From tiny samples do mighty populations grow? Using the British Household Panel Survey to analyse the household sector balance sheet

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Working Paper no. 239

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This paper represents the views and analysis of the authors and should not be thought to represent those of the Bank of England. The authors are grateful to Richard Barwell, Peter Brierley, María Gutiérrez-Domènech, John Whitley and Garry Young from the Bank of England and to Stuart Brown, Margaret Dolling and Roger Ward at the ONS for fruitful discussions and helpful suggestions.

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The Bank of England's working paper series is externally refereed.

ISSN 1368-5562

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Abstract

This paper evaluates the reliability of specific variables in the British Household Panel Survey (BHPS) by comparing grossed-up variables from the BHPS with their corresponding national aggregates. The paper focuses on those variables that provide the most information on risks to financial stability stemming from households, particularly household balance sheet variables relating to debt and assets, and income. The results indicate that housing wealth and income derived from the BHPS are broadly consistent with the aggregate measures. But unsecured debt and financial wealth are substantially under-recorded in the BHPS relative to the aggregate benchmark.

Key words: BHPS, grossing up.

JEL classification: C8, D14.

Summary

The economic situation of British households can be assessed using both aggregate (macro) and disaggregated (micro) data. One of the main sources of information for disaggregate data is the British Household Panel Survey (BHPS). The BHPS is the only regular survey that provides information on households' balance sheet positions, which are very important for evaluating concerns about financial and monetary stability. Essentially, the use of the disaggregated data contained in the BHPS allows us to analyse the distribution of debt and assets among UK households: what types of households are accumulating debt and to what extent; is most of the debt being accumulated by households with high current (income) and/or potential earnings (high qualifications), who are also building up wealth?

At the macro level, National Accounts and Bank of England statistics are widely used to assess the sustainability of the upward trend in household debt. The conclusions derived from a macro approach are limited in the sense that they cannot answer questions on the distribution of debt and balance sheet positions; hence the need for disaggregated data. But to what extent are the disaggregated data (BHPS) consistent with the aggregate data derived from the National Accounts? Can we use the disaggregated data from the BHPS to explain and understand the growing trend in household debt shown in the National Accounts?

This paper compares the grossed-up BHPS data with the national aggregates. We use the National Accounts as our benchmark given the extensive use of those figures in policy considerations. We are interested in the match between the BHPS data and the national aggregates, and whether that match has remained broadly stable over the years covered by the BHPS.

The general conclusion is that the match between the BHPS and the national aggregate data has remained broadly stable, but with sufficient variation to make the correlation of growth rates of disaggregated and aggregate data very weak. The ratio of the BHPS grossed-up figure to the national aggregate varies according to the variable of interest.

Labour income is very well recorded in the BHPS, with a ratio to the aggregate figures of 94% on average between 1991 and 2001. Non-labour income is recorded less well, with only a 56% ratio, resulting in a ratio for total income of 80%. Housing wealth is systematically over-recorded in the BHPS. Unsecured debt is substantially under-recorded

at 53% and 45% of the aggregate figure for 1995 and 2000 respectively. The degree of under-recording of financial assets is even greater at 39% and 25% of the aggregate data for 1995 and 2000 respectively.

1 Introduction

The economic situation of British households, and specifically the impact on financial stability of the growing trend in personal indebtedness, can be assessed using both aggregate (macro) and disaggregate (micro) data. One of the main sources of information for disaggregate data is the British Household Panel Survey (BHPS). The BHPS is the only regular survey that provides information on households' balance sheet positions, which are very important for evaluating concerns about financial and monetary stability as well as being relevant to other public policy issues, such as the adequacy of provision for all old age. Essentially, the use of the disaggregate data contained in the BHPS allows us to analyse the distribution of debt and assets among UK households: what type of households are accumulating debt and by how much; is most of the debt being accumulated by households with high current (income) and/or potential earnings (high qualifications) who are also building up wealth?

At the macro level National Accounts and Bank of England statistics are widely used to assess the sustainability of the growing trend in household debt. The conclusions derived from a macro approach are limited in the sense that they cannot answer questions on the distribution of debt and balance sheet positions, hence the need for disaggregate data. But to what extent is the disaggregate data (BHPS) consistent with the aggregate data derived from the National Accounts? Can we use the disaggregate data from the BHPS to explain and understand the growing trend in household debt shown on the National Accounts?

This paper therefore compares the grossed-up BHPS data with the national aggregates. We use the National Accounts as our benchmark given the extensive use of those figures in policy considerations. We are aware of the complications that the use of National Accounts to benchmark a household survey implies. As Jenkins (2000) observes, the comparability with the National Accounts data depends on whether the variables are attempting to measure the same concept in the survey and in the National Accounts, as well as on the group of people that both sources cover. Equally, National Accounts data are also subject to errors since they are themselves estimates.

In the comparison of the BHPS with the national aggregates we are interested in those variables that provide the most information on risks to financial and monetary stability stemming from households and, therefore, we focus on household balance sheet variables relating to debt, assets and income.

The results of the comparison indicate that the BHPS systematically over-records housing

wealth —with an average BHPS/national aggregate ratio of 120%. However, it under-records the other variables considered in this study, namely income (total, labour and non-labour), secured and unsecured debt and financial assets. Although the BHPS does not ask about consumption, it can be inferred from questions on income and saving. We find that the implied level of consumption in the BHPS is less than in the National Accounts.

The grossed-up BHPS figures share the same trends as the national aggregates, but the growth rates of the variables represent a poorer approximation of the national aggregate growth rates than of the levels. In general terms, the match between the grossed-up BHPS figures and the national aggregates was closer for earlier waves.

The rest of the paper is organised as follows. In Section 2 we describe the main features of the BHPS. The grossing-up method is explained in Section 3. The results of the comparison between the BHPS and the national aggregates are presented in Section 4.1. Section 4.2 examines the households balance sheet distribution. Finally, Section 5 concludes.

2 The British Household Panel Survey

The BHPS was designed to be representative of all people resident in Britain. It provides information on households, as well as individuals. Several studies using BHPS data have assumed that this survey is also representative of the British household population. The BHPS is organised and maintained by the Institute for Social and Economic Research (ISER) at the University of Essex.[(1)]

As of May 2003, there have been 11 annual waves of the BHPS, with Wave 1 corresponding to 1991. This initial wave consists of an equal-probability clustered sample of 8,167 addresses drawn from the Postcode Address File for Great Britain, south of the Caledonian Canal (therefore excluding Northern Ireland and the North of Scotland).[(2)] Non-residential or institution addresses are excluded from the survey.[(3)] The total number of interviews conducted at Wave 1 was 10,264, encompassing 5,505 households. In order to maintain the representativeness of the BHPS, all original sample members at Wave 1 remain sample members at subsequent waves until they die. Original sample members are

(1) A summary of sample design and contents of the BHPS can be found at Buck, Burton, Laurie and Lynn (2002).
(2) For a detailed description of the sample procedure see Taylor, Brice, Bruck and Prentice-Lane (2001).
(3) It also excludes persons resident neither at a private residential address nor in an institution such as the homeless, travellers, or people with no permanent accommodation.

followed as they move between households and, if aged 16 and over, are interviewed.[4] In Wave 11 the number of individuals interviews conducted was 8,936 (4,887 households).

The fieldwork is concentrated in a relatively short period within the year starting in September. Table A shows the percentage of interviews taking place each month (totals for Wave 1 to Wave 11). Around 80% of the interviews are undertaken in the months of September and October (the percentage of interviews between September and November rises to over 93%).

Table A: Interviews by month

Month	% of interviews
January	1.73%
February	1.03%
March	0.78%
April	0.35%
May	0.12%
August	0.02%
September	40.83%
October	38.49%
November	13.90%
December	2.71%

The topics covered in the BHPS are: labour markets, income, savings and wealth, household and family organisation, housing, consumption, health, social and political values, education and training. However, wealth, financial assets and debt components are included in Waves 5 and 10 only. This specific design was aimed at avoiding upsetting respondents with potentially sensitive questions, thereby risking a reduction in the response rate.

3 Grossing-up method

To study the reliability of the BHPS data, we compare, for a set of variables of interest, aggregate data published by the Office for National Statistics (ONS) and the Bank of England with their counterparts in the BHPS. To do this we need first to gross up the BHPS data in order to obtain an aggregate estimate based on the survey data, having adjusted the survey so that it is representative of the UK population.

The BHPS could, in principle, be grossed up at either the individual level or at the household level. We present results for both levels of grossing up. We observe that for

[4] In our study we do not include the several additional and boosted samples of Wave 7 and onwards.

those variables that are asked about at the individual level (eg income variables, unsecured debt and financial assets) the match between grossed-up figures and national aggregates is better if grossing up is carried out at the individual level. Similarly, for those variables that are covered in the household questionnaire (eg housing wealth and secured debt), the match is better if we work with the household grossing-up method. This is generally the result of the assumptions made in order to convert household variables into individual variables, (eg how to allocate across individuals of the same household the housing wealth for the entire household) and the missing values generated at the household level when we add up individual answers within a household to obtain the total of a specific variable for a household. This is due to the non-response of individuals within a household.

As far as the grossing-up method is concerned, Banks and Johnson (1997) note, in their study of the reliability of the Family Expenditure Survey (FES), that a very simple way to gross up would be to take the sum across all people in the survey of the variable we are interested in, and to multiply it by the ratio of the number of people in the population to the number of respondents in the survey. This method is known as *uniform grossing*. With uniform grossing we are assuming that the respondents in the BHPS are representative of the UK household population. If the pattern of a specific variable depends on certain individual characteristics and respondents in the BHPS are not fully representative of the population totals, a uniform grossing would lead to a biased estimate of the population variable.

One way of correcting for the different proportions of type of households in the BHPS and population is to assign different weights by individual characteristics in the grossing-up process. We refer to this process as a *differential grossing* method.

In this paper we use a set of BHPS-derived weights to gross up the BHPS data. Specifically, we use the cross-sectional weights constructed for individual respondents and households. (5)

At this stage we are not exploiting the longitudinal properties of the BHPS, mainly because two of our key variables, unsecured debt and financial assets, are only available at five-year intervals. We then study how the distribution of debt and assets evolve over time by type of individuals. This explains the use of cross-sectional weights instead of longitudinal weights. We concentrate on the provided weights because we expect the majority of the BHPS users to use these weights and not to construct their own.

(5) For a detailed explanation of how these weights are constructed see Volume A, Section V, of the BHPS documentation that can be found in www.iser.essex.ac.uk/bhps/doc/index.html.

We can then distinguish two BHPS samples, the unweighted BHPS (ie when we do not apply any weights) and the weighted BHPS (ie when we adjust the original BHPS sample with the cross-sectional weights).

To obtain the grossed-up BHPS figures we work with the BHPS cross-sectional weights and estimates of the UK population.[6] For the individual grossing-up procedure we modify the BHPS individual cross-sectional weights by the ratio of the UK resident population to the number of BHPS respondents year by year to construct the individual grossing factors.[7]

Thus the grossed-up figure for variable x at year t is given by:

$$X_t^{grossedBHPS} = \sum_{i=1}^{N_t} x_{it} \times xrw_t \times \frac{UKResPop_t}{N_t}$$

where $X_t^{grossedBHPS}$ is the grossed-up figure for variable x at time t; i denotes an individual respondent in the BHPS; N_t is the number of individual respondents in the BHPS for year t; xrw_t is the BHPS cross-sectional weight for BHPS respondents at time t; and $UKResPop_t$ means UK resident population in year t.

The household grossing factors are constructed in a similar way. The household cross-sectional weights are multiplied by the ratio of the UK resident population to the number of BHPS respondents. This implicitly assumes that the proportion of households to individuals in the BHPS is the same as in the population. The ONS produces an estimate of the number of households in the United Kingdom from 1995 onwards only. Estimates of the number of households for 1991–94 have been constructed using the proportion of number of households to individuals from 1995 onwards. This series is then used to construct alternative household grossing factors. Since the national aggregates of the relevant variables are for the resident population, the BHPS aggregates figures derived from the last set of household grossing factors are always lower than when using the first set of household grossing factors. For this reason and to permit an easier comparison with

(6) Estimates of the UK resident population have been obtained from the ONS web site. Tables Mid-year population estimates: Estimated Resident Population by single year of age and sex. These estimates are revised estimates in light of the results of the 2001 Census.

(7) We have also constructed individual grossing factors based on household (rather than resident) population estimates, but opted for the resident estimates given that the national aggregates are calculated for the UK resident population. Grossed-up BHPS figures for the household population are available upon request from the authors.

the individual grossing results we only present results for the first set of household grossing factors, but all the results are available upon request from the authors.

The grossed-up figure at the household level for variable x at year t is given by:

$$Xh_t^{grossedBHPS} = \sum_{h=1}^{H_t} x_{ht} \times xhw_t \times \frac{UKResPop_t}{N_t}$$

where $Xh_t^{grossedBHPS}$ is the grossed-up figure, at the household level, for variable x at time t; h denotes a household in the BHPS; H_t is the number of households in the BHPS for year t; and xhw_t is the BHPS cross-sectional weight for household analysis at time t.

Chart 1 compares the proportion of individuals in different age groups in both the weighted and unweighted BHPS and the post 2001 census population estimates, for three (first, middle and last) of the BHPS available waves. These graphs allow us to compare the population distribution and evaluate the importance of a weighting scheme in grossing up the data. In general terms, the weighted BHPS age distribution is closer to the ONS age distribution than the unweighted BHPS. Chart 2 plots the proportion of individuals in the weighted and unweighted BHPS samples by specific variables (qualifications, income and unsecured debt groups). This shows that in 2001 better qualified individuals were over-represented in the unweighted BHPS sample; this was not apparent in the original 1991 sample.

Chart 1: Weighted vs unweighted BHPS and ONS data

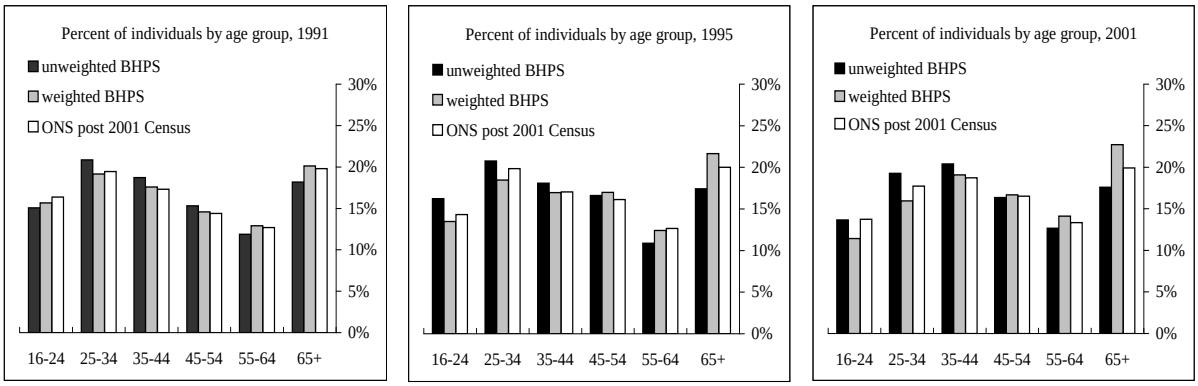
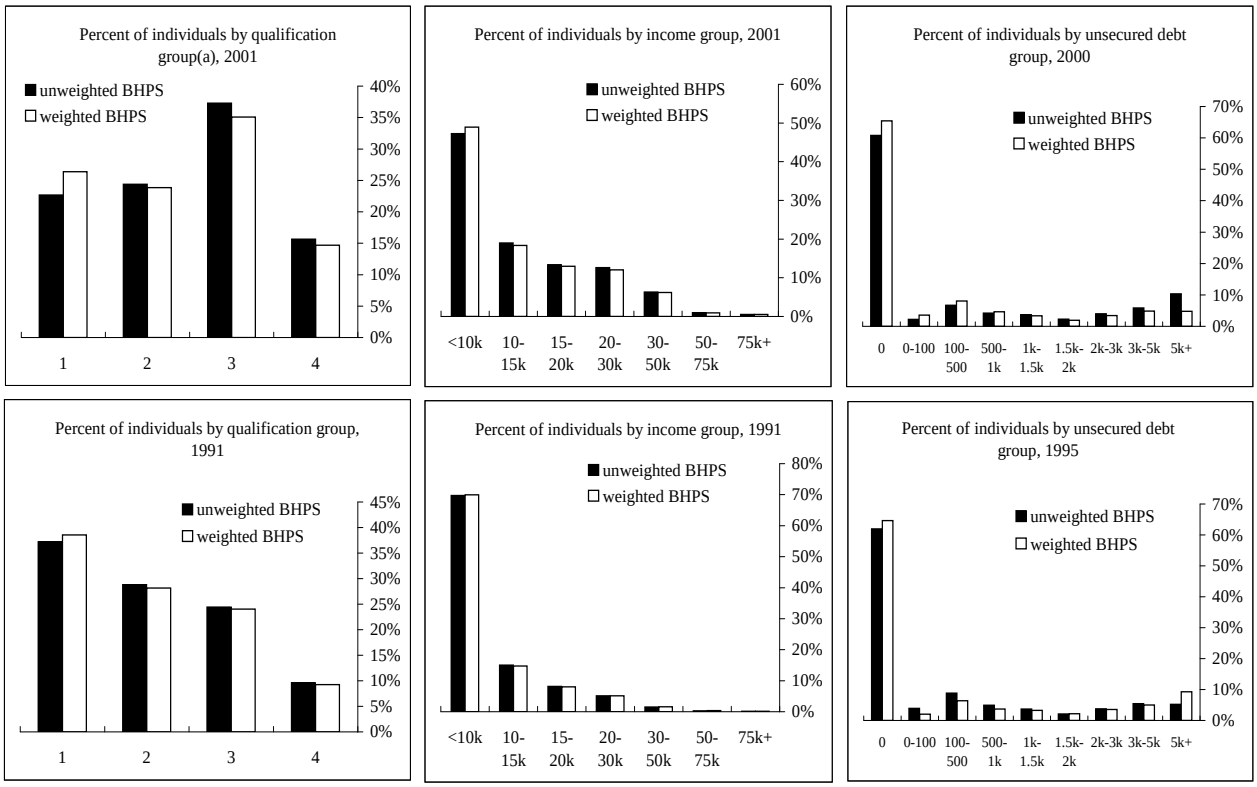


Chart 2: Weighted vs unweighted BHPS



(a) Qualification groups are 1: no or other qualification or apprenticeship; 2: CSE, GCSE or commercial qualification; 3: A Level, nursing or other higher; 4: teaching, first or higher degree.

4 Results

4.1 Reliability of BHPS data

In this section, we take a set of variables of interest from the BHPS data set and compare them with their aggregate counterparts. The variables chosen are those that provide the most information on the risks to financial stability and the macroeconomy stemming from the household sector and therefore are mostly household balance sheet variables relating to debt, assets and income. We start by examining the definitional differences between the BHPS variables, and the aggregate measures which correspond the closest with them. We then look at how these aggregate and grossed-up BHPS variables compare in practice, bearing in mind any discrepancies we would expect having looked at definitional differences between them. The national statistics variables are taken from the *United Kingdom Economic Accounts* (UKEA), the *UK National Accounts Blue Book* and *Financial Statistics* all published by the ONS, and Bank of England statistics. Tables A.b

and A.a detail the BHPS and aggregate variables' definitions, identifiers and frequencies.

4.1.1 Choosing aggregate variables to compare with the BHPS variables

The first caveat to note is that financial assets, housing wealth and income data taken from the ONS balance sheet also include non-profit institutions serving households (NPISH)[8] as well as private households, while obviously the BHPS is a survey of private households only. We would therefore expect the ONS numbers to be greater than the grossed-up BHPS numbers. We discuss this matter further when looking at financial assets, where we have an ONS estimate for the proportion of shares and deposits that NPISH hold.

Second, the data at the aggregate level are taken from different sources. The BHPS variables are derived from asking householders themselves. The ONS and Bank of England figures are more often based on tax returns and surveys of companies and financial institutions.

Another point to note is that we do not impute any value for missing values in any of the variables here considered, we treat those observations as missing values. This reduces the sample size and has the effect of implicitly assuming that item non-response is randomly distributed.

Income

The first variable we examine is income. Income recorded in the BHPS is divided between labour and non-labour income. BHPS non-labour income includes four components: pension, benefit, transfer and investment income. Trying to analyse each of these four components in isolation is very difficult given the difficulty of matching them up with ONS categories. Therefore, we present grossed-up results for total income, labour income and non-labour income.

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[8] According to the national statistics, NPISH consists of 'non-profit institutions which are separate legal entities, which serve households and which are private other non-market producers. Their principal resources, apart from those derived from occasional sales, are derived from voluntary contributions in cash or in kind from households in their capacity as consumers, from payments made by general governments and from property income'. They are of two main types: those created by associations of persons to provide goods or, more often, services mainly for the benefit of the members themselves (eg trade unions, professional or learned societies, consumers' associations, political parties, churches or religious societies, social, cultural, recreational and sport clubs); charities, relief or aid agencies, set up for philanthropic purposes (eg the Association of Corporate and Certified Accountants; Barnardoes; Boy Scouts; British Society for the Advancement of Science; Civil Service Sports Council; the National Trust; Oxfam and the Salvation Army).

The BHPS data set includes gross but not net income variables. Gross income variables are derived by BHPS staff themselves, from a number of other variables. The simulation model is described by Bardasi, Jenkins and Rigg (1999) who say that three types of information for each respondent adult are taken: income of each type currently received at the time of interview, together with income received at 1 September of the previous year; information gathered by retrospective recall about the types of income received and unemployment spells during the year; and external information about benefit values etc. Derivation of annual employment earnings, one of the variables on which income is based, is by interpolation for those who have remained in the same job through the year; for those who changed jobs, information about their job history since the last interview and the starting salary in each job is used.

The aggregate measure of income is taken from *Financial Statistics*, ONS, Table 14.8A: 'Income and Capital Accounts: Households and Non-Profit Institutions Serving Households'. The variable taken for comparison with BHPS labour income is 'Wages and Salaries' (identifier ROYJ.Q). Annual estimates of wages and salaries are based on Inland Revenue data, with interpolation to gain quarterly estimates. Estimates of wages and salaries for those within the PAYE system, are derived from a 1% sample of the tax deduction documents. The estimates for pay obtained for the whole PAYE population are obtained by multiplying the 1% sample estimates by appropriate grossing factors which are themselves obtained by comparing the employee's National Insurance (NI) contributions totals obtained from the 1% sample with the total employee's NI contributions recorded. Data from the FES are used to give supplementary estimates of income of those partially or not covered by the PAYE system, eg those on incomes below the PAYE threshold. Other adjustments are also made for evasion etc.[(9)] The income measure we derive, therefore, for the BHPS and from the ONS, is not the personal disposable income series which is usually taken as the standard household income measure.

BHPS non-labour income consists of pension income, transfer income, benefit income and investment income. These are derived from questions such as 'how much have you received in the way of dividends and interest from any savings and investment in the last twelve months?' We take the ONS counterpart to be the sum of household interest income, distributed income of corporations, which together should match up with investment income, and social benefits other than transfers in kind (identifiers

[(9)] Self-employment income in the National Accounts is proxied by a series called mixed income, which is equivalent to sole traders' income. If we included this in the measurement of aggregate labour income, we would assume that people in the BHPS report profits from their unincorporated businesses in addition to any salaries they may draw from them. If we use an aggregate measure of labour income that includes mixed income, the ratio of grossed-up BHPS to aggregate income is on average 11 percentage points lower than if we exclude mixed income form the national aggregate.

ROYM.Q+ROYN.Q+RPHL.Q). Note that we do not deduct mortgage interest payments from household interest income, as in the ONS measure of net property income.

Interest and dividend income are calculated by the ONS using the dividends and interest matrix developed within the ONS itself. This is a framework for estimating dividend and interest flows to and from each sector of the economy. It allocates the total payable between the receiving sectors using figures on the sectors' holdings of the instruments, which in turn are derived from their balance sheets. Interest income covers interest receipts related to eg holdings of government securities and national savings, and bank and building society deposits. It is calculated using the dividends and interest matrix, based on levels of interest-bearing assets held by the household sector and the relevant interest rates. For total income we add all components.

Consumption

Turning to the consumption variable, in the BHPS there is no variable for total consumption,[10] so we define it as annual total income minus annualised monthly savings. For the ONS aggregate we use 'final consumption expenditure, households' from the *UKEA*, Table A2 'Gross domestic product: by category of expenditure' (identifier ABJQ.Q). This covers all personal expenditure on goods (durable and non-durable) and services, including the value of income in kind, imputed rents for owner-occupied dwellings and the purchase of second-hand goods less the proceeds of sales of used goods. Final consumption expenditure of NPISH is not included in the measure, unlike the income and financial assets variables.

The ONS measures of personal expenditure on goods and services are calculated by summing estimates of spending on individual goods and services. These are calculated using a number of sources. The first is household surveys. Three surveys are used: two using household analysis (the FES and the National Food Survey) and one using an individual survey (International Passenger Survey, which measures holiday and travel expenditure). Grossing factors are based on estimates of the household population from the ONS and average household size from the FES, and are used to convert expenditure per household in the surveys to national totals. A smoothing process is used, using a three-year moving average of the constant price estimates. Second, statistics of retail and other traders' turnover are used, namely surveys directed at businesses, in particular retail traders but also wholesalers and producers. These have a larger coverage of spending than

[10] There is some information about some components of consumption in the BHPS; however, only some items of consumption are recorded and, moreover, the number and/or type of questions asked vary substantially across waves making it difficult to obtain a comparable BHPS measure of consumption.

the household surveys and also cover tourists and those in institutions and are therefore more reliable. Third, information from administrative sources, eg on licenses, is used. And fourth, estimates are made using a statistical model rather than data collection (this is called the commodity-flow approach). The best estimate for each good or service is thus derived from these sources, and then an aggregate taken for all of them.

Housing wealth

To compute housing wealth from the BHPS, the householder (value of the house is a question asked at the household, rather than individual, level) is simply asked 'about how much would you expect to get for your home if you sold it today?'; the answer is therefore highly subjective and depends on factors such as whether the house has recently been valued and awareness of changes in house prices. The housing variable from the BHPS includes the value of all property, including overseas property. The aggregate figure we compare this with is the ONS housing wealth series published in the *Blue Book*, household and NPISH non-financial balance sheet: 'tangible assets: residential buildings' (code CGRI.Q). This is based on a Department of Environment Survey of construction output. It does not include overseas property.

Secured debt

The BHPS has information on secured debt in Waves 3 to 11. Secured debt is defined as the total amount of outstanding loans on all property and it is defined at the household level. The aggregate figure we use is net lending to individuals, secured on dwellings (amounts outstanding, code VTXK.Q). The Bank of England statistics are based on banks' gross advances and approvals data, which are reported by a sample of banks accounting for 95% of total lending for house purchase. The Building Society Commission collects data for building societies, which account for about 95% of total building society lending for house purchase.

Unsecured debt

Unsecured debt and financial assets variables are only available for Waves 5 and 10 (corresponding to years 1995 and 2000). In these two waves, BHPS unsecured debt is defined as financial commitments other than mortgages and housing-related loans. But there is a change in the question about unsecured debt between Waves 5 and 10. In both waves the respondent is shown a card with a list of debt instruments. From this list the respondent has to point out which debt instruments he has, before being asked how much

he owes on these instruments in total. In Wave 10 student loans and overdrafts are two new categories that did not appear in Wave 5. Nevertheless, in both waves there is an 'other' category. One can assume that people would have included student loans and overdrafts in this residual category in Wave 5, but this is clearly an assumption we cannot test.

Apart from the variable that records the exact amount of unsecured debt the individual respondent owes, the BHPS contains information on unsecured debt in banded variables. When the respondent acknowledges that he does not recall how much unsecured debt he owes, he is asked to give a banded answer. We also use this information to determine the amount of unsecured debt the individual owes. Specifically we simply use the middle value of the band or for the open bracket we use a simple approximation (the mean value of unsecured debt for those that report the exact amount of unsecured debt being this amount bigger than the top-coded banded value). (11)

The BHPS also reports if the unsecured debt commitment is sole, joint or both (the latter only for 2000). If the commitment is joint we assume that it is joint only with one other person and give the individual half of the amount of the unsecured debt reported. If the commitment if both sole and joint, we use the information provided on another variable that records how much of that unsecured debt is only sole. We give to the individual the amount that he says is only sole plus half of the rest of the total amount (again assuming that the joint part is joint only with one other person).

The aggregate series used to compare the grossed-up BHPS figures is net lending to individuals: consumer credit (code VZRI.Q). This item is divided into credit card borrowing (code VZRJ.Q) and other consumer credit (code VZRK.Q). These data comes from statistics published by the Bank of England (*Monetary and Financial Statistics*). The Bank of England credit card data are collected from a sample of banks which account for 98% of total bank credit card lending. Additionally, we adjust the amount of credit outstanding on credit cards, seeking to include only the proportion bearing interest, since in the BHPS the respondent is asked to exclude outstanding amounts that are paid within the billing period. We do this using a variable for the percentage of credit card balances not bearing interest, which is obtained from the British Bankers' Association.

(11) Banks, Smith and Wakefield (2002) use a more sophisticated imputation method. Values are imputed for banded variables and for missing values all together. They impute values for missing information by choosing a random value from a set of benefit units (their unit of analysis) in the same age, education and employment status group. For banded information, values are imputed from benefit units in the same age, education and employment status group and with wealth that is contained within the relevant band. Banks *et al* (2002) call this procedure 'conditional hot-deck' and they use to impute values for savings, investments (financial assets) and debt. Using the 'conditional hot-deck' they allow for more variability in the imputed variables but also they are increasing the correlation between the imputed variables and those that they use to define the groups.

Financial assets

As in the unsecured debt variable, the BHPS contains information on exact amounts of financial assets held, banded variables and if these financial assets are held in sole, joint or both sole and joint. This information is used in a similar way as that on unsecured debt in order to get the total financial assets that an individual holds.

The aggregate measure of financial assets used for comparison comprises ONS measures of deposits, securities other than shares and shares and other equity. Specifically, we use the 'Financial balance sheet: households and non-profit institutions serving households' from *Financial Statistics*; 'currency and deposits, total' (code NNMP.Q) minus 'currency' (code NNMQ.Q) plus 'securities other than shares, total' (code NNMY.Q) plus 'shares and other equity, total' (code NNOS.Q). The BHPS asks whether people hold money in savings accounts; however, it does not clearly distinguish between cash deposits used for savings purposes, and cash deposits used for transactions purposes. We therefore subtract currency from our ONS measure, but retain deposits, on the assumption that BHPS respondents will report how much they hold in bank accounts, even if the money is for transactions rather than saving purposes. The BHPS asks whether people have assets including PEPs, unit trusts, ISAs, premium bonds, shares, savings accounts and other investments, and how much money they have in these savings and investments.

Treatment of assets held in life assurance and pension funds

The BHPS does not ask people how much money they hold in pension fund assets, hence we do not include these in our ONS measure. This means that the ONS financial assets measure we take is in fact only part of the total financial assets measure, which includes insurance technical reserves (namely net equity of households in life assurance and pension funds' reserves and prepayments of insurance premiums).

There are no direct sources on household holdings of financial assets, so two estimation methods are used by the ONS. One is based on the information from the other party to the transaction; and the second uses residuals.

We would expect the caveat noted above about the lack of an estimate of the proportion of the balance sheet attributable to the NPISH sector to be a particular problem with respect to financial assets. This is because NPISH includes institutions which hold large amounts of financial assets. However, the ONS *Share Ownership Survey 2002* indicated that the

value of quoted UK shares held by charities[12] at the end of 2000 was £23.8 billion, about 1.5% of total shares and NPISH hold 3.8% of deposits.

4.1.2 Comparing grossed-up BHPS and national aggregate variables

In this section, we assess how well the grossed-up BHPS data compares to the national aggregates. We also examine if any bias is stable across waves.

As stated in Table A, the majority of the interviews are carried out between the months of September and October of any given year, with the remainder carried out between November of that year and August of the following year. We therefore choose the time period of the national aggregate data accordingly. For flow data, we take national aggregate data from the last two quarters of a given year (the year before the wave year) and the first two quarters of the following year. For stock data we take the third quarter of a given year; given that as most households are asked the value of their house in September or October, it makes most sense to compare their average answer with the ONS estimate for Q3 of that year.

In Tables B and C we show what proportion (shown as a percentage) of the national aggregate is captured by BHPS grossed-up figures for the individual and the household grossing up, respectively. Numbers below 100 mean that BHPS under-records the national aggregate.

In general the ratio of BHPS grossed-up figures to national aggregates, for those variables for which we have data for all waves, are fairly stable. It is also true that variables that are collected at the individual level are slightly more closely related to their national aggregates counterparts when the grossing up is done at the individual level, rather than at the household level (eg income variables, consumption, unsecured debt and financial assets). Similarly, the secured debt variable, collected at the household level, is more closely related to the aggregate counterpart if grossed at the household level. The exception is housing wealth, a household variable that is over-recorded and more so if grossed up at the household level. In our comments below on how a particular BHPS variable tracks the national aggregate we focus on the individual grossing-up method if the variable was collected at the individual level, and on the household grossing-up method if the variable was collected at the household level.

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[12] Defined as all non-profit making institutions including private trusts set up for charitable purposes, charities and the holdings of universities and church commissioners.

Table B: Ratio of implied individual aggregate to national aggregate data

Year	Variables							
	Secured debt	Housing wealth	Total income	Labour income	Non-labour income	Consumption	Unsecured debt	Financial assets
1991		111.99	79.12	97.64	48.05	88.61		
1992			81.65	98.87	53.11	89.02		
1993	87.90	121.05	82.19	96.12	58.63	87.28		
1994	88.41	123.10	81.48	97.21	55.22	87.75		
1995	88.98	123.92	81.79	96.52	57.31	87.02	53.03	38.94
1996	82.74	113.11	80.92	94.92	57.44	84.91		
1997	91.50	119.34	79.96	94.98	54.96	85.36		
1998	86.47	114.21	78.84	91.60	56.04	83.00		
1999	86.15	111.72	77.27	88.04	58.23	80.82		
2000	82.58	115.67	78.08	90.06	57.30	82.21	44.67	24.94
2001	84.90	121.07	79.92	92.41	57.70	83.00		
s.d.	0.03	0.05	0.02	0.03	0.03	0.03	0.06	0.10
mean	86.63	117.52	80.11	94.40	55.82	85.36	48.85	31.94

Once we compare growth rates of variables derived from the grossed-up BHPS with those corresponding to the national aggregate the match is not as close as before. In Charts A.1 to A.3 we plot national aggregates and BHPS grossed-up figures in levels and in growth rates for easy comparison. To summarise, in Table D we report the correlation coefficients between the national aggregates and the BHPS grossed-up series.

Taking income first, the mean value of the BHPS/aggregate ratio varies from 56% for non-labour income to 94% for labour income. When mixed income is included in labour income as a measure of self employment income, this ratio is 83% (total income has an average value of 80%). These results are broadly consistent with the results of Banks and Johnson (1997) in their study of the reliability of the FES. The authors find that the two main components of income, that is, earnings and social security, are well recorded in the FES and follow the National Accounts closely. Smaller income components registered in the FES, such as self-employment income and investment income, fluctuate widely and are generally under-recorded. We should also take into consideration that labour income (as defined above) represents an average of 63% of total household income (as considered here) for the years 1991–2001.

The BHPS/aggregate ratio of consumption has an average of 85% calculated between 1991–2001. The volatility is 0.03. As can be seen in Table B and Chart A.1 the reliability of the imputed consumption variable has decreased between the first waves and the more

Table C: Ratio of implied household aggregate to national aggregate data

Year	Variables							
	Secured debt	Housing wealth	Total income	Labour income	Non-labour income	Consumption	Unsecured debt	Financial assets
1991		114.62	74.95	92.98	44.94	79.43		
1992			78.60	94.94	51.54	82.10		
1993	97.72	125.64	79.42	92.34	57.57	80.51		
1994	90.03	126.74	77.52	91.74	54.72	80.34		
1995	93.11	129.42	79.45	93.04	56.83	81.55	49.80	35.52
1996	85.22	116.53	78.52	91.62	56.99	79.39		
1997	95.50	123.26	77.56	91.40	54.53	79.79		
1998	91.38	119.03	76.86	88.71	55.62	78.66		
1999	91.33	117.73	76.11	85.98	58.63	76.90		
2000	88.30	121.95	76.72	87.71	57.30	77.84	42.23	22.97
2001	89.76	127.34	79.13	91.18	58.06	78.69		
s.d.	0.03	0.05	0.01	0.03	0.04	0.01	0.05	0.09
mean	90.82	122.23	77.71	91.06	55.16	79.56	46.01	29.24

recent waves. For the first and second waves the grossed BHPS/aggregate ratio was about 89%, decreasing to just above 80% for the latter waves. The growth rates derived from the BHPS grossed-up consumption variable are much more volatile than the corresponding ONS series and follow those less closely than was the case for the total and labour income variables.

Table D: Correlation coefficients between BHPS and national aggregates

Variable	Individual aggregates		Household aggregates	
	Level	Growth rates	Level	Growth rates
Secured debt	0.98	0.41	0.98	0.35
Housing wealth	0.99	0.66	0.99	0.66
Total income	0.99	0.39	0.99	0.08
Labour income	0.99	0.45	0.99	0.39
Non-labour income	0.98	−0.37	0.97	−0.41
Consumption	0.99	−0.35	0.99	−0.22

The average value for the BHPS/aggregate ratio of housing wealth[13] is 122% with a volatility of 0.05. It is worth noting that this variable is the only one (of the variables considered in this study) that is over-recorded in the BHPS. One of the reasons for this might be that the BHPS variable includes housing overseas, whereas the national aggregate does not include any property overseas, but we do not expect that this explains much of the

[13] For the year 1992 we do not have a comparable figure, BHPS has a very high number of cases recorded as non-applicable.

difference. Interestingly, the growth rates derived from the grossed BHPS housing wealth variable follow quite closely the growth rates of the national aggregate for this variable.

The average value for the BHPS/aggregate ratio of secured debt is 91%, with a volatility of 0.03. The growth rates are distorted for the years 1996 and 1997 due to an erratically low BHPS/aggregate ratio in 1996.

Surprisingly, unsecured debt is somewhat better recorded in Wave 5 than in Wave 10, in spite of two categories added to the unsecured debt showcard for 2000. The BHPS/aggregate ratio is 53% for 1995 and 45% for 2000. However, the percentage recorded is still lower than we would expect, and much lower than secured debt. It suggests that BHPS respondents simply do not recall all their unsecured debt commitments.

The worst under-recording, however, is for financial assets. The BHPS/aggregate ratio is 39% for 1995 and 25% for 2000. The fact that financial assets are better recorded in 1995 than in 2000 might be due to a difference in the way data on financial assets is collected in the two waves. In the BHPS individuals are asked if they hold any money in savings accounts and investments and how much. This question is asked in Waves 5 and 10, but the questions are slightly different in each wave. In both waves the individual is asked if he has regular savings. In Wave 5, if the answer is yes, the individual is asked about types of savings and investment and amounts. If the answer is no, he is asked 'even if you do not save regularly do you have any savings or investments?'. In Wave 10 there is not such a distinction between regular and irregular savings and the individual is always asked about his types of savings and investment instruments and amounts held.

Why are financial assets so under-recorded in the BHPS? Other than the fact that the BHPS and ONS use different definitions to measure financial assets, and the fact that people just do not know how much their financial assets are worth, there is a further reason: very rich households are under-represented in the BHPS. Previous analysis has shown that in 1995, the wealthiest 1% of households in the BHPS sample owned 6% of total wealth —see Cox, Whitley and Brierley (2002), page 411. In contrast, according to Inland Revenue estimates, in the UK population as a whole, the wealthiest 1% of households owned 19% of total wealth. When the data are grossed up, this under-representation becomes clear.

It is also true that, out of the variables of interest in this study, financial assets related variables have the lowest response rate; an average of 88% of individuals answer the questions relating to financial assets (see Table A.c). The average rate of response for any other variables is above 90%.

4.2 Distributions

This section examines the distribution, and how this has changed over time, of assets and debt variables by age and qualification categories; it also shows where the largest concentrations are.[14] This gives a useful picture of the change in holdings of assets and debt over the life cycle, as well as illustrating the effect of different levels of education. This type of information is not available using aggregate figures.[15]

Chart A.4 shows how aggregate unsecured debt is distributed across different groups. It tends to be concentrated among younger, better qualified individuals. Between 1995 and 2000 there is an increase across all age groups and all but the lowest qualification groups. The biggest increases were for groups aged 25–34 and 35–44, and those with A Levels, nursing or other higher qualification.

The average amount of unsecured debt held by debtors also increased by all age and qualification groups and most notably for the youngest and more educated individuals. The younger and the more qualified also include a relatively high proportion of people holding unsecured debt. This feature has been accentuated in 2000. But the overall proportion of individuals holding unsecured debt remained constant at 35% (43% if we consider the number of households holding unsecured debt).[16]

Total and mean values of secured debt rose by less between 1995 and 2000 than unsecured debt (see Chart A.5). Total values of secured debt rose for all households with householders aged 25 and over, but decreased for those whose head of household was under 25 years. Mean values for those holding secured debt increased across all age groups. Total values of secured debt increased by all qualification groups except the least educated, but again mean values of secured debt for debtors increased across all qualification groups, but by most for the highest qualification group.

The total amounts of secured debt are concentrated among those households with head of household aged between 35 and 44 and in the third qualification group. The highest mean values of secured debt are concentrated in the middle age and high qualified head of households. This is in contrast with the highest mean unsecured debt concentrated in the

[14] Age groups are 16–24, 25–34, 35–44, 45–54, 55–64 and 65 years old and over. Qualification groups are 4: teaching, first or higher degree; 3: A Level, nursing or other higher; 2: CSE, GCSE or commercial qualification; 1: no or other qualification or apprenticeship.

[15] All the variables are shown in nominal terms.

[16] Although there are no aggregate figures on consumer credit penetration, we can compare this number with a Department of Trade and Industry survey: Kempson (2002), which shows that in 2002 47% of people had a current credit commitment.

lower age groups (this pattern has been accentuated in the year 2000).

The overall proportion of households with secured debt remained constant (at just under 40%) between 1995 and 2000; this is also broadly true if we consider the proportion of households holding secured debt disaggregated by age and qualification variables.

The total and mean value of housing wealth held (for those with positive housing wealth) rose across all age and qualification groups between 1995 and 2000; and by the most for the higher qualification groups and the oldest head of households (see Chart A.6). The overall home ownership ratio increased from 68% to 71% between 1995 and 2000, decreasing for the youngest age group (16–24) and increasing for the head of households aged 55 and over.

By contrast, the mean value of financial assets remained constant for most age and qualification groups between 1995 and 2000. Financial assets has a particularly pronounced distribution, with individuals[17] aged 65 and over and in the higher qualification groups having more financial assets than any other groups (see Chart A.7).

The average value of financial assets increases very rapidly by age and qualification groups, whereas the proportion of individuals holding financial assets is more stable across these groups.

We can compare holdings of total debt and total assets to see if groups with high levels of debt tend also to have high levels of assets. To do this we calculate the value of net assets (eg housing wealth plus financial assets minus secured and unsecured debt). We do this at the household and individual level since some of the variables (housing wealth and secured debt) are collected at the household level, and others (financial assets and unsecured debt) at the individual level. We present results only at the household level since these do not vary substantially if we do the analysis at the individual level.

Chart A.8 plots totals and mean values of net assets by age and qualification groups. The older the age group, the higher the level of net assets, reflecting saving over the life cycle. Net assets rose across all age and qualification groups between 1995 and 2000, mainly reflecting the rise in housing wealth. The third highest qualification group holds most of the net assets.

[17] If we consider this variable at the household level, the main conclusions still remain true.

Considering mean values of net assets we observe a rapid increase across all age groups up to the 55–64 group, with a decrease for the elder group, possibly indicating a move towards smaller properties by households in these age groups. The mean value of net assets increases across qualification groups, with the differences becoming more marked in 2000.

5 Conclusions

In this paper we evaluate the reliability of some of the variables of the BHPS. Using BHPS weights and estimates of the UK household population we gross up the BHPS data and compare these numbers with aggregate data. We are interested in whether the grossed-up figures from the BHPS are a close match to the national aggregates, and if that match has remained broadly stable over the years covered by the BHPS.

We focus on those variables that provide the most information on risks to financial stability and the macro-economy stemming from households and, therefore, concentrate on household balance sheet variables relating to debt, assets and income.

The general conclusion is that the match between the BHPS data and the national aggregates remains broadly stable, but with sufficient variation to make the correlation of growth rates of disaggregate and aggregate data very low. The ratio of the BHPS grossed-up figure to the national aggregate varies from variable to variable.

Labour income is very well recorded in BHPS, with a ratio to the aggregate figures of 94% on average between 1991 and 2001. Non-labour income is recorded less well with only a 56% ratio, resulting in a ratio for total income of 80%.

Housing wealth is systematically over-recorded in the BHPS. On the other hand, consumption is systematically under-recorded, at around 85% of the national aggregate.

Unsecured debt and financial assets variables are only gathered for the years 1995 and 2000 in the BHPS. Unsecured debt is substantially under-recorded at 53% and 45% of the aggregate figure respectively for 1995 and 2000. The degree of under-recording for financial assets is even greater at 39% and 25% respectively for 1995 and 2000.

The BHPS is useful in assessing the distribution of household income and the main components of the household balance sheet. However, there is evidence of substantial under-recording of financial assets and unsecured debt relative to aggregate figures, and this should be taken into account when analysing the data.

Tables and charts

Table A.a: Variables definition: ONS

Variable	Definition	Source	Code	Quarters taken
Annual income	Wages and salaries + social benefit other than transfer in kind + interest + distributed income of corporations	*Financial Statistics* (ONS): Table 14.8A	royj.q + rphl.q + roym.q + royn.q	Q3+Q4+Q1+Q2
Labour income	Wages and salaries	*Financial Statistics* (ONS): Table 14.8A	royj.q (+royh.q for mixed income)	Q3+Q4+Q1+Q2
Non-labour income	Social benefit other than transfer in kind + interest + distributed income of corporations	*Financial Statistics* (ONS): Table 14.8A	rphl.q + roym.q + royn.q	Q3+Q4+Q1+Q2
Housing wealth	Housing wealth	The *Blue Book* (ONS): Table 10.10	cgri.a	Q3
Financial assets	Deposits + securities other than shares + shares and other equity	*Financial Statistics* (ONS): Table 12.1N	nnmp.q + nnmy.q + nnos.q - nnmq.q	Q3
Unsecured debt	Net lending to individuals, consumer credit other than credit cards + total lending to individuals, credit card (corrected by percentage of credit card balances bearing interest)	*Monetary and Financial Statistics* (Bank of England), British Bankers' Association Table A5.6	vzrk.q +vzrj.q * % of credit card balances bearing interest	Q3
Secured debt	Total net lending to individuals secured on dwellings (amount oustanding)	*Monetary and Financial Statistics* (Bank of England) Table A5.2	vtxk.q	Q3
Consumption	Total household consumption expenditure	*UK Economic Accounts*, Table A2	abjq.q	Q3+Q4+Q1+Q2

Table A.b: Variables definition: BHPS[a]

Variable	Definition	Code	Waves	Notes
Annual income	Individual annual income	fiyr	1-11	fiyr
Labour income	Individual labour income	fiyrl	1-11	
Non-labour income	Individual non-labour income	fiyrnl	1-11	
Housing wealth	Value of all properties for home-owners (household variable)	hsval+hs2val (hs2val is hs2valo in Waves 10 and 11)	1, 3-11	The respondent is asked how much he thinks his total property is worth today. Waves 1, 2 and 6 do not have data for second property. Wave 2 has a very high per cent of non-applicable answers
Financial assets	Sum of all liquid and illiquid financial assets	svack svacsk svackb* svacsj bankk nvestk nvestsk nvestc* nvestsj	5, 10	Wave 5 collects information on irregular savings, whereas Wave 10 only collects information on savings if the respondent is a regular saver. The names of the variables change between waves
Unsecured debt	As sum of individual unsecured debt: Financial commitments other than mortgages and housing-related loans	debty debtc* debtj debtsj	5, 10	The question on unsecured debt varies slightly between Waves 5 and 10 as well as the name of the variables
Secured debt	Total amount of outstanding loans on all property (including current home) (household variable)	mgtot	3-11	
Consumption	Residual definition as income minus savings	fiyr-saved*12	1-11	Other definitions of consumption are worked out as sum of different consumption components captured in BHPS. These definitions of consumptions are poorer than the residual definition and are more volatile across waves

[a]To get household variables from individual variables we sum the value of the variable across individuals within a household. If any individual within the household has a missing code, the value of that variable would be missing for that household. To allocate housing wealth and secured debt across individuals in a household we use BHPS variables on first and second owners of the house in a household. Unfortunately, there is no information on third and further onwners.

Table A.c: Response rates by year (%)

Year	Income	Housing wealth[a]	Consumption	Secured debt	Unsecured debt	Financial assets
1991	96.51	100.00	90.01			
1992	96.06	99.50	90.21			
1993	93.96	94.30	88.56	87.71		
1994	95.51	96.45	90.64	90.25		
1995	95.42	96.34	89.57	91.46	93.70	89.93
1996	96.66	98.36	91.58	92.52		
1997	97.28	98.27	93.01	93.49		
1998	97.02	97.24	92.81	92.66		
1999	96.90	97.66	92.29	93.62		
2000	96.61	95.73	91.31	92.82	94.24	86.90
2001	96.04	96.30	90.83	91.67		

[a]Housing wealth and secured debt respondents ratios are based on the number of households responding to these questions over all households.

Chart A.1: Individual grossing vs national aggregates, levels

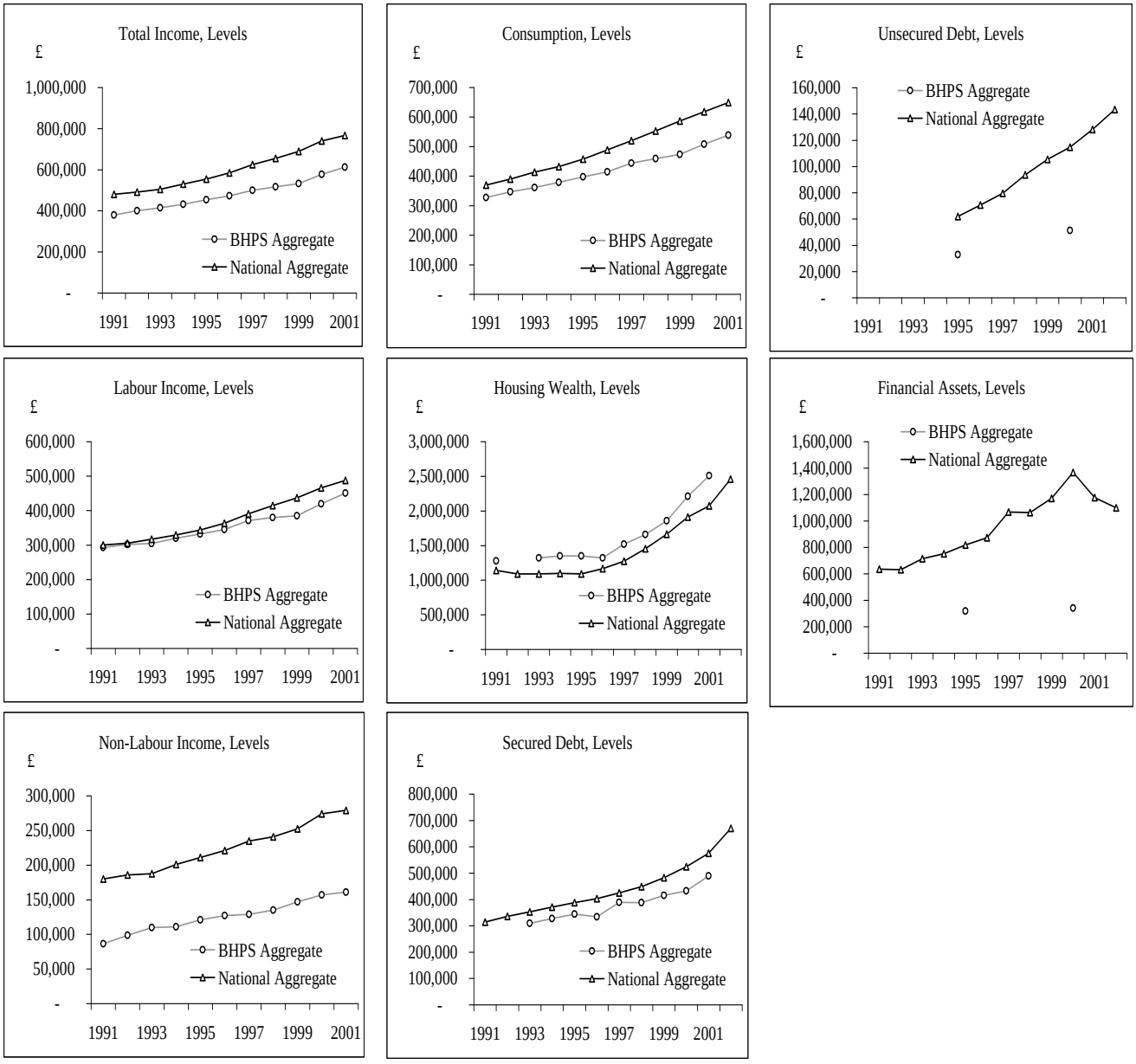


Chart A.2: Household grossing vs national aggregates, levels

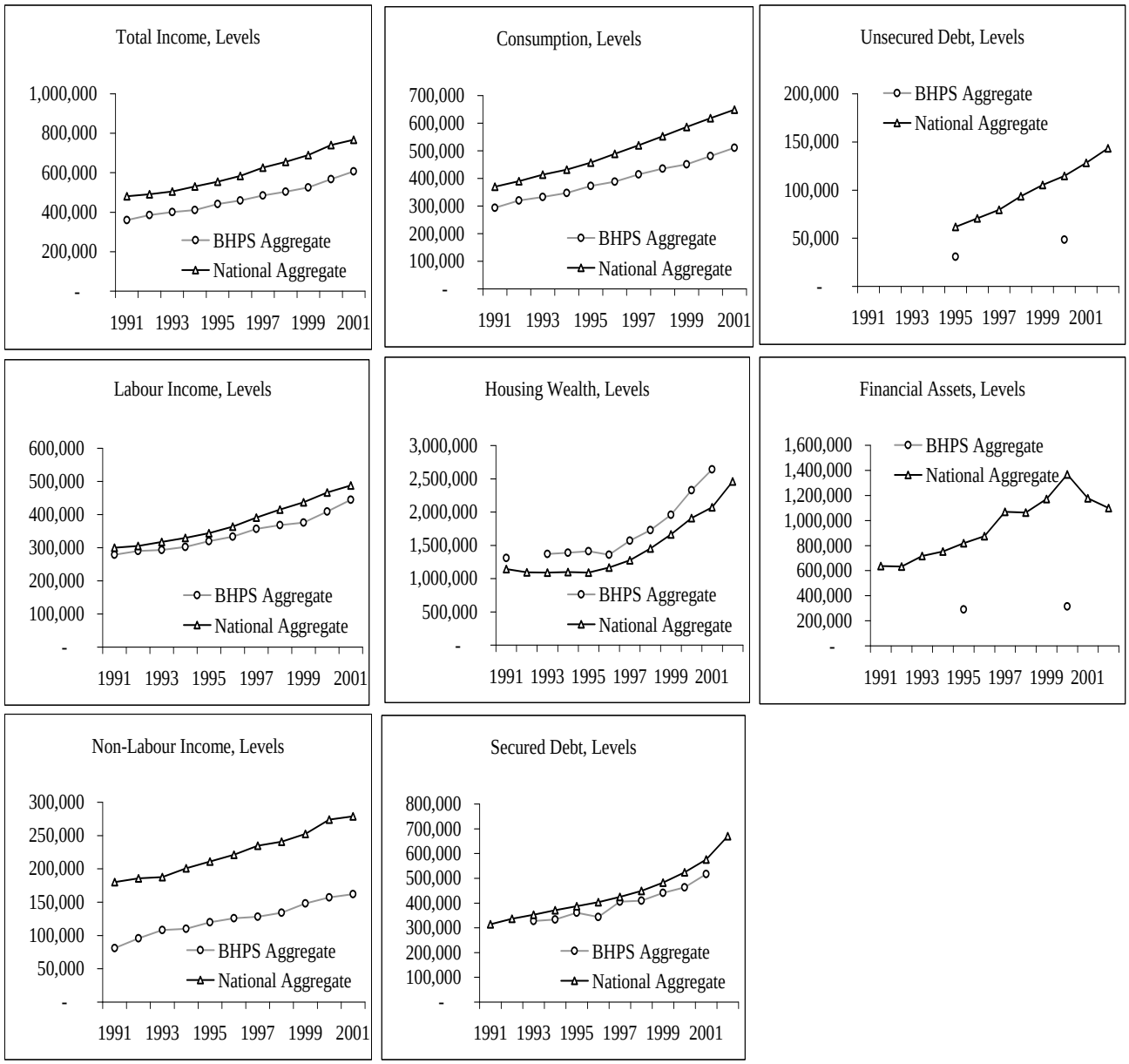


Chart A.3: Household grossing vs national aggregates, growth rates

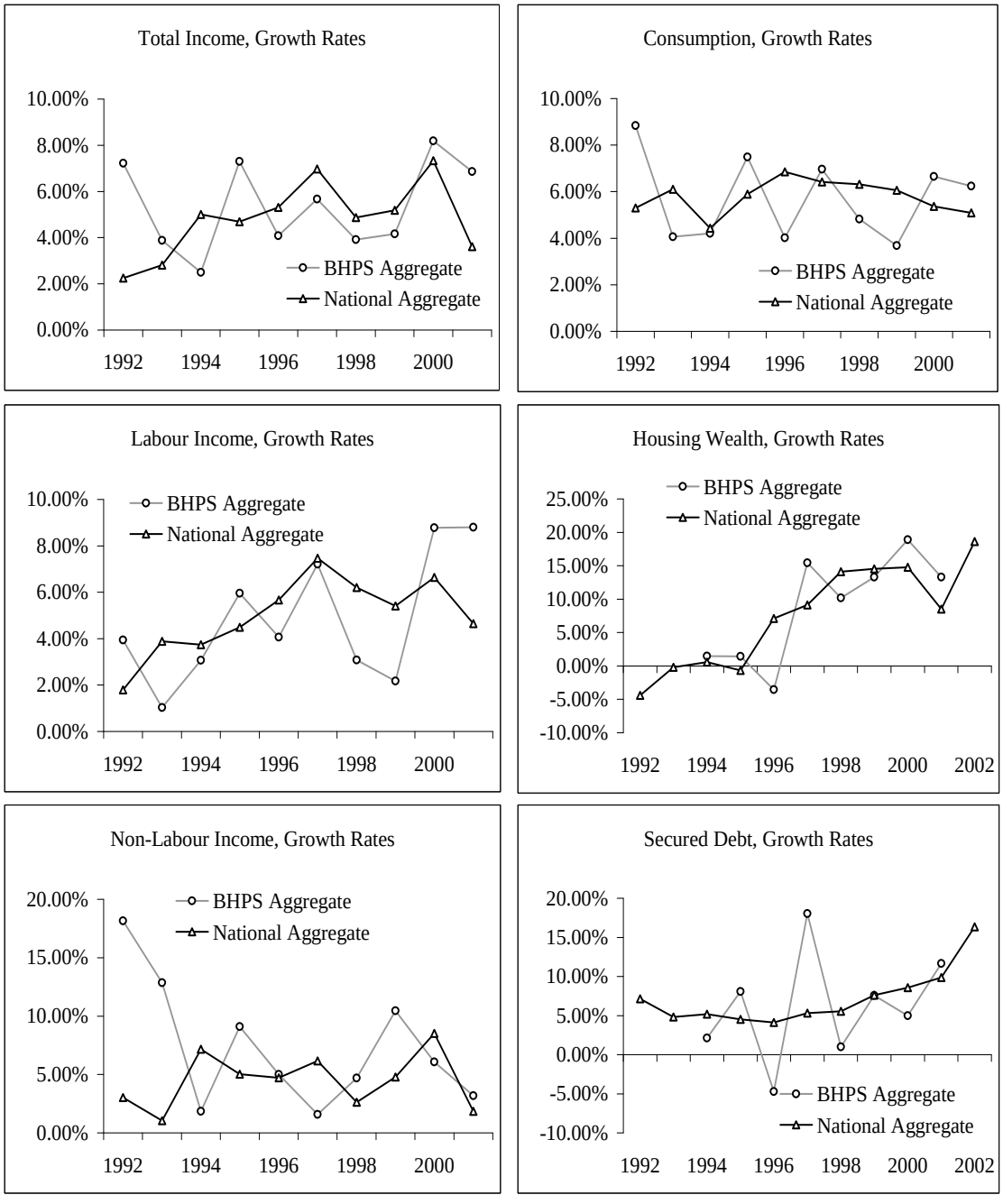
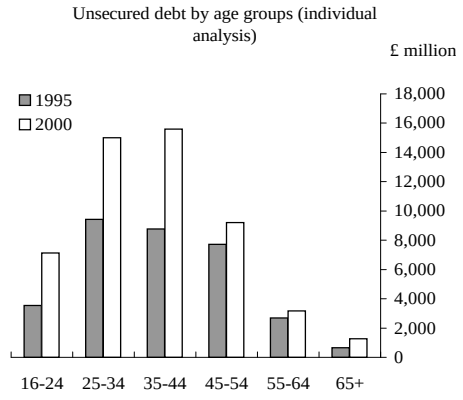
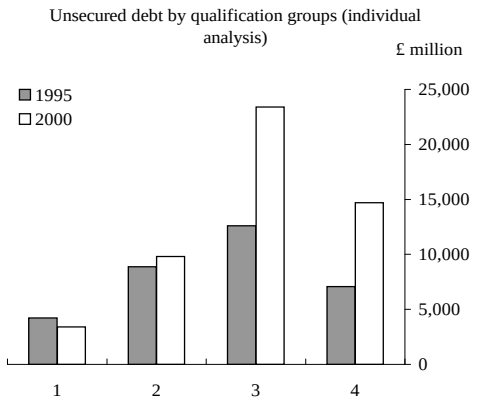
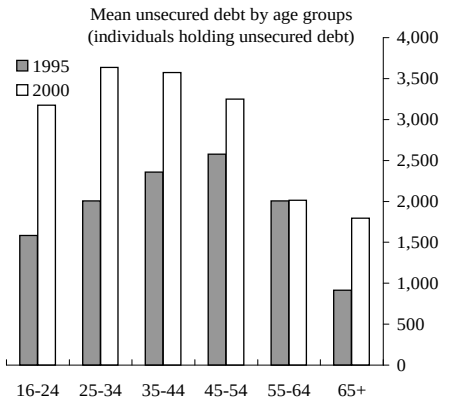
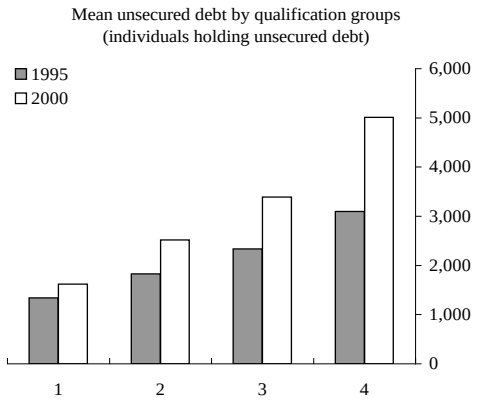


Chart A.4: Unsecured debt distribution







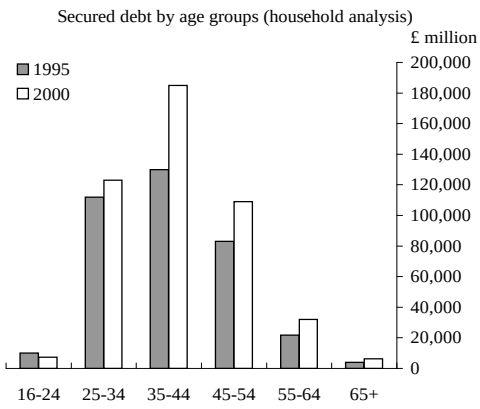


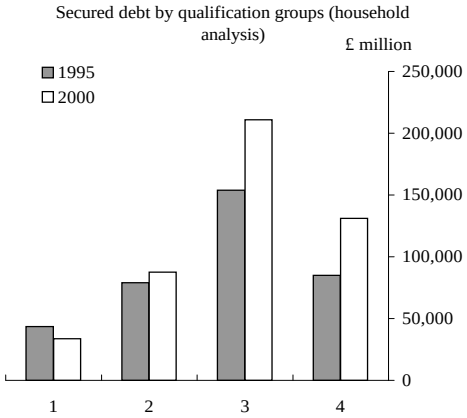
% Holding Unsecured Debt

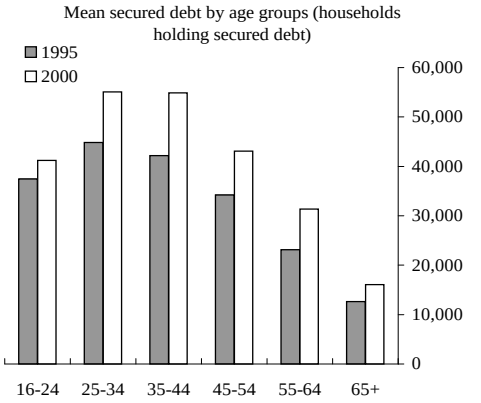
by individuals 1995	qualification groups				total
age groups	1	2	3	4	
16-24	41.07	31.58	36.82	72.46	36.87
25-34	52.68	60.30	57.60	50.71	56.94
35-44	43.37	52.50	55.62	43.75	50.02
45-54	35.67	42.03	40.60	45.73	39.99
55-64	19.67	29.40	29.17	25.52	23.99
65+	6.37	7.73	8.14	15.20	7.36
total	21.40	40.53	42.90	42.92	35.20

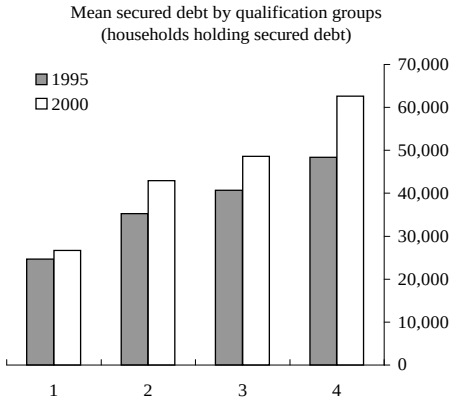
by individuals 2000	qualification groups				total
age groups	1	2	3	4	
16-24	27.51	24.04	54.07	69.16	42.61
25-34	39.88	54.28	58.69	66.55	57.85
35-44	37.25	55.72	54.78	47.44	51.63
45-54	32.38	35.70	40.14	39.58	37.17
55-64	23.62	21.83	33.75	25.20	26.49
65+	5.54	9.35	8.73	9.22	6.88
total	17.37	35.75	45.65	45.17	35.43

Chart A.5: Secured debt distribution









% Holding Secured Debt

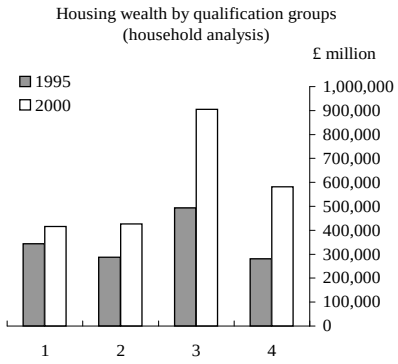
by households 1995

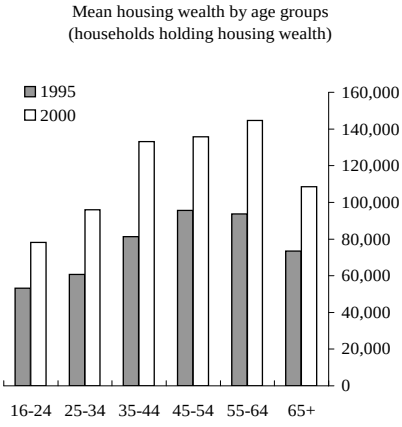
age groups	qualification groups 1	2	3	4	total
16-24	5.26	29.69	24.99	18.70	23.76
25-34	30.95	54.21	70.53	66.00	59.79
35-44	48.45	73.01	77.71	79.56	71.28
45-54	47.25	62.40	69.77	66.63	60.04
55-64	21.73	28.42	38.83	43.29	29.02
65+	3.67	1.88	7.25	5.13	4.02
total	18.42	43.78	55.39	55.45	38.65

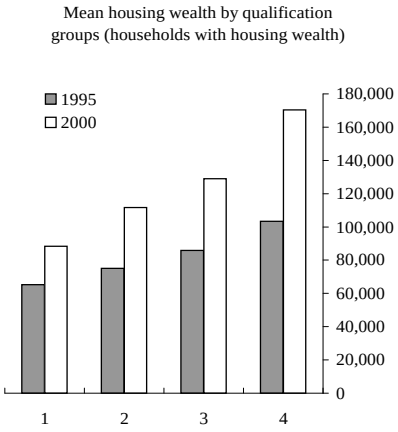
by households 2000

age groups	qualification groups 1	2	3	4	total
16-24	14.40	30.58	13.90	21.54	19.57
25-34	24.21	52.67	64.24	72.51	60.38
35-44	42.68	66.39	73.75	81.77	70.18
45-54	41.95	61.41	62.09	66.09	57.87
55-64	18.25	21.21	38.14	34.42	27.46
65+	5.57	3.93	4.03	2.67	4.86
total	15.30	41.64	50.82	54.90	38.14

Chart A.6: Housing wealth distribution





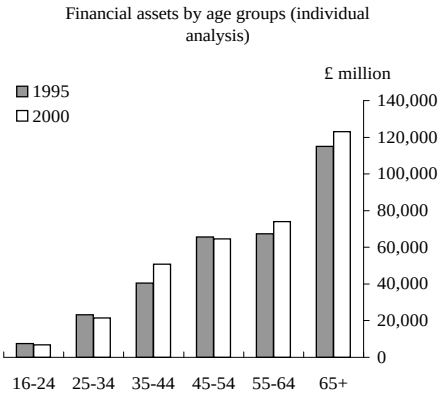


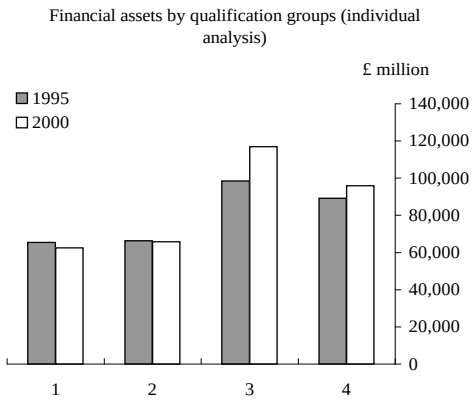
% Holding Housing Wealth

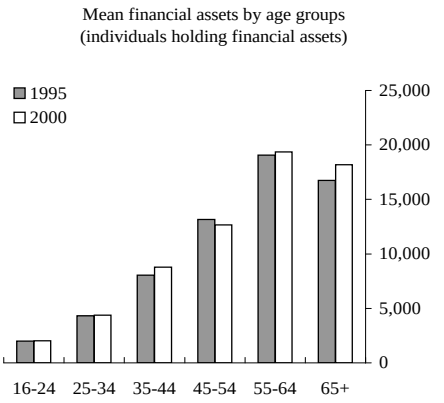
by households 1995 qualification groups					total
age groups	1	2	3	4	
16-24	5.26	36.59	32.78	32.66	31.10
25-34	35.27	60.44	75.20	71.43	65.15
35-44	58.74	79.82	85.82	85.79	79.09
45-54	68.69	86.73	90.17	88.24	81.77
55-64	63.53	78.56	87.35	100.00	75.11
65+	47.11	71.71	83.66	88.48	58.09
total	53.23	70.38	80.28	82.18	68.22

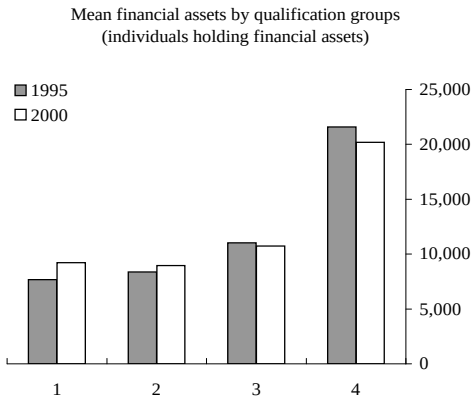
by households 2000 qualification groups					total
age groups	1	2	3	4	
16-24	22.09	36.36	25.52	24.32	27.72
25-34	25.71	59.32	70.22	76.58	65.97
35-44	53.19	76.78	81.45	92.62	79.50
45-54	65.60	84.57	88.03	89.83	82.38
55-64	62.06	80.65	85.73	98.11	77.26
65+	54.03	81.01	82.31	88.78	65.06
total	55.86	74.12	78.35	85.51	71.32

Chart A.7: Financial assets distribution









% Holding Financial Assets

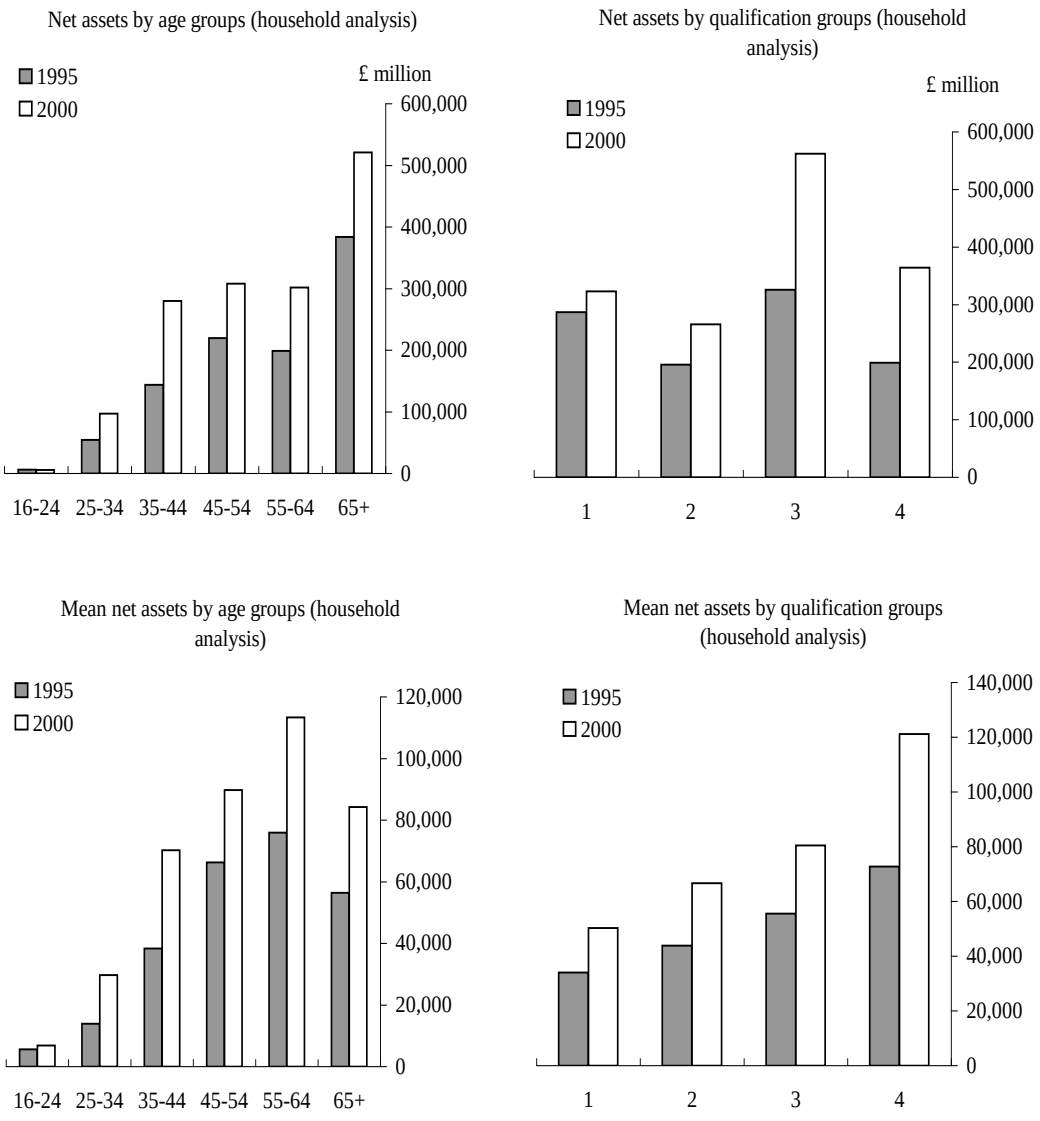
by individuals 1995

	qualification groups				total
age groups	1	2	3	4	
16-24	28.66	61.48	69.29	65.41	62.65
25-34	38.49	62.24	70.37	81.62	66.22
35-44	48.05	69.10	76.24	80.12	68.99
45-54	56.35	76.95	75.34	82.71	70.18
55-64	60.18	76.31	80.37	91.83	70.00
65+	70.82	80.77	85.62	87.37	75.06
total	60.94	68.32	74.42	81.75	69.09

by individuals 2000

	qualification groups				total
age groups	1	2	3	4	
16-24	23.91	67.57	70.29	62.85	66.43
25-34	30.16	64.97	77.78	80.03	71.50
35-44	47.68	70.27	76.78	82.18	72.63
45-54	57.88	80.90	80.32	82.50	75.18
55-64	62.58	80.90	83.19	83.28	74.48
65+	70.10	87.38	89.65	90.35	77.10
total	62.17	73.65	78.42	80.83	73.40

Chart A.8: Net assets distribution



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