527	0.005	0.522	0.006
1981	0.563	0.005	0.553	0.005	0.575	0.005	0.537	0.005	0.542	0.006
1982	0.579	0.005	0.561	0.005	0.577	0.006	0.546	0.005	0.541	0.006
1983	0.572	0.006	0.569	0.006	0.578	0.006	0.496	0.006	0.504	0.006
1984	0.571	0.006	0.575	0.006	0.572	0.006	0.482	0.006	0.470	0.006
1985	0.554	0.006	0.570	0.006	0.581	0.006	0.467	0.006	0.462	0.006
1986	0.530	0.006	0.542	0.006	0.582	0.006	0.451	0.006	0.467	0.006
1987	0.510	0.006	0.525	0.006	0.558	0.006	0.434	0.006	0.447	0.006
1988	0.480	0.006	0.489	0.006	0.546	0.006	0.416	0.006	0.443	0.006
1989	0.468	0.006	0.492	0.006	0.547	0.006	0.411	0.006	0.442	0.006
1990	0.458	0.006	0.459	0.007	0.534	0.006	0.390	0.006	0.428	0.007
1991	0.461	0.006	0.468	0.007	0.518	0.006	0.394	0.006	0.432	0.007
1992	0.467	0.006	0.473	0.007	0.527	0.006	0.397	0.006	0.433	0.006
1993	0.474	0.007	0.477	0.007	0.545	0.006	0.402	0.006	0.441	0.006
1994	0.491	0.006	0.491	0.007	0.540	0.006	0.408	0.006	0.429	0.007
1995	0.504	0.006	0.480	0.007	0.530	0.006	0.394	0.007	0.424	0.007
1996	0.490	0.006	0.485	0.007	0.534	0.007	0.383	0.006	0.418	0.007
1997	0.485	0.007	0.472	0.007	0.523	0.007	0.389	0.007	0.406	0.007
1998	0.487	0.007	0.486	0.007	0.531	0.007	0.384	0.007	0.405	0.007
1999	0.480	0.006	0.476	0.007	0.518	0.007	0.375	0.007	0.402	0.007
2000	0.491	0.007	0.498	0.007	0.530	0.007	0.391	0.007	0.396	0.007
2001	0.482	0.007	0.493	0.007	0.545	0.006	0.404	0.007	0.422	0.007
2002	0.501	0.007	0.507	0.007	0.530	0.007	0.417	0.007	0.419	0.007
2003	0.503	0.007	0.507	0.007	0.540	0.007	0.430	0.007	0.409	0.008
2004	0.505	0.007	0.507	0.008	0.544	0.007	0.436	0.007	0.423	0.008
2005	0.499	0.007	0.503	0.008	0.538	0.007	0.427	0.008	0.422	0.008
2006	0.500	0.008	0.493	0.009	0.541	0.008	0.426	0.009	0.430	0.008
2007	0.502	0.008	0.501	0.009	0.550	0.008	0.425	0.009	0.436	0.009
2008	0.503	0.008	0.489	0.009	0.536	0.008	0.434	0.009	0.432	0.009
2009	0.506	0.010	0.491	0.011	0.551	0.010	0.431	0.010	0.446	0.011

Notes. All equivalised for household size and expressed in December 2009 prices. See text for details

**Appendix Table B8. Measures of relative poverty in HBAI income, broad income and consumption, all years**

	HBAI income	Standard error	Broad income	Standard Error	Consumption	Standard Error	Cash income	Standard Error	Cash outlays	Standard error
1978	0.131	0.005	0.127	0.005	0.111	0.004	0.148	0.005	0.129	0.004
1979	0.135	0.005	0.130	0.005	0.121	0.004	0.155	0.005	0.158	0.005
1980	0.154	0.005	0.146	0.004	0.128	0.004	0.161	0.005	0.160	0.004
1981	0.138	0.005	0.142	0.005	0.122	0.004	0.158	0.005	0.142	0.004
1982	0.120	0.005	0.132	0.005	0.118	0.004	0.148	0.005	0.146	0.004
1983	0.129	0.005	0.126	0.005	0.114	0.004	0.185	0.005	0.170	0.005
1984	0.128	0.005	0.122	0.005	0.123	0.004	0.193	0.005	0.188	0.005
1985	0.141	0.005	0.125	0.005	0.112	0.004	0.207	0.005	0.188	0.005
1986	0.164	0.005	0.150	0.005	0.116	0.004	0.215	0.005	0.189	0.005
1987	0.183	0.005	0.167	0.005	0.136	0.005	0.221	0.005	0.203	0.005
1988	0.212	0.005	0.187	0.005	0.138	0.004	0.221	0.005	0.201	0.005
1989	0.215	0.005	0.179	0.005	0.138	0.004	0.221	0.005	0.201	0.005
1990	0.223	0.005	0.209	0.005	0.150	0.005	0.233	0.005	0.203	0.005
1991	0.216	0.005	0.206	0.005	0.161	0.005	0.225	0.005	0.214	0.005
1992	0.222	0.005	0.206	0.005	0.156	0.005	0.242	0.005	0.211	0.005
1993	0.204	0.005	0.190	0.005	0.142	0.005	0.234	0.005	0.209	0.005
1994	0.193	0.005	0.183	0.005	0.144	0.005	0.225	0.005	0.210	0.005
1995	0.184	0.005	0.195	0.005	0.153	0.005	0.232	0.005	0.213	0.005
1996	0.210	0.005	0.198	0.005	0.149	0.005	0.249	0.005	0.213	0.005
1997	0.201	0.005	0.191	0.005	0.164	0.005	0.237	0.005	0.221	0.005
1998	0.198	0.005	0.182	0.005	0.149	0.005	0.236	0.005	0.224	0.005
1999	0.209	0.005	0.193	0.005	0.161	0.005	0.231	0.005	0.229	0.005
2000	0.194	0.005	0.176	0.005	0.155	0.005	0.222	0.005	0.220	0.005
2001	0.198	0.005	0.173	0.005	0.140	0.005	0.225	0.005	0.214	0.005
2002	0.191	0.006	0.173	0.005	0.151	0.005	0.216	0.005	0.227	0.005
2003	0.175	0.005	0.165	0.005	0.143	0.005	0.205	0.005	0.214	0.005
2004	0.177	0.005	0.164	0.005	0.141	0.005	0.202	0.005	0.211	0.005
2005	0.177	0.006	0.167	0.005	0.145	0.005	0.209	0.005	0.210	0.005
2006	0.177	0.006	0.175	0.006	0.146	0.006	0.208	0.006	0.212	0.006
2007	0.176	0.006	0.162	0.006	0.136	0.006	0.205	0.006	0.200	0.006
2008	0.179	0.006	0.173	0.006	0.145	0.006	0.214	0.006	0.219	0.006
2009	0.176	0.007	0.173	0.007	0.136	0.007	0.212	0.007	0.194	0.007

Notes. Relative poverty defined as living in household with less than 60% of median income.

**Appendix Table B9. Differences in measures of inequality of HBAI income, broad income and consumption, all years**

	Gini						Coefficient of variation					
	Income – consumption	Standard error	Income – HBAI	Standard error	Consumption – HBAI	Standard error	Income – consumption	Standard error	Income – HBAI	Standard error	Consumption – HBAI	Standard error
1978	0.012	0.003	0.000	0.001	-0.012	0.003	0.066	0.016	0.002	0.005	-0.064	0.015
1979	0.022	0.003	0.003	0.001	-0.019	0.004	0.096	0.015	0.008	0.004	-0.088	0.016
1980	0.013	0.004	0.007	0.002	-0.006	0.004	0.064	0.025	0.027	0.011	-0.037	0.029
1981	0.005	0.006	0.004	0.002	-0.001	0.006	-0.055	0.124	0.030	0.012	0.085	0.132
1982	0.011	0.006	0.004	0.002	-0.008	0.007	-0.097	0.170	0.052	0.027	0.150	0.196
1983	0.007	0.004	0.004	0.002	-0.003	0.004	0.036	0.027	0.012	0.008	-0.024	0.030
1984	0.019	0.005	0.005	0.002	-0.014	0.005	0.245	0.111	0.019	0.005	-0.226	0.111
1985	0.008	0.004	0.008	0.002	0.000	0.004	0.074	0.026	0.020	0.007	-0.054	0.027
1986	-0.003	0.006	0.005	0.003	0.008	0.006	-0.051	0.092	-0.065	0.079	-0.014	0.049
1987	-0.013	0.011	-0.002	0.003	0.012	0.010	0.109	0.296	-0.074	0.053	-0.184	0.266
1988	-0.022	0.007	0.010	0.002	0.032	0.007	-0.129	0.163	0.072	0.015	0.201	0.174
1989	-0.023	0.004	0.015	0.002	0.038	0.004	-0.031	0.025	0.059	0.012	0.090	0.030
1990	-0.044	0.005	0.005	0.002	0.049	0.005	-0.251	0.106	0.025	0.029	0.275	0.089
1991	-0.039	0.005	0.010	0.002	0.050	0.006	-0.215	0.102	0.073	0.023	0.287	0.120
1992	-0.031	0.008	0.008	0.002	0.039	0.009	0.488	0.379	0.038	0.007	-0.450	0.379
1993	-0.037	0.004	0.009	0.002	0.047	0.004	-0.118	0.040	0.006	0.018	0.124	0.032
1994	-0.032	0.005	0.010	0.002	0.043	0.005	-0.124	0.043	0.048	0.009	0.172	0.050
1995	-0.035	0.004	-0.002	0.002	0.033	0.004	-0.084	0.021	0.005	0.004	0.089	0.021
1996	-0.032	0.005	0.009	0.001	0.041	0.005	-0.126	0.060	0.039	0.008	0.165	0.066
1997	-0.039	0.004	0.008	0.002	0.047	0.005	-0.118	0.029	0.034	0.005	0.152	0.031
1998	-0.046	0.007	0.012	0.002	0.058	0.007	-0.359	0.153	0.062	0.013	0.421	0.165
1999	-0.053	0.007	0.014	0.002	0.067	0.007	-0.431	0.191	0.076	0.016	0.507	0.206
2000	-0.035	0.005	0.009	0.002	0.045	0.006	-0.152	0.048	0.042	0.006	0.194	0.052
2001	-0.048	0.007	0.017	0.002	0.065	0.008	-0.278	0.136	0.080	0.014	0.358	0.147
2002	-0.030	0.005	0.013	0.002	0.043	0.006	-0.196	0.077	0.069	0.015	0.264	0.090
2003	-0.038	0.007	0.012	0.002	0.050	0.008	-0.317	0.073	0.083	0.014	0.400	0.084
2004	-0.032	0.005	0.013	0.002	0.045	0.006	-0.186	0.053	0.058	0.009	0.244	0.059
2005	-0.027	0.006	0.011	0.002	0.038	0.006	-0.066	0.081	0.050	0.008	0.115	0.085
2006	-0.039	0.006	0.014	0.002	0.053	0.007	-0.188	0.056	0.070	0.015	0.258	0.067
2007	-0.064	0.026	0.012	0.004	0.077	0.029	-1.236	0.647	0.217	0.088	1.453	0.735
2008	-0.032	0.009	0.014	0.002	0.047	0.010	-0.327	0.257	0.103	0.042	0.430	0.298
2009	-0.050	0.007	0.014	0.002	0.064	0.008	-0.225	0.076	0.073	0.016	0.298	0.092

Notes. Standard errors calculated using DAsD package.

**Appendix Table B10. Differences in measures of inequality of HBAI income, broad income and consumption, all years**

	<b>10:90</b>					
	Income – consumption	Standard error	Income – HBAI	Standard error	Consumption – HBAI	Standard error
<b>1978</b>	-0.001	0.005	0.003	0.003	0.004	0.005
<b>1979</b>	-0.011	0.005	-0.002	0.003	0.009	0.005
<b>1980</b>	-0.003	0.005	-0.002	0.003	0.001	0.005
<b>1981</b>	0.009	0.005	0.000	0.003	-0.009	0.005
<b>1982</b>	-0.001	0.005	0.007	0.003	0.008	0.005
<b>1983</b>	-0.007	0.005	0.000	0.003	0.006	0.005
<b>1984</b>	-0.018	0.005	-0.007	0.003	0.011	0.005
<b>1985</b>	-0.005	0.005	-0.011	0.003	-0.006	0.005
<b>1986</b>	0.008	0.005	-0.010	0.004	-0.018	0.005
<b>1987</b>	0.021	0.005	-0.005	0.003	-0.027	0.005
<b>1988</b>	0.035	0.005	-0.010	0.003	-0.045	0.005
<b>1989</b>	0.028	0.005	-0.019	0.004	-0.046	0.005
<b>1990</b>	0.046	0.005	-0.003	0.004	-0.049	0.005
<b>1991</b>	0.036	0.005	-0.012	0.004	-0.048	0.005
<b>1992</b>	0.043	0.005	-0.007	0.004	-0.050	0.005
<b>1993</b>	0.046	0.005	-0.009	0.004	-0.054	0.005
<b>1994</b>	0.034	0.005	-0.008	0.004	-0.043	0.005
<b>1995</b>	0.040	0.005	0.006	0.003	-0.034	0.005
<b>1996</b>	0.034	0.005	-0.003	0.003	-0.037	0.005
<b>1997</b>	0.043	0.005	0.000	0.004	-0.043	0.005
<b>1998</b>	0.033	0.005	-0.005	0.004	-0.038	0.005
<b>1999</b>	0.039	0.005	-0.009	0.003	-0.047	0.005
<b>2000</b>	0.035	0.006	-0.003	0.004	-0.038	0.005
<b>2001</b>	0.035	0.005	-0.018	0.004	-0.052	0.005
<b>2002</b>	0.026	0.006	-0.012	0.004	-0.038	0.006
<b>2003</b>	0.014	0.006	-0.006	0.004	-0.020	0.006
<b>2004</b>	0.030	0.006	-0.004	0.004	-0.035	0.006
<b>2005</b>	0.026	0.006	-0.011	0.004	-0.037	0.006
<b>2006</b>	0.036	0.006	-0.007	0.004	-0.043	0.006
<b>2007</b>	0.035	0.006	-0.003	0.005	-0.037	0.006
<b>2008</b>	0.031	0.007	-0.007	0.004	-0.038	0.007
<b>2009</b>	0.040	0.007	-0.010	0.005	-0.050	0.007

Notes. Standard errors calculated using DASD package.

**Appendix Table B11. Differences in measures of inequality of HBAI income, broad income and consumption, all years**

	50:90						10:50					
	Income – consumption	Standard error	Income – HBAI	Standard error	Consumption – HBAI	Standard error	Income - consumption	Standard error	Income – HBAI	Standard error	Consumption - HBAI	Standard error
1978	-0.022	0.007	0.005	0.004	0.027	0.008	0.021	0.007	0.000	0.005	-0.020	0.007
1979	-0.025	0.008	0.001	0.004	0.026	0.008	0.005	0.007	-0.005	0.005	-0.010	0.007
1980	-0.029	0.008	-0.003	0.004	0.026	0.008	0.023	0.007	0.000	0.005	-0.023	0.007
1981	-0.006	0.007	-0.009	0.004	-0.003	0.007	0.022	0.007	0.010	0.005	-0.012	0.007
1982	-0.018	0.007	-0.005	0.004	0.013	0.007	0.016	0.007	0.018	0.005	0.002	0.007
1983	-0.020	0.008	-0.004	0.004	0.017	0.008	0.010	0.007	0.004	0.005	-0.006	0.007
1984	-0.028	0.008	-0.007	0.005	0.021	0.008	-0.003	0.007	-0.005	0.005	-0.001	0.007
1985	-0.019	0.008	-0.004	0.004	0.015	0.008	0.011	0.007	-0.016	0.005	-0.028	0.007
1986	-0.024	0.008	-0.007	0.005	0.017	0.008	0.040	0.007	-0.012	0.006	-0.052	0.008
1987	0.009	0.008	0.004	0.005	-0.005	0.008	0.033	0.007	-0.015	0.006	-0.048	0.007
1988	0.011	0.008	-0.010	0.005	-0.021	0.008	0.056	0.007	-0.010	0.006	-0.066	0.007
1989	-0.001	0.007	-0.013	0.005	-0.012	0.008	0.055	0.008	-0.024	0.006	-0.079	0.008
1990	0.017	0.008	-0.005	0.006	-0.023	0.008	0.075	0.008	-0.001	0.007	-0.076	0.008
1991	0.021	0.007	-0.018	0.005	-0.039	0.008	0.050	0.008	-0.007	0.007	-0.057	0.008
1992	0.030	0.007	-0.009	0.005	-0.039	0.007	0.054	0.008	-0.006	0.007	-0.060	0.008
1993	0.022	0.007	-0.015	0.005	-0.036	0.007	0.068	0.008	-0.003	0.007	-0.071	0.008
1994	0.017	0.008	-0.017	0.005	-0.034	0.008	0.049	0.008	0.000	0.007	-0.049	0.008
1995	0.029	0.008	-0.013	0.005	-0.042	0.007	0.049	0.008	0.024	0.006	-0.025	0.008
1996	0.018	0.008	-0.011	0.005	-0.029	0.008	0.049	0.008	0.005	0.006	-0.043	0.008
1997	0.033	0.008	-0.013	0.005	-0.046	0.008	0.051	0.008	0.013	0.007	-0.038	0.008
1998	0.021	0.008	-0.011	0.005	-0.032	0.008	0.045	0.009	0.002	0.007	-0.043	0.009
1999	0.034	0.008	-0.022	0.005	-0.056	0.008	0.041	0.008	0.004	0.006	-0.038	0.008
2000	0.036	0.008	0.000	0.005	-0.037	0.008	0.032	0.009	-0.006	0.007	-0.038	0.009
2001	0.014	0.008	-0.025	0.005	-0.039	0.008	0.053	0.008	-0.011	0.007	-0.063	0.008
2002	0.026	0.008	-0.019	0.005	-0.044	0.008	0.024	0.009	-0.006	0.007	-0.030	0.009
2003	-0.006	0.008	-0.008	0.005	-0.002	0.008	0.033	0.009	-0.004	0.007	-0.036	0.009
2004	0.021	0.008	-0.006	0.005	-0.028	0.009	0.037	0.009	-0.003	0.007	-0.040	0.009
2005	0.015	0.008	-0.018	0.005	-0.034	0.009	0.035	0.010	-0.004	0.008	-0.039	0.010
2006	0.023	0.009	-0.021	0.006	-0.045	0.009	0.048	0.010	0.007	0.008	-0.041	0.010
2007	0.019	0.009	-0.006	0.006	-0.025	0.010	0.049	0.011	0.000	0.009	-0.048	0.010
2008	0.012	0.009	-0.030	0.005	-0.041	0.010	0.048	0.011	0.015	0.008	-0.033	0.011
2009	0.018	0.010	-0.035	0.007	-0.053	0.011	0.060	0.012	0.015	0.010	-0.045	0.012

Notes. Standard errors calculated using DASD package.



**Appendix Table B12. Differences in measures of relative poverty, all years**

	<b>All individuals</b>					
	Income – consumption	Standard error	Income – HBAI	Standard error	Consumption – HBAI	Standard error
<b>1978</b>	-0.016	0.005	0.004	0.004	0.020	0.005
<b>1979</b>	-0.009	0.005	0.004	0.004	0.014	0.006
<b>1980</b>	-0.018	0.005	0.008	0.004	0.026	0.005
<b>1981</b>	-0.021	0.005	-0.004	0.004	0.016	0.006
<b>1982</b>	-0.014	0.005	-0.012	0.004	0.002	0.006
<b>1983</b>	-0.012	0.006	0.003	0.004	0.015	0.006
<b>1984</b>	0.000	0.006	0.006	0.004	0.006	0.006
<b>1985</b>	-0.012	0.006	0.016	0.005	0.029	0.006
<b>1986</b>	-0.034	0.006	0.014	0.005	0.048	0.006
<b>1987</b>	-0.031	0.006	0.016	0.005	0.047	0.006
<b>1988</b>	-0.049	0.005	0.025	0.005	0.074	0.006
<b>1989</b>	-0.041	0.006	0.037	0.005	0.077	0.006
<b>1990</b>	-0.060	0.006	0.014	0.005	0.073	0.006
<b>1991</b>	-0.045	0.006	0.010	0.005	0.055	0.006
<b>1992</b>	-0.050	0.006	0.017	0.005	0.067	0.006
<b>1993</b>	-0.048	0.006	0.015	0.005	0.063	0.006
<b>1994</b>	-0.039	0.006	0.010	0.005	0.049	0.006
<b>1995</b>	-0.042	0.006	-0.011	0.005	0.031	0.006
<b>1996</b>	-0.050	0.006	0.011	0.005	0.061	0.006
<b>1997</b>	-0.027	0.006	0.010	0.005	0.037	0.007
<b>1998</b>	-0.033	0.006	0.016	0.005	0.049	0.007
<b>1999</b>	-0.032	0.006	0.016	0.005	0.048	0.007
<b>2000</b>	-0.020	0.006	0.018	0.005	0.038	0.007
<b>2001</b>	-0.032	0.006	0.025	0.005	0.058	0.006
<b>2002</b>	-0.022	0.007	0.018	0.005	0.039	0.007
<b>2003</b>	-0.022	0.006	0.010	0.005	0.032	0.007
<b>2004</b>	-0.024	0.007	0.013	0.005	0.037	0.007
<b>2005</b>	-0.022	0.007	0.010	0.006	0.032	0.007
<b>2006</b>	-0.029	0.007	0.002	0.006	0.031	0.008
<b>2007</b>	-0.027	0.007	0.014	0.006	0.041	0.007
<b>2008</b>	-0.028	0.007	0.006	0.006	0.034	0.008
<b>2009</b>	-0.037	0.008	0.003	0.007	0.040	0.009

Notes. Standard errors calculated using DASD package.

**Appendix Table B13. Statistical significance of changes in Gini in HBAI income**

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1978	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1979	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
1980	1	1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1981	1	1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1982	1	1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1983	1	1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1984	1	1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1985	1	1	1	0	0	0	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1986	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1987	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	-1	0	0	0	0	0	-1	-1	-1	-1	0	0	0	0	-1	-1	0	0	0
1988	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1989	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	-1	0	0	0
1990	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1993	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1994	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	-1	-1	0	0	0	0
1995	1	1	1	1	1	1	1	1	1	0	-1	0	-1	-1	-1	-1	0	0	-1	-1	-1	-1	-1	-1	0	-1	0	-1	-1	0	-1	-1	
1996	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0
1997	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1998	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
1999	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0
2000	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0
2002	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0
2003	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0
2005	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes. “1” means inequality in <row\_year> was statistically-significantly higher than in <col\_year>. Assumes each year’s estimate independent of others.

**Appendix Table B14. Statistical significance of changes in Gini in broad income**

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1978	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1979	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
1980	1	1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1981	1	1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1982	1	1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1983	1	1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1984	1	1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1985	1	1	1	0	0	0	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1986	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	
1987	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	-1	0	0	0	0	0	-1	-1	-1	-1	0	0	0	0	-1	-1	0	0	0
1988	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1989	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	-1	0	0	0
1990	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1993	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1994	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	-1	-1	0	0	0	0
1995	1	1	1	1	1	1	1	1	1	0	-1	0	-1	-1	-1	-1	0	0	-1	-1	-1	-1	-1	-1	0	-1	0	-1	-1	0	-1	-1	
1996	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0
1997	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
1998	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
1999	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0
2000	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0
2002	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0
2003	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0
2005	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes. "1" means inequality in <row\_year> was statistically-significantly higher than in <col\_year>. Assumes each year's estimate independent of others.

**Appendix Table B15. Statistical significance of changes in Gini in consumption**

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1978	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1979	1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0
1980	1	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0
1981	1	0	0	0	0	0	0	0	-1	-1	-1	0	-1	-1	0	0	0	-1	0	-1	0	-1	0	0	-1	0	-1	-1	-1	0	-1	0	
1982	1	0	0	0	0	0	0	0	-1	-1	-1	0	-1	-1	0	0	0	0	0	-1	0	-1	0	-1	0	0	0	-1	-1	0	-1	0	
1983	1	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	-1	0	-1	0	-1	0	0	-1	0	-1	-1	0	-1	0	
1984	1	1	0	0	0	0	0	0	0	-1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0
1985	1	1	0	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	-1	-1	0	0	0
1986	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1987	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1
1988	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	1	1	1	0	1	0	1	0	1	1	1	1	1	0	0	0	0	1
1989	1	1	1	0	0	1	0	0	0	-1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1990	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	1	
1991	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1992	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1993	1	1	1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	1	
1994	1	1	0	0	0	0	0	0	-1	-1	-1	0	-1	-1	0	0	0	0	-1	0	-1	0	-1	0	0	0	0	-1	-1	0	-1	0	
1995	1	1	1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1	0	0	0
1996	1	1	1	1	0	1	0	0	0	-1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1997	1	1	1	0	0	0	0	0	0	-1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	1	
1998	1	1	1	1	1	1	0	0	0	-1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1999	1	1	1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	1	
2000	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2001	1	1	1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	
2002	1	1	1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	1	
2003	1	1	1	1	0	1	0	0	0	-1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2004	1	1	1	0	0	0	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	
2005	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	0	1	0	1	0	1	1	0	1	0	0	0	0	1	
2006	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2007	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2008	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2009	1	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	0	0	-1	-1	-1	-1	-1	0	-1	-1	0	-1	-1	-1	-1	0	

Notes. “1” means inequality in <row\_year> was statistically-significantly higher than in <col\_year>. Assumes each year’s estimate independent of others.

**Appendix Table B16. Statistical significance of changes in relative poverty in HBAI income**

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1978	0	0	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1979	0	0	-1	0	1	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1980	1	1	0	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1981	0	0	-1	0	1	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1982	0	-1	-1	-1	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1983	0	0	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1984	0	0	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1985	0	0	0	0	1	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1986	1	1	0	1	1	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	-1	0	
1987	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	-1	0	0	-1	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0
1988	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
1989	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1990	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1991	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1992	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1993	1	1	1	1	1	1	1	1	1	1	0	0	-1	0	-1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
1994	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	0	0	0	-1	0	0	-1	0	0	0	1	1	1	1	1	1	0	0
1995	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	0	0	0	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0
1996	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1
1997	1	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
1998	1	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
1999	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1
2000	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	0	0	0	-1	0	0	-1	0	0	0	1	1	1	1	1	1	0	1
2001	1	1	1	1	1	1	1	1	1	1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
2002	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	0	0	0	-1	0	0	-1	0	0	0	1	0	0	0	0	0	0	0
2003	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0
2004	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0
2005	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0
2006	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0
2007	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0
2008	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	-1	0	0	-1	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0
2009	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	0	0	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0

Notes. "1" means poverty in <row\_year> was statistically-significantly higher than in <col\_year>. Assumes each year's estimate independent of others.

**Appendix Table B17. Statistical significance of changes in relative poverty in broad income**

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1978	0	0	-1	-1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1979	0	0	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1980	1	1	0	0	1	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1981	1	0	0	0	0	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1982	0	0	-1	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1983	0	0	-1	-1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1984	0	0	-1	-1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1985	0	0	-1	-1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1986	1	1	0	0	1	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	
1987	1	1	1	1	1	1	1	1	1	0	-1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	
1988	1	1	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0
1989	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	-1	0	0	-1	-1	0	0	-1	0	0	0	1	1	0	0	1	0	0	0
1990	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1991	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1992	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
1993	1	1	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
1994	1	1	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	0	0	0	-1	0	0	0	0	0	0	1	1	1	1	0	1	0	0
1995	1	1	1	1	1	1	1	1	1	1	0	1	-1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
1996	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1
1997	1	1	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
1998	1	1	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	0	0	0	-1	0	0	0	0	0	0	1	1	1	0	1	0	0	0
1999	1	1	1	1	1	1	1	1	1	1	0	1	-1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
2000	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	-1	0	0	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0
2001	1	1	1	1	1	1	1	1	1	0	-1	0	-1	-1	-1	-1	0	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0
2002	1	1	1	1	1	1	1	1	1	0	-1	0	-1	-1	-1	-1	0	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0
2003	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	0
2004	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	0
2005	1	1	1	1	1	1	1	1	1	0	-1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	0
2006	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	-1	-1	0	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0
2007	1	1	1	1	1	1	1	1	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	0
2008	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	-1	-1	0	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0
2009	1	1	1	1	1	1	1	1	1	0	0	0	-1	-1	-1	-1	0	-1	-1	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0

Notes. "1" means poverty in <row\_year> was statistically-significantly higher than in <col\_year>. Assumes each year's estimate independent of others.

**Appendix Table B18. Statistical significance of changes in relative poverty in consumption**

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1978	0	0	-1	0	0	0	-1	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1979	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	
1980	1	0	0	0	0	1	0	1	1	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	-1	-1	0	-1	-1	0	-1	0		
1981	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	-1	0	
1982	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1983	0	0	-1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1984	1	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	-1	0	
1985	0	0	-1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1986	0	0	-1	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
1987	1	1	0	1	1	1	1	1	1	0	0	0	-1	-1	-1	0	0	-1	0	-1	-1	-1	-1	0	-1	0	0	0	0	0	0	0	
1988	1	1	0	1	1	1	1	1	1	0	0	0	0	-1	-1	0	0	-1	0	-1	0	-1	-1	0	-1	0	0	0	0	0	0	0	
1989	1	1	0	1	1	1	1	1	1	0	0	0	0	-1	-1	0	0	-1	0	-1	0	-1	0	0	0	0	0	0	0	0	0	0	
1990	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	
1991	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	
1992	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	
1993	1	1	1	1	1	1	1	1	1	0	0	0	0	-1	-1	0	0	0	0	-1	0	-1	-1	0	0	0	0	0	0	0	0	0	
1994	1	1	1	1	1	1	1	1	1	0	0	0	0	-1	0	0	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0	
1995	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
1996	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	
1997	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	1	
1998	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	
1999	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	
2000	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	
2001	1	1	0	1	1	1	1	1	1	0	0	0	0	-1	-1	0	0	0	0	-1	0	-1	-1	0	0	0	0	0	0	0	0	0	
2002	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
2003	1	1	1	1	1	1	1	1	1	0	0	0	0	-1	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	
2004	1	1	0	1	1	1	1	1	1	0	0	0	0	-1	-1	0	0	0	0	-1	0	-1	-1	0	0	0	0	0	0	0	0	0	
2005	1	1	1	1	1	1	1	1	1	0	0	0	0	-1	0	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0	0	
2006	1	1	1	1	1	1	1	1	1	0	0	0	0	-1	0	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0	0	
2007	1	1	0	0	1	1	0	1	1	0	0	0	0	-1	-1	0	0	-1	0	-1	0	-1	-1	0	-1	0	0	0	0	0	0	0	
2008	1	1	1	1	1	1	1	1	1	0	0	0	0	-1	0	0	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0	0	
2009	1	0	0	0	1	1	0	1	1	0	0	0	0	-1	-1	0	0	-1	0	-1	0	-1	-1	0	0	0	0	0	0	0	0	0	

Notes. "1" means poverty in <row\_year> was statistically-significantly higher than in <col\_year>. Assumes each year's estimate independent of other.