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How reliable is the family expenditure survey? Trends in incomes and expenditures over time

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How Reliable is the Family Expenditure Survey?

**Trends in Incomes and
Expenditures over Time**

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Preface

This research forms part of the research programme of the ESRC Centre for the Microeconomic Analysis of Fiscal Policy at the Institute for Fiscal Studies. Material from the Family Expenditure Survey made available by the Office for National Statistics (ONS) through the ESRC Data Archive has been used by permission of the Controller of HMSO. Neither the ONS nor the ESRC Data Archive bears any responsibility for the analysis or interpretation of the data reported here. The usual disclaimer applies.

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Summary

In this report, we examine trends in income and expenditure in the Family Expenditure Survey (FES). The FES has been the predominant source of information on these factors over the last 25 years and the studies presented here examine whether the trends observed are borne out in other sources of information, such as benefit receipts, the New Earnings Survey (NES) or National Accounts. The main findings are:

- In aggregate, the FES records about £9 in every £10 of income contained in the National Accounts. When broken down by income sources, we find that earnings and social security income closely match the National Accounts, while other sources, such as self-employment income and income from investments, are badly under-recorded.
- In each of the years 1985 to 1992, the amount of earnings recorded in the FES as a proportion of National Accounts earnings varies between 93.3 per cent and 98.6 per cent. Comparison with the NES showed that the raw earnings distribution in the FES was below that found in the NES. Grossing up the FES to population totals using weights based on family types tended to reduce the percentile points of the FES distribution, moving it further from the NES distribution.
- Total benefit income recorded in the FES is relatively close to that in the National Accounts. However, certain benefits, such as family credit and housing benefit for private tenants, showed a marked degree of under-recording in the FES.
- Investment income in the FES as a proportion of the National Accounts figure rose from 41.3 per cent in

1985 to 60.3 per cent in 1992. There appeared to be a lag of a year before increases in investment income in the National Accounts fed through to the FES.

- Self-employment income was badly under-recorded in the FES. There are a number of possible reasons for this, but the FES remains an unreliable data source when examining the incomes of the self-employed.
- A comparison of grossed-up spending in the FES with total expenditure in the National Accounts shows that the FES matches well the main patterns in consumer spending — booms and busts — over the period 1974–92.
- The FES does not capture all spending in the National Accounts; it covers the spending of private households only and excludes spending by the institutional population and by tourists. The proportion of National Accounts spending captured by the FES averages 86 per cent between 1974 and 1992.
- What matters for the empirical analysis of spending behaviour using the FES is the consistency of the data across the period. The results show that the proportion of National Accounts data captured by the FES is reasonably stable. Care should be taken in measuring housing costs, however. With rising interest rates in the late 1980s, using mortgage interest payments rather than imputed rents produces a very different measure of the cost of housing.
- For individual commodities, the results are also encouraging. A comparison of the FES and National Accounts shows stable ratios over time for most commodity groups. However, a small note of caution should be sounded about tobacco expenditure in the

FES, which appears as a successively smaller proportion of the National Accounts figure over time.

1

Introduction

JAMES BANKS and PAUL JOHNSON
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The Family Expenditure Survey (FES) was originally collected in the 1950s and 1960s to record the composition of household expenditures for use in the calculation of commodity weights for the retail price index. Since then, however, it has also become the predominant source of information for the analysis of the income and expenditure levels, patterns and distributions among UK households over the last 35 years. It has been used as a basis for the construction of tax and benefit models — including those used by the Treasury, the Department of Social Security (DSS) and the Institute for Fiscal Studies (IFS). It is the basis for official figures on low incomes (DSS, 1996) and on the income distribution and the effects of taxes and benefits on the income distribution (*Economic Trends*, various). Independent analysis at IFS (Goodman and Webb, 1995a) has extended the income distribution series right back to the first of the annual FES surveys in 1961. Data from the FES have also provided the basic descriptive information for almost all that we know about various parts of the income distribution, the relative incomes of different groups of people and much more. It has also become the primary dataset for the economic evaluation of UK household labour supply behaviour, work

incentives, consumption growth and saving and spending patterns.¹

Empirical research based on FES (or, more generally, micro) data has become especially important, given the shifting emphasis of economic and policy research towards the microeconomic issues that underlie macroeconomic performance. This shift has gone hand in hand with the development and utilisation of econometric techniques for the analysis of large time series of cross-sectional data. In particular, the understanding of how to use grouping estimators to create synthetic panel data (see Deaton (1985) or Moffitt (1993)) has meant that a succession of single cross-sectional datasets have become valuable in the estimation of dynamic problems such as consumption, saving or labour supply choices.

Given its centrality to so much research in the economic and social field, a very clear idea of the reliability of FES data is essential. There have been concerns expressed about the reliability of some of the income data, particularly with respect to the self-employed. This has caused the DSS to publish many tables in its annual *Households Below Average Income* publication both including and excluding the self-employed population. Other misgivings have been expressed regarding the quality of data on investment

¹A host of papers use FES data in these areas. Examples include Browning, Deaton and Irish (1985), Blundell and Walker (1986) and Blundell, Duncan and Meghir (1995) for labour supply; Jenkins (1995) and Duncan and Giles (1996) for work incentives; Attanasio and Browning (1995), Attanasio and Weber (1994) and Banks, Blundell and Preston (1994) for consumption growth and saving; and Deaton and Muellbauer (1980), Blundell, Pashardes and Weber (1993), Browning and Meghir (1991), Banks and Johnson (1993) and Banks, Blundell and Lewbel (1997) for household spending.

incomes, and on the behaviour of recorded expenditure in the FES relative to what is known from other sources about the level of expenditure in the economy.

By far the most comprehensive study in a similar spirit to that which follows was that of Atkinson and Micklewright (1983). This, along with the excellent *Family Expenditure Survey Handbook* of Kemsley, Redpath and Holmes (1980), provides the starting-point and basic reference for most researchers worrying about the representativeness of the FES. Given that this study covers data only up to 1977, a new look at the issues raised by the use of these datasets is long overdue. This volume presents papers given at a conference organised in the summer of 1996 to discuss exactly these issues. In the papers that follow, Johnson and McCrae look at the income dimension of the data, while Tanner goes well beyond the Atkinson and Micklewright agenda by looking at changes in expenditure totals over time for individual commodity groups as well as total expenditure measures.

1.1 The Family Expenditure Survey

The FES has been collected on a roughly consistent basis since 1961. Since 1967, it has drawn an annual sample of approximately 10,000 households — a more than one in 2,500 sample of the UK household population. Between 1961 and 1966, the annual sample was roughly half this many. It is a voluntary survey and generates a response rate of around 70 per cent of those originally approached. The survey covers the whole of mainland Britain, south of the Caledonian Canal, and Northern Ireland. But it is also a household survey and does miss certain important groups of the population — students in university halls of residence, people living in

nursing and residential homes, prisoners, parts of the armed forces, and, of course, the homeless.²

The demographic information and income data are collected in a face-to-face interview with each member of the household and, if possible, answers to income questions are substantiated by documentary evidence. Expenditure data come from a two-week diary of spending kept by each adult household member, though regular outgoings such as utility bills are averaged over a three-month period. There is also 'retrospective recall' information on large items such as furniture and holidays purchased over a longer period. In terms of the collection of this information, perhaps the biggest change over the 35 years since 1961 actually occurred in the 1994–95 data when computer-aided personal interviewing (CAPI) was introduced.

Over such a long period, there have also been major changes in the exact range of information elicited. It would be foolish to attempt to list all such changes, but there have been a small number of major changes to the sampling frame and grouping of spending commodities that are worth bearing in mind. First, and possibly most importantly, the sampling frame was changed in 1986, from the electoral roll to the Post Office register. Possible effects of this would be to increase the number of households that have recently moved to their address — a group that are less likely to be covered on the electoral roll. Second, in 1987, all commodity expenditures were reclassified in accordance with the revised definition of the retail price index (RPI) which changed from having 11 sub-indices to having 14. This

²See Evans (1995) for a detailed description of the non-household population, which he calculates accounts for around 1.4 per cent of the total UK population.

change affects almost all the commodity aggregates that are provided with the FES data (except alcoholic drink, tobacco, fuel and light, housing and clothing) but not the individual diary expenditure records themselves. Therefore researchers looking for a time series of aggregate groupings can reconstruct them on a consistent basis from the diary records.³ This is not the case for the 1994–95 reclassification of expenditures which actually took place at the diary code level, reflecting the need to capture changing household spending patterns (creating a separate code for pasta, for example). In taking account of this most recent change, assumptions have to be made to construct a spending series that is consistent across years.

A third set of definitional changes relate to the self-employed. Whilst this is a group for which income and spending are clearly hard to measure, a change in recording of self-employment income (prior to and including 1993–94, self-employment income related to that from each individual's main activity only; after this date, however, all activities were included in the definition), coupled with a changing questionnaire for this group, led to serious inconsistencies in the series for this group. A final set of coding issues worthy of note at this stage relate to the classification of credit expenditures in the FES since its introduction. Changes in the measurement of credit expenditures have frequently been required to capture changes in the

³This exercise has been done at IFS to re-create the post-1987 RPI commodity groupings for the 1968–87 data. For most groupings in most years, the re-aggregation exercise is straightforward, although for some diary codes (those that were subsequently split into subcategories, for example) *ad hoc* assumptions have to be made, resulting in some (slight) definitional inconsistencies across years.

market for household credit. But two major changes in recording of credit expenditures occurred. In 1979, and in all previous years, the full amount of any payment to a credit-card company made in the two-week period was treated as credit expenditure. Between 1980 and 1987, credit expenditure was redefined to measure the value of all goods and services recorded on the last credit-card statement. In 1988, the definition was changed again to include only items acquired by credit card over the two-week period, regardless of whether the payment has taken place.⁴ This volume asks what effect changes such as these may have had on trends in income and spending observed in the FES in comparison with other sources of data, such as benefit information or National Accounts.

One final point that it is worth making regarding the likelihood, a priori, of data being reliable over time is that, unlike most other micro-datasets, the FES comes to users in a 'cleaned-up' form. Where there is any missing information from a household (but which is not sufficient to disqualify the household from the sample), the information is imputed and placed in the data before the user ever sees it. There is nothing to mark where this has occurred. In all the papers that follow, this is ignored: the data are treated as the authors, and all other users, see and use it. It is worth remembering that, since an answer of 'missing' to any income question disqualifies the household from the final sample altogether, the overall response rate, in terms of usable observations, is actually quite high. This is in comparison with many surveys which have around the

⁴For further discussion of these changes and changes in retrospective recall codes, see Tanner (this volume) or Goodman and Webb (1995b).

same sample response rate but then many missing values for questions relating to items such as income.

1.2 Estimating Population Totals from Sample Data

Because it is a voluntary survey with non-random non-response, the demographic composition of the FES sample may differ from that of the population at large. To take this into account, the survey has to be 'grossed up' to be as representative as possible of the UK household population. This volume is not primarily a discussion of possible grossing-up regimes, but different ways of adjusting the data for non-response are obviously important for an exercise of this nature.

One method is simply to multiply the spending of each household surveyed by the ratio of the number of households in the population to the number of households in the survey — a method known as uniform grossing. Whilst giving a good approximation, this technique implicitly assumes that the households that respond to the FES are representative of the households in the UK. If the variable of interest (say, for example, household spending) varies systematically by household type, uniform grossing factors will only achieve unbiased estimates of the population spending totals if all types of households are represented in the sample in the same proportions as in the population. Alternatively, if different households are systematically under- or over-represented in the sample relative to their proportions in the population, uniform grossing factors will only produce unbiased population totals if spending patterns do not vary systematically by household type. It is, however, relatively easy to think of cases where these conditions do not hold. For example, households with

children are known to be over-represented in the FES relative to the UK population (see Kemsley, Redpath and Holmes (1980)). It is also likely that households with children will tend to have different spending patterns from households without — higher spending on children's clothing, for example. In this case, uniform grossing factors will tend to overestimate total population spending on children's clothing relative to the 'true' level.

To correct for the problem of differential response rates, each household can be assigned a different weight in the grossing-up process to correct for their over- or under-representation in the sample. These weights are computed from comparing the relative numbers of each household type in the survey and in the population for that year. The sample weights are then used in computing all statistics, including means and medians as well as counts of the number of households falling into various categories.

The papers in this volume use differential grossing factors to take into account the effects of year-on-year sample variation on average incomes or expenditures and to facilitate easy comparison with aggregate statistics. More specifically, they use a set of differential grossing factors constructed by the DSS for use in calculating its Households Below Average Income (HBAI) statistics. This set of grossing factors corrects for known differential rates of response to the FES in three dimensions — age, marital status and household size — and is reported, for 1991, in Table 1.1.⁵ Since the numbers are frequency weights (in thousands), a high grossing factor implies that the relevant group is under-represented.

⁵For further discussion, see Department of Social Security (1994).

TABLE 1.1
Differential (HBAI) grossing factors
computed from 1991 FES and census data

<i>Benefit unit type</i>	<i>Grossing factor (frequency weight) (thousands)</i>
Married couple, no children	3.7039
Married couple, 1 child	3.0810
Married couple, 2 children	2.9843
Married couple, 3+ children	2.7000
Married couple, age 65–74	3.3340
Married couple, age 75+	3.4180
Single male, age less than 30	4.3879
Single male, age 30–54	3.4067
Single male, age 55–64	3.1959
Single female, age less than 20	3.7553
Single female, age 20–39	3.4945
Single female, age 40–59	3.1594
Male single parent	4.7160
Female single parent	3.4506
Male single pensioner, 65+	2.7848
Female single pensioner, 60–74	3.0616
Female single pensioner, 75+	3.3427

For the analysis of a time series of datasets, it is important that the grossing factors are recomputed for each year to capture sample variation. This requires yearly control totals to be inferred from the 10-yearly census records augmented with records of births and deaths, benefit recipient statistics and labour force surveys. Some discussion of these issues is presented in the papers below, although the yearly grossing factors in both studies are taken from Goodman and Webb's (1995a) study of changes in the income distribution which computes these grossing factors for every year between 1961 and 1991.

One feature of these grossing factors should be borne in mind. Comparisons of expenditures work at the household level since it is impossible to attribute expenditures to individual household members or even

benefit units within the household. The HBAI grossing factors, however, are computed from benefit unit data and then aggregated to the household level before being merged to generate the grossed-up totals reported in the papers below. This technique does not accommodate possible spillover effects of multiple benefit units living in the same household (such as may be important in the multiple adult case).⁶ Further details relating to differential grossing techniques for FES data are given in Atkinson, Gomulka and Sutherland (1988), Goodman and Webb (1995a) and Banks and Tanner (1997) who compare the impact of different grossing regimes for National Account aggregates of consumer spending.

1.3 How Reliable is Income and Expenditure Information in the FES?

In July 1996, the Institute for Fiscal Studies organised a conference for users and providers of FES data to discuss the issues raised in comparing patterns in FES economic variables both across time and to other sources of information. This volume presents the results of the analysis discussed at the conference. Included in this volume are revised versions of the text of the two main papers given there, as well as two short papers originally given as discussions by Tim Andrews and by John King of the Office for National Statistics. Tim Andrews is responsible for collection of household spending aggregates for use in the National Accounts and John King is in charge of the collection of the FES itself.

⁶Computing true household grossing factors from household-level control totals relaxes this restriction and Banks and Tanner (1997) document these differences more completely.

In the first paper, Paul Johnson and Julian McCrae look at the reliability of data on sources of income for the period 1985–92. They consider each component of income in turn — investment income, social security, supplementary benefit / income support, family income supplement / family credit, housing benefit, occupational pensions, self-employment income and finally earnings — and then look at trends in total income compared with evidence from the National Accounts. Although total income follows other aggregates quite well, Johnson and McCrae find variation in the degree to which incomes are captured by the FES.

The two largest components of income — earnings and social security benefits — are well-recorded and follow the National Accounts closely. This is not the case for the smaller sources of income, such as self-employment income and investment income, which fluctuate year on year and are under-recorded on average. This under-recording, however, may well come from an undersampling of the self-employed and the wealthy (neither of which are controlled for in the grossing-up exercise) rather than representing an inaccuracy in the measurement of households included in the final sample. Looking at smaller sub-components of income, there is more fluctuation in the degree of inaccuracy. Structural breaks appear to be evident in sources of benefit income, which mean that such data should be treated with caution when comparing one year with the next. There is also some evidence of an increased undersampling of young unemployed individuals in later years of the sample.

In the second paper of this volume, Sarah Tanner provides an extensive analysis of trends in household

spending since 1974. The paper shows that, for most items, trends in aggregate spending are mirrored in FES totals. Once the expenditures have been adjusted for changes in retrospective recall and credit information, and once differential grossing factors have been applied, there is a good correspondence between National Accounts aggregates and FES expenditure totals for almost all goods. On average, around 90 per cent of aggregate spending is captured in the FES and this proportion has been constant over time. For some items, this is not the case — alcohol and tobacco expenditures, for example, are significantly under-recorded and the under-recording of the latter has become more severe over the last 10 years (as has under-recording of expenditures on ‘other goods and services’). As a guide to the amount of fluctuation in these over time, the variability of each series is less than the margin of error given for the ONS national aggregates.⁷

Both papers look in some detail at the issue of housing costs, since these are typically an important component of household economic decisions and are also extremely difficult to measure (for owner-occupiers, at least). Tanner shows that the measure of housing costs computed using HBAI methodology rises substantially as a proportion of that in the National Accounts during the late 1980s and early 1990s. But the two series do not attempt to measure the same thing, since the National Accounts methodology includes imputed rents for home-owners, whereas the HBAI measure includes mortgage interest costs only. As the number of new mortgage holders increased in the

housing boom, and interest rates rose, a larger proportion of monthly payments would have been predominantly interest rather than repayment of capital and this would cause rapid convergence in the two series. Johnson and McCrae, whilst not considering the total housing cost measure *per se*, compare trends in different components of housing costs to various sources of information, since ‘after-housing-costs’ income is one of the measures on which income inequality statistics are based. They find that individual components of housing costs (or indicators of these measures), such as average rents and the number of people receiving mortgage interest tax relief deducted at source (MIRAS), match well to aggregate statistics, but that there is some difference in estimates of mortgage debt outstanding between the FES and other surveys such as that of the Council of Mortgage Lenders. They also outline the extent of imputation required for interest payments (these imputations are already carried out in the HBAI adjustment). The discussions in both papers indicate that, while FES information on housing costs is likely to be reliable, it is important to consider in detail the exact concept of housing costs that is relevant and to select appropriate FES data accordingly.

It is worth noting that neither of the main papers in this volume addresses the reliability of information on household saving. This is not surprising — a complete analysis would require a paper in itself, and the definitional issues to be solved in comparing FES totals with other information are complex. The appropriate treatment of deductions from pay for private versus state pensions, the measurement of employer contributions to pension plans, the relative importance of consumption versus saving in the accumulation of housing wealth,

⁷The variability is measured by the standard deviation of the ratio of the aggregated FES spending for each group to the National Accounts total for that group.

and the consumption of durables in general, all make this an area in which a 'reliability' exercise is not straightforward. What evidence there is on savings in the FES is also documented elsewhere. The interested reader is referred to Banks and Blundell (1994), who use FES data over the last 20 years to provide a description of the level of household saving, Banks and Tanner (1996), who document asset holding decisions of FES households, and Attanasio and Banks (1997), who compare trends and patterns in household saving in the UK with those observed in the US, both at the aggregate and at the household level.

The Family Expenditure Survey is a well-used source of information on the economic choices of UK households, and the papers in this volume suggest that the levels and trends in total incomes, total expenditures and constituent parts of each capture, to a large extent, the levels and trends suggested by other information. This is in contrast to many household surveys, both in the UK and in other countries. Having been collected annually for more than the last 30 years, it represents a unique picture of the changing economic circumstances of individuals and households, a picture that is borne out in other less frequent or less detailed sources of information. But the papers in this volume also suggest that care must be taken when using a (long) time series of FES datasets to ensure that changes to the derived data, the sample frame or the coding of questions between years are adequately accounted for in generating and processing a dataset. There have been a multitude of these changes, some more major than others, and the majority can be controlled for at the data-processing stage.

References

- Atkinson, A., Gomulka, J. and Sutherland, H. (1988), 'Grossing-up FES data for tax-benefit models', in A. Atkinson and H. Sutherland (eds), *Tax Benefit Models*, Occasional Paper no. 10, London: STICERD.
- and Micklewright, J. (1983), 'On the reliability of income data in the Family Expenditure Survey, 1970–1977', *Journal of the Royal Statistical Society*, series A, vol. 146, pp. 33–61.
- Attanasio, O. and Banks, J. (1997), 'Trends in household saving: a tale of two countries', mimeo, Institute for Fiscal Studies.
- and Browning, M. (1995), 'Consumption over the business-cycle and over the life-cycle', *American Economic Review*, vol. 85, pp. 1118–38.
- and Weber, G. (1994), 'The UK consumption boom of the late 1980s: aggregate implications of microeconomic evidence', *Economic Journal*, vol. 104, pp. 1269–1302.
- Banks, J. and Blundell, R. (1994), 'Household saving behaviour in the UK', in J. Poterba (ed.), *International Comparisons of Household Saving*, Chicago: University of Chicago Press.
- , — and Lewbel, A. (1997), 'Quadratic Engel curves and consumer demand', *Review of Economics and Statistics*, vol. 79, pp. 527–39.
- , — and Preston, I. (1994), 'Life-cycle expenditure allocations and the consumption costs of children', *European Economic Review*, vol. 38, pp. 1234–78.
- and Johnson, P. (1993), *Children and Household Living Standards*, London: Institute for Fiscal Studies.
- and Tanner, S. (1996), 'Savings and wealth in the UK: evidence from micro data', *Fiscal Studies*, vol. 17, no. 2, pp. 37–64.
- and — (1997), 'Grossing up FES expenditure data for use in National Accounts', mimeo, Institute for Fiscal Studies.
- Blundell, R., Duncan A. and Meghir, C. (1995), 'Estimating labour supply responses using tax reforms', Institute for Fiscal Studies, Working Paper no. 95/7.
- , Pashardes, P. and Weber, G. (1993), 'What do we learn about consumer demand patterns from micro data?', *American Economic Review*, vol. 83, pp. 570–96.
- and Walker, I. (1986), 'A life-cycle consistent empirical model of family labour supply using cross-section data', *Review of Economic Studies*, vol. 53, pp. 539–58.

- Browning, M., Deaton, A. and Irish, M. (1985), 'A profitable approach to labor supply and commodity demand over the life cycle', *Econometrica*, vol. 53, pp. 503–44.
- and Meghir, C. (1991), 'The effect of male and female labour supply on commodity demands', *Econometrica*, vol. 59, pp. 925–51.
- Deaton, A. (1985), 'Panel data from time series of cross sections', *Journal of Econometrics*, vol. 30, pp. 109–26.
- and Muellbauer, J. (1980), 'An Almost Ideal Demand System', *American Economic Review*, vol. 70, pp. 312–26.
- Department of Social Security (1994), *Households Below Average Income, 1979–1991/2: A Statistical Approach*, London: HMSO.
- (1996), *Households Below Average Income, 1979–1994*, London: HMSO.
- Duncan, A. and Giles, C. (1996), 'Labour supply incentives and recent family credit reforms', *Economic Journal*, vol. 106, pp. 142–55.
- Evans, M. (1995), 'Out for the count: the incomes of the non-household population and the effect of their exclusion from national income profiles', STICERD, Discussion Paper no. WSP/111.
- Goodman, A. and Webb, S. (1995a), 'For richer, for poorer: the changing distribution of income in the UK, 1961–91', *Fiscal Studies*, vol. 16, no. 4, pp. 29–62.
- and — (1995b), 'HBAI expenditure data documentation', annex to HBAI dataset, mimeo, Institute for Fiscal Studies.
- Jenkins, S. (1995), 'Accounting for inequality trends: decomposition analyses for the UK, 1971–86', *Economica*, vol. 62, pp. 29–63.
- Kemsley, W., Redpath, R. and Holmes, M. (1980), *Family Expenditure Survey Handbook*, London: Social Survey Division, OPCS.
- Moffitt, R. (1993), 'Identification and estimation of dynamic models with a time series of repeated cross-sections', *Journal of Econometrics*, vol. 59, pp. 99–124.

Robustness of FES Income Data, 1985–92*

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2.1 Introduction

The Family Expenditure Survey (FES) has been used in innumerable studies of the income distribution in the past decade and more. It forms the basis of official income distribution statistics¹ (Department of Social Security (1995), for example) and was used extensively by Goodman and Webb (1994) in their description of the income distribution over a period of three decades. Among other uses, it forms the basis of many labour supply studies (Blundell, Duncan and Meghir (1995), for example) and is the basis for most currently operating tax and benefit models (see Giles and McCrae (1995) and Atkinson and Sutherland (1988)), including those run by HM Treasury and the Department of Social Security.² Even with the arrival of new datasets such as the Family Resources Survey and the British Household Panel Survey, the FES is likely to remain for a long time the primary source of income data in the UK.

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¹Though it is to be superseded by the new Family Resources Survey.

²Jones, Stark and Webb (1991) discuss the issue of modelling benefit expenditures using the FES.

There have in the past been a number of studies of the reliability of FES data. Probably the best known and most comprehensive remains that of Atkinson and Micklewright (1983) who consider the income data in the years 1970 to 1977. Other work at Bath by Coulter (1991) has looked at the data for a small number of specific years, while members of the microsimulation unit at Cambridge have produced a number of studies — see, for example, Atkinson et al. (1993).

Here we look at the robustness of various aspects of the FES data from 1985 through to 1992. We do not attempt to be all-embracing, in the way that Atkinson and Micklewright were in 1983, partly because little would be gained by simply repeating that exercise. Rather, we try to dig a little deeper into some of the more interesting of the income sources. We begin by briefly outlining a couple of methodological issues, including the question of ‘grossing’ the FES. We then consider each of the major components of income in turn in Section 2.3. We provide overall estimates of the reliability of each income source, and more detail on the distribution and components of some. We then show how these total to compare total income in the FES with total income recorded in the National Accounts. In Section 2.4, we extend the analysis to consider the issue of housing costs which form an important part of many measures of consumption and of standard of living.³

2.2 Methodological Issues

Checking the reliability of survey data requires two things alongside the data themselves. The first is, of

³The DSS, for example, calculates its income distribution statistics on both a pre- and a post-housing-costs basis. See Johnson and Webb (1992) for a detailed discussion of this issue.

course, something reliable against which to check them. In many cases, that is not so simple a requirement to fulfil as might be first thought. In what follows, we have made extensive use of the National Accounts *Blue Book*, but there are many occasions on which this has had to be supplemented with other information. For earnings, we have used New Earnings Survey data; for social security benefits, we have used *Social Security Statistics*; and for occupational pensions, we have had to make use of additional information from the Association of British Insurers and the Inland Revenue.

In each case, the exact nature of the data used and their comparability with the FES are, of course, vital. We have tried to provide an adequate description of all the different data used, but inevitably it is not comprehensive.

Grossing

Second, one needs to ‘gross up’ the data. Each person in the FES ‘represents’ approximately 3,000 people in the population. But we know that, because the FES is a voluntary survey, non-response is not random. So some people in the data ‘represent’ more people in the actual population than do others. We know, for example, that certain types of households (such as those containing the very elderly) are under-represented, whilst others (such as couples with children) are over-represented. As a result, when grossing up our results, we have applied different weights to the results for different types of family. So we have ‘grossed up’ in this one particular way — by family type — where family type is defined by the individual’s age, sex, marital status and number of children.

This ensures that our grossed sample will have the same proportion of people in different family types as for the population as a whole. Population totals for these groups are determined from census data, with adjustments being made for demographic trends occurring between census years.

The data are grossed up to match the family type composition of the *household* population. This is the methodology used by the DSS in its Households Below Average Income (HBAD) publications and in other government statistics. Brief experimentation with other grossing regimes made little difference to the results, especially to the patterns of results. This corresponds well with the findings of Atkinson and Micklewright, who compared two sorts of weighting — by region and by age.

TABLE 2.1
Family types for grossing FES

Family type	Number of children	Sex	Age
Single people	None	Male	Under 25
			25-64
			65-69
			70-74
			75 and over
	None	Female	Under 25
			25-59
			60-64
			65-69
			70-74
Lone parents	1 or more	Both	75 and over
			Under 25
Couples	None	—	25 and over
			Man under 65
			Man under 65
			Man under 65
			Man under 65
			Man under 65
			Man 65-69
Man 70-74			
Man 75 and over			

One exception to this rule is that we know that the very rich are generally under-represented (or at least varyingly represented) in our survey data. One way of getting around this for total income is to adjust the data using the Survey of Personal Incomes (SPI). This is a fully representative sample of taxpayers based on Inland Revenue tax data. The procedure for SPI-adjusting the data is simply to take the richest 200,000 individuals in the FES population and replace their total income with the average income of the richest 200,000 individuals in the SPI. This method was used both by the DSS and by Goodman and Webb in their income distribution work.

The basic classifications used to create the grossing factors are shown in Table 2.1. These are based on the family type, number of children, sex and age.

2.3 The Major Components of Income

In this section, we take the major components of income as recorded in the National Accounts and compare them with similar components in the FES over the years 1985-92.

For each source of income and also for total income, we show the amount recorded in the FES as a proportion of the amount in the *Blue Book* and the annual rates of growth for both the FES and the National Accounts series. For some sources, we then go into more depth, looking at the distribution of incomes (in the case of earnings) or the composition of the component (in the case of social security).

Throughout, it is important to bear in mind the relative size of each income source as a component of the total. Earnings are by far the largest component, forming about 63 per cent of all income; social security forms around 12 to 13 per cent, self-employment 10 to

11 per cent, investments 9 to 10 per cent and occupational pensions around 4 per cent.

2.3.1 Investment income

Investment income includes gross interest from the various types of bank and building society accounts and National Savings, income from shares and rent from property. For our purposes, it does not include incomes from occupational pensions or annuities, nor are we considering imputed income from owner-occupation.

We make direct comparisons between the FES and the National Accounts (NA) since they appear not to be measuring different things; there does not appear to be a significant income element in the NA that is not captured by the FES.⁴ Nevertheless, the divergence between the two is very large. This is a confirmation of the findings of Atkinson and Micklewright (1983), who found (with the FES age-weighted) that the FES between 1970 and 1977 recorded between 49.5 per cent and 57.2 per cent of the investment incomes in the NA.

We actually find a significantly greater divergence between years, with the FES recording just 41.3 per cent of the NA total in 1985 but reaching 65.2 per cent of the total in 1991 (see Table 2.2). The jumps between 1989 and 1990 and between 1990 and 1991 are particularly large by comparison with the NA — around 20 percentage points greater in each case. Between 1988 and 1989, the reverse was true, with investment incomes in the *Blue Book* rising by nearly 35 percentage points but in the FES rising by less than seven percentage points.

⁴We compare here FES variable P48 with NA variable GITP.

TABLE 2.2
Investment income

	FES/NA	Annual growth in NA	Per cent	
			Annual growth in FES	
1985	41.3	25.9		
1986	48.2	2.0	19.1	
1987	56.7	6.9	25.8	
1988	54.5	11.5	7.1	
1989	43.0	34.8	6.6	
1990	50.1	22.0	41.9	
1991	65.2	-4.4	24.4	
1992	60.3	-3.2	-10.4	

So not only is the considerable underestimation of the total a reason for concern, but also the volatility of the FES relative to the NA appears to be very large — much more so than that recorded in the 1970s by Atkinson and Micklewright.

One of the most important reasons for the general undersampling of investment income as a whole is almost certainly an undersampling of the very wealthy who hold a high proportion of total wealth. Even among those who are sampled, there is probably a tendency to be less open about revealing unearned income than other sorts of income. As Atkinson and Micklewright (1983) point out, Kemsley, Redpath and Holmes (1980) found very high levels of estimated responses and 'don't knows' in a report on 1978 data.

The consistent undersampling is real and similar to that found by previous authors. The volatility, though, might be more apparent than real. Looking at Table 2.2, one can see an important pattern — that while NA and FES growth rates are very different each year, there is a clear relationship between growth in the NA and growth *one year later* in the FES. For example, in 1987, investment income in the NA grew 6.9 per cent; it grew

by 25.8 per cent in the FES for that year but by 7.1 per cent in the FES for 1988. The very big changes from 1989 in the NA are clearly followed by similar changes a year later in the FES. Right at the beginning of the period, it appears that the 1985–86 change is very much bigger in the FES than in the NA, but looking back a year, one sees the NA rising sharply between 1984 and 1985.

The probable reason for this pattern is that when people are asked how much interest they received, they will look this up in an account book which will normally show interest received on a date some months ago and on the basis of the 12 months prior to that. In other words, reported interest, even for those interviewed right at the end of a calendar year, will not be the interest accrued in that year. For those interviewed at the beginning of the year, part of it is likely to refer to interest accrued two calendar years previously.

This also means that the FES/NA numbers will appear volatile if based on single years, but over longer periods will oscillate about a relatively stable mean. Over our period, the mean works out at about 52 per cent.

2.3.2 Social security

The measure here is of total social security income (excluding rate / poll tax benefits).⁵ In each year, recorded FES receipt is below that recorded in the *Blue Book*. A maximum of 98 per cent is recorded in 1985 with a low of 93 per cent in 1991 (see Table 2.3).

⁵From the FES, codes P30 and P31 plus a constructed rent rebate number based on HBAI statistics. From the NA, variable GITS – GITY – GITS.

TABLE 2.3
Social security benefits

	FES/NA	Annual growth in NA	Per cent
			Annual growth in FES
1985	98.1		
1986	95.2	8.6	5.5
1987	95.5	2.7	3.0
1988	93.4	2.6	0.4
1989	94.0	4.4	5.1
1990	93.3	8.7	7.9
1991	93.1	17.3	17.1
1992	96.4	14.8	19.0

Because several of the sections below are devoted to some specific social security benefits, we do not spend much time here considering the precise reasons for the (relatively small) divergences between the FES and the NA. The most likely explanation is an undersampling of some of the groups most dependent on social security which grossing-up procedures are not sufficient to counteract. It is also plausible that those individuals who are defrauding the benefit system might be less likely to respond truthfully, or indeed at all, to a household survey.

The year-to-year trends are comfortably similar, with the FES picking up all of the 17 per cent increase in receipts between 1990 and 1991, though the FES increase between 1991 and 1992 is rather big — four percentage points greater than that recorded in the NA.

There are numerous social security benefits, and investigating the robustness of individual benefits is potentially of much interest in addition to this broad-brush look at social security as a whole. Instead of looking at all benefits, we investigate here the main means-tested benefits — income support (formerly supplementary benefit), family credit (formerly family

income supplement) and housing benefit. For reasons associated with measuring take-up of benefits and labour supply estimates, these are probably the most important benefits for which to have a clear impression of the usefulness of FES data.

Supplementary benefit / income support

There are particularly good administrative statistics available on income support (IS) and its predecessor, supplementary benefit (SB), which is the main means-tested benefit for those out of work. They are to be found in the *Annual Statistical Enquiry* (ASE), published each year by the DSS, which gives detailed breakdowns of IS receipt by amount and by type of recipient. This is based on a 1 per cent sample of benefit recipients at May of each year. Summary figures drawn from these statistics are to be found in the DSS's *Social Security Statistics*, and information on expenditure levels is contained in DSS Departmental Reports. We make use of that level of information here to look not only at the total levels of IS spending but also at the distribution of receipt. These sorts of issues are especially important when considering the measurement of benefit take-up rates which are usually determined from FES data.⁶

For the purposes of checking FES robustness with respect to SB and IS, the most serious difficulty lies in the fact that the FES is a household survey whereas a significant proportion of IS expenditure goes to individuals living in institutions — notably residential care and nursing homes (RCNH). IS pays the fees of many of those living in such institutions and, since these

⁶See, for example, Fry and Stark (1993) and Dorsett and Heady (1991).

can be large, the impact of this difference will be greater when measured in terms of average receipts or total expenditures than when measured in terms of numbers of recipients.

In order to make published administrative statistics comparable with data from the FES, it is useful to be able to extract from them payments to individuals not in the household sector. For some, though not all, of the analyses that follow, we have been able to do that either by using data direct from the ASE or by using information supplied to us by DSS analysts charged with overseeing the ASE. In some cases, however, the difficulties involved in disentangling information about the household sector only from the ASE were deemed too great.

Financial years are used rather than calendar years, first because annual expenditure figures are based on financial years and second because of the change-over from the old SB system to the new IS system which occurred in April 1988.

Total expenditure

The main figures for total expenditure on SB and IS come from DSS Departmental Reports. Since these base expenditure figures on financial years, we do the same when providing figures from the FES. Table 2.4 shows total expenditures on SB/IS for each of the years 1985–86 to 1991–92 derived from the grossed-up FES and from the annual public expenditure White Papers for social security. As the table makes clear, only around two-thirds to three-quarters of total SB/IS expenditure was recorded in the FES over this period, with an average shortfall of £2–2½ billion. The under-recording appears to be very much worse among pensioners than

TABLE 2.4
Total expenditure on supplementary benefit / income support

	Great Britain		
	Expenditure (administrative statistics) (£ billion)	Expenditure (FES) (£ billion)	FES/Admin
<i>1985-86</i>			
All	7.52	5.61	74.6%
Pensioners	1.08	0.35	32.4%
Non-pensioners	6.44	5.26	81.7%
<i>1986-87</i>			
All	7.97	5.72	71.8%
Pensioners	1.18	0.26	22.0%
Non-pensioners	6.79	5.46	80.4%
<i>1987-88</i>			
All	7.96	5.37	67.5%
Pensioners	1.32	0.25	18.9%
Non-pensioners	6.64	5.12	77.1%
<i>1988-89</i>			
All	7.58	5.21	68.7%
Pensioners	1.85	0.70	37.8%
Non-pensioners	5.73	4.51	78.7%
<i>1989-90</i>			
All	7.68	5.47	71.2%
Pensioners	2.05	0.87	42.4%
Non-pensioners	5.63	4.60	81.7%
<i>1990-91</i>			
All	8.90	6.09	68.4%
Pensioners	2.31	0.83	35.9%
Non-pensioners	6.59	5.26	79.8%
<i>1991-92</i>			
All	11.65	8.39	72.0%
Pensioners	2.76	0.81	29.3%
Non-pensioners	8.89	7.58	85.3%

Note: 'Pensioners' refers to those over state pension age from 1985-86 to 1987-88, and to all those aged 60 and over from 1988-89.

among non-pensioners. In 1987-88, for example, SB expenditure on pensioners in the FES appeared to be only around one-fifth of that recorded in the public expenditure White Paper. In the best year (1989-90), this reaches two-fifths.

Table 2.4 tells far from the full story, however. As we have already made clear, the FES excludes the non-

household population and so the actual level of under-reporting in the FES is rather less than the figures would suggest. In 1991-92, for example, £1.9 billion in IS went towards paying the fees for residential care and nursing homes of some 231,000 individuals.

Stripping out the expenditure on the non-household population for each of the years is not possible using any published data, including those in the ASE. However, the DSS at Newcastle was able to provide figures showing the numbers of recipients in private households and their average weekly receipt for years since 1989. These can readily be multiplied to provide an estimate of annual spending on IS to the population in private households. These estimates, together with those from the FES, are reproduced in Table 2.5. Note that the estimates from the FES are based on a year's data running from April of one year to March of the next, whereas the administrative data come from a snapshot of the situation in May of the earlier year.

TABLE 2.5
Expenditure on income support
(household population only)

	Expenditure (administrative statistics) (£ billion)	Expenditure (FES) (£ billion)	FES/Admin
<i>1989-90</i>			
All	6.47	5.47	84.5%
Pensioners	1.06	0.87	82.1%
Non-pensioners	5.41	4.60	85.0%
<i>1990-91</i>			
All	7.05	6.09	86.4%
Pensioners	1.16	0.83	71.6%
Non-pensioners	5.89	5.26	89.3%
<i>1991-92</i>			
All	8.99	8.39	93.3%
Pensioners	1.27	0.81	63.8%
Non-pensioners	7.71	7.58	98.3%

TABLE 2.6
Income support caseload by family type
(excluding non-household cases)

	Couple pensioner		Single pensioner		Couple		Couple,		Single	
					with children	no children	with children	no children	with children	no children
<i>1989</i>										
FES (thousands)	70	610	330	190	660		1,020			
ASE (thousands)	130	1,160	360	220	770		1,280			
FES/ASE	53.8%	52.6%	91.7%	86.4%	85.7%		79.7%			
<i>1991</i>										
FES (thousands)	80	790	420	290	810		1,050			
ASE (thousands)	120	1,110	420	220	890		1,460			
FES/ASE	66.7%	71.2%	100.0%	131.8%	91.0%		71.9%			
<i>1992</i>										
FES (thousands)	100	800	600	290	1,070		1,190			
ASE (thousands)	130	1,130	510	250	980		1,800			
FES/ASE	76.9%	70.8%	117.6%	116.0%	109.2%		66.1%			

Note: Here, pensioners are those over state pension age.

The numbers drawn from the FES are much closer to those shown in administrative statistics in Table 2.5 than in Table 2.4. Adjusting to take account of the non-household population clearly makes a substantial difference and, for non-pensioners, expenditure levels become very close. Nevertheless, there still appears to be some significant understatement, especially for pensioners, in the FES even when this is taken into account.

Table 2.6 shows the number of IS recipients in different family types for selected years between 1989 and 1992, comparing numbers derived from the ASE with those derived from the FES. The family types used are not the standard ones for identifying type of IS receipt, but divide the population between pensioners and non-pensioners and between single people and couples and between those with and those without children in the same way as, for example, the DSS's Households Below Average Income statistics divide the population. The ASE figures are adjusted to exclude non-household recipients.

Table 2.6 confirms that the worst under-recording is among pensioners, though the degree of under-recording is diminishing. Among non-pensioner couples, the FES appears to involve some slight over-recording of IS cases in the later years. For single people without children, there is serious under-recording in the FES, especially by 1992. This is almost certainly a problem of non-response among this group — a problem which is not fully accounted for by a grossing regime which does not take account of economic status. This point is also relevant to the discussion of the distribution of earnings (see Section 2.3.5).

TABLE 2.7
Numbers of benefit units receiving SB/IS

	Thousands							
	Range of SB/IS payment (£ per week)							
	<10	10-20	20-30	30-40	40-50	50-60	60-70	70+
1985-86								
<i>Pensioners</i>								
FES	830	80	30	20	10	0	0	0
DSS	1830	100	40	60	40		80 ^a	
<i>Non-pensioners</i>								
FES	150	250	920	490	330	340	210	110
DSS	210	350	950	560	350		800 ^a	
1987-88								
<i>Pensioners</i>								
FES	500	70	30	10	20	10	0	0
DSS	1380	100	40	50	50		110 ^a	
<i>Non-pensioners</i>								
FES	120	250	610	590	350	290	210	160
DSS	230	310	710	730	360		830 ^a	
1988-89								
<i>Pensioners</i>								
FES	450	80	50	30	70	10	40	20
DSS	1140	120	100	40	130	20	50	140
<i>Non-pensioners</i>								
FES	70	140	410	640	330	250	160	150
DSS	140	190	400	620	410	320	280	280
1989-90								
<i>Pensioners</i>								
FES	550	50	40	50	110	40	30	40
DSS	1010	100	80	50	130	20	20	190
<i>Non-pensioners</i>								
FES	60	100	340	500	360	280	130	220
DSS	200	110	460	570	430	300	140	330
1990-91								
<i>Pensioners</i>								
FES	550	30	60	40	60	30	20	50
DSS	1050	100	90	70	100	50	20	200
<i>Non-pensioners</i>								
FES	60	50	340	390	240	450	110	350
DSS	150	110	480	540	220	490	130	390
1991-92								
<i>Pensioners</i>								
FES	630	90	80	50	20	60	10	40
DSS	890	90	90	90	20	130	20	250
<i>Non-pensioners</i>								
FES	60	100	160	810	210	490	250	580
DSS	130	160	120	1030	300	490	300	580

^aThis figure is for £50+ per week.

Note: The DSS figures refer to a week in May of the financial year except in 1985-86 and 1986-87 when the only figures available are for February 1986; hence the lack of figures for 1986-87.

TABLE 2.8
Number of benefit units reporting income support as retirement pension

	Number of benefit units (thousands)
1985	120.6
1986	94.5
1987	104.6
1988	249.8
1989	353.6
1990	355.8
1991	172.1
1992	112.4

Information regarding the distribution of amounts of SB/IS in payment is shown in £10 ranges in Table 2.7. The main point to take from it is that, particularly for pensioners, the largest discrepancies are in the numbers with very small amounts of benefit. In May 1987, for example, administrative statistics record nearly 1.4 million pensioners receiving less than £10 per week of SB, whereas the grossed-up FES for 1987-88 finds only half a million in this range.

The underestimation of the number of pensioners receiving IS that we see in Table 2.6 and that is confirmed in Table 2.7 is unlikely to involve significant under-recording of total income in the FES. Because many pensioners receiving the benefit receive it in conjunction with their retirement pension and on a joint order book, much of the apparent under-recording of SB/IS is explained by the recording of the benefit as retirement pension in the FES. Table 2.8 shows the number of benefit units for which reported retirement pension payment was within five pence of their IS entitlement. The numbers in this category drop off sharply in 1991 and 1992, largely explaining the better recording of IS among pensioners seen in these years. In

TABLE 2.9
Mean receipt of supplementary benefit / income support

	<i>£ per week</i>			
	<i>FES</i> <i>(ungrossed)</i>	<i>FES</i> <i>(grossed)</i>	<i>DSS</i> <i>(raw)</i>	<i>DSS</i> <i>(adjusted)^a</i>
<i>1985-86</i>				
Pensioners	6.96	6.91	10.73	
Non-pensioners	37.55	36.11	37.01	
<i>1986-87</i>				
Pensioners	5.95	5.86	*	
Non-pensioners	39.73	37.94	*	
<i>1987-88</i>				
Pensioners	7.73	7.69	12.65	5.60
Non-pensioners	40.07	38.25	38.58	
<i>1988-89</i>				
Pensioners	17.96	17.60	20.16	11.38
Non-pensioners	41.99	40.23	43.45	
<i>1989-90</i>				
Pensioners	19.42	18.76	23.52	11.69
Non-pensioners	46.66	44.57	43.44	
<i>1990-91</i>				
Pensioners	19.02	18.90	25.44	12.27
Non-pensioners	52.67	50.87	47.27	
<i>1991-92</i>				
Pensioners	15.70	15.96	34.16	13.37
Non-pensioners	56.28	54.89	53.20	

^aThe adjusted DSS figure for pensioners excludes those in RCNH by using the information on numbers and average receipt in this category to construct a mean receipt for those in households.

*Figures missing from 1986-87 because the 1985-86 number refers to February 1986 and the 1987-88 number refers to May 1987.

Note: From 1988-89, 'pensioners' refers to all those over the age of 60.

the 1990 FES, post-April, around a third of a million pensioners have recorded retirement pensions equal to the appropriate IS rates.

Table 2.9 shows average receipt of SB/IS by pensioners and non-pensioners for each year. As with the above analyses, it suffers from the minor problem that the administrative statistics are based on just one week in May (February in 1986) while FES-based estimates came from the whole financial year. It is also worth noting that the figures in Table 2.9 may give a

false impression of accuracy to the extent that the under-recording of very small and very large amounts of benefit may cancel each other out when it comes to reporting the mean amount of benefit recorded in the FES. The table shows FES averages both grossed up using HBAI grossing factors and not grossed up.

For pensioners, there is a clear tendency for raw administrative statistics to record a higher average payment than does the FES. This reflects the high payments to those in institutional care missing from the FES. Once account has been taken of these groups by excluding them from the administrative average, a very different pattern emerges, with average FES receipt well above administrative figures. This reflects the under-recording of very small SB/IS payments in the FES. The average recorded payments for pensioners in the FES fell in the last two years, reflecting the better data on low receipts in those years. The ungrossed-up FES averages are consistently, if only slightly, above their grossed-up counterparts, except in the final year.

Among non-pensioners, the relationship between the averages appears to alter in the final years. Having been consistently below the administrative averages, the grossed-up FES averages are higher in the final three years. The ungrossed-up FES numbers are consistently higher than their grossed-up counterparts, indicating that, on average, lower weights are being given to those with higher receipts by the grossing-up factors.

Family income supplement / family credit

One benefit that has received an especially large amount of attention from labour supply modellers and others interested in the scope for improving work incentives

TABLE 2.10

Total expenditure on, and numbers receiving,
family income supplement / family credit

	Total expenditure (£ thousand)		Ratio of spending FES/DSS	Numbers receiving (thousands)		Ratio of receipt FES/DSS
	FES	DSS		FES	DSS	
1984-85	129	126	102.4%	188	205	91.7%
1985-86	133	130	102.3%	197	205	96.1%
1986-87	152	161	94.4%	185	215	86.0%
1987-88	163	180	90.6%	209	220	95.0%
1988-89	400	394	101.5%	250	280	89.3%
1989-90	358	425	84.2%	268	305	87.9%
1990-91	340	494	68.8%	240	320	75.0%
1991-92	408	626	65.2%	271	355	76.3%
1992-93	735	929	79.1%	368	450	81.8%

Source: Social Security Departmental Reports.

for families with children has been family credit (FC).⁷ It was introduced in 1988, replacing family income supplement (FIS). It is available specifically to families with children with at least one member in full-time work. The number of hours of work required to qualify for FIS and then FC has fallen from 30 to 24 and finally to 16.

FIS/FC is a relatively small-scale benefit and was received by fewer than one hundred families in the FES data in each of the years between 1985 and 1992. It might thus be expected to suffer from random fluctuations in the data. Table 2.10 shows total amounts spent on FIS/FC for the years 1984-85 to 1992-93 and total numbers receiving it, figures coming from the grossed-up FES and the DSS public expenditure White Paper.

The proportions of actual recipients and of actual spending recorded in the FES do not appear to follow very clear patterns except that there is a sharp tailing-off

in the proportions of actual receipt that are recorded in the last three years. While in the earlier part of the period the proportion of expenditure recorded is greater than the proportion of recipients recorded, this pattern appears to reverse from 1989-90.

The fall-off in recorded receipts must be a matter of some concern, especially given the importance accorded to FC in much labour supply work. Reasons for this tailing-off are not obvious, though it might be connected with the relatively rapid rate of increase in the numbers of recipients over this later period. That, though, would not explain recorded expenditure falling faster than recorded numbers in receipt.

FIGURE 2.1

Numbers of family credit recipients, by quarter

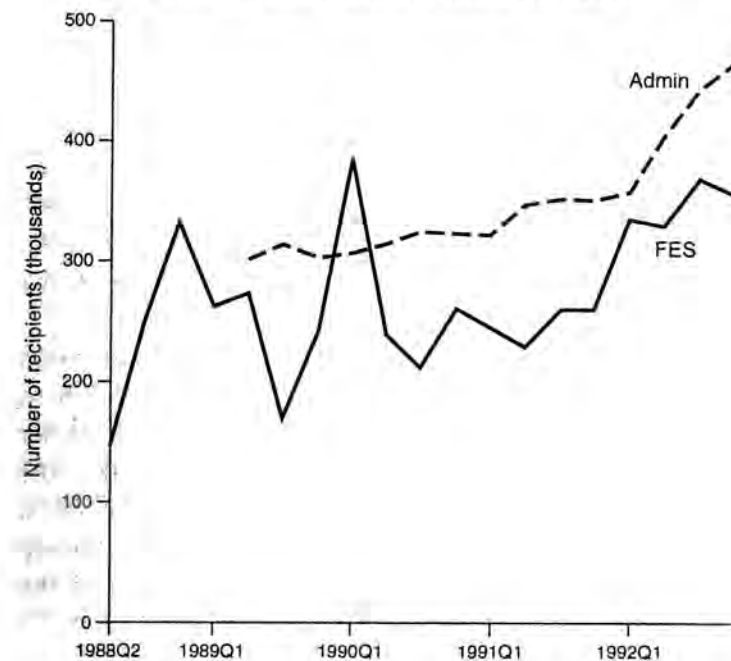
⁷See, for example, Duncan and Giles (1996).

TABLE 2.11
Numbers of couples and lone parents in receipt of
family income supplement / family credit

	No. of couples (thousands)		Ratio (couples)	No. of lone parents (thousands)		Ratio (lone parents)
	FES	DSS	FES/DSS	FES	DSS	FES/DSS
1984-85	67	120	55.8%	87	81	107.4%
1985-86	112	114	98.2%	81	81	100.0%
1986-87	120	115	104.3%	61	83	73.5%
1987-88	142	125	113.6%	66	92	71.7%
1988-89	130			113		
1989-90	156	177	88.1%	103	108	95.4%
1990-91	139	193	72.0%	91	122	74.6%
1991-92	159	210	75.7%	105	131	80.2%

Figure 2.1 plots numbers of FC recipients by quarter, from the second quarter of 1988 to the final quarter of 1992. Naturally, there is a lot of variation from quarter to quarter in the FES. This is especially apparent at the start of the period, when the numbers recorded in the FES fluctuate quite wildly from quarter to quarter, and the closeness between the FES and administrative data for 1988-89 and 1989-90 appears to depend on two quarters with exceptionally high numbers of FC recipients. Otherwise, there is a trend in the FES in the right direction but it is undoubtedly below that in the administrative figures.

Table 2.11 splits the sample of recipients into couples with children and lone parents.⁸ For both groups, the numbers recorded in the FES are rather unstable over time by comparison with the administrative statistics. Given the small sample sizes, this is not especially surprising. Of most direct concern is the fact that the FES appears to have missed the

⁸There are a small number of recorded receipts by individuals who appear to have no children; these are excluded from the table.

significant growth in the numbers of both types of recipients between 1989 and 1992. By 1991-92, the FES was recording only about three-quarters of the actual recipients of each type. There seems to have been some sort of structural break after 1989-90, when about 90 per cent of each group were identified.

Among those who are recorded as receiving FIS/FC, average receipt seems to be very close in the FES to that recorded in administrative statistics. For couples, recorded average receipt varies from 91 per cent to 108 per cent of reality. For lone parents, there is a low of 89 per cent and a high of 116 per cent. In neither case is there a clear trend or pattern of changes.

Housing benefit

Another benefit that has been of particular interest in recent years has been housing benefit — a means-tested benefit designed to pay all or part of the rent of those with very low incomes.⁹ Total expenditure on and numbers of recipients of rent rebates and rent allowances in Great Britain are shown in Table 2.12. The table breaks figures down into rent rebates, which are paid to local authority tenants, and rent allowances, which go to tenants in the private sector. There is clearly a different pattern for each sector.

The number of rent allowance recipients recorded by the FES is only around 70 to 75 per cent of the total recorded in administrative statistics in each year. The proportion recorded tends to be slightly higher in the post-Fowler years than pre-Fowler, but varies around 70-75 per cent of the actual total. There are a number of possible reasons for this. The first is that the FES

⁹See Giles, Johnson, McCrae and Taylor (1996) for a discussion of housing benefit making heavy use of FES data.

TABLE 2.12

Expenditure on, and numbers receiving, rent rebates and allowances

Great Britain

	Expenditure on:		Numbers receiving:	
	Rent rebate (£ million)	Rent allowance (£ million)	Rent rebate (thousands)	Rent allowance (thousands)
1986-87				
FES	2,510	680	3,680	800
DSS	2,350	1,000	3,720	1,180
1987-88				
FES	2,660	780	3,540	840
DSS	2,430	1,030	3,665	1,200
1988-89				
FES	2,510	680	3,370	740
DSS	2,610	1,060	3,130	970
1989-90				
FES	2,710	670	3,250	700
DSS	2,850	1,340	2,950	960
1990-91				
FES	2,970	860	2,970	710
DSS	3,140	1,540	2,930	1,030
1991-92				
FES	3,600	1,370	3,150	800
DSS	3,520	1,690	2,970	1,150

undersamples the private rented sector, probably because of the highly mobile nature of its occupants. Another reason may be the existence of a significant level of fraud within the housing benefit system, particularly if this fraud is being perpetrated by landlords who will not be interviewed in the FES.

The under-recording of recipients is reflected in an under-recording of expenditures on rent allowance, though this is even more pronounced, dropping to just 50 per cent of actual expenditure in 1989-90. Thus either those private tenants with large rebates are being missed or those receipts recorded in the FES are actually higher than they appear there.

By contrast, for some years there is an over-recording of the numbers of rent *rebate* recipients, though in

general the FES-based and administrative statistics are quite close. There is no obvious pattern of changing relationships over time. Expenditure on rent rebates recorded in the FES is also very similar to that seen in administrative statistics.

2.3.3 Occupational pensions

Occupational pension payments are recorded for individuals from private and public sectors in the FES. No distinction is made between payments from different schemes if an individual is in receipt of pensions from several sources.

Comparing figures from the FES with administrative statistics is problematic because there is a lack of comparable data. Total payments for the grossed-up amounts of occupational pensions from the FES are shown in Table 2.13. No equivalent figures are available from the National Accounts, which only show combined pension payments and life assurance payments. The reason given¹⁰ is that 'it is not possible to derive separate accounts for ordinary life business and for insured pension funds business'. Most life assurance payments, especially any lump-sum payments, are not recorded in the FES at all. Furthermore, occupational pensions pay out lump sums as well as regular pensions and these lump sums are not recorded in the FES.

Figures that are available include information from *Inland Revenue Statistics* on the total amount of occupational pensions received, but only by taxpayers. Since a large number of occupational pension receipts are relatively small and received by non-taxpayers, the

¹⁰Central Statistical Office, 1985, para. 6.48.

TABLE 2.13
Occupational pension and life assurance statistics

	£ billion per annum					
	1	2	3	4	5	6
	National Accounts (P + LA)	ABI (LA)	IR (LS) ^a	FES (OP)	Estimate from published data (1-2-3)	4/5
1985	21.5	9.0	3.3	10.3	9.2	112.0%
1986	24.8	11.2	3.8	11.1	9.8	113.3%
1987	29.2	13.4	3.7	12.6	12.1	104.1%
1988	30.4	14.0	4.0	14.6	12.4	117.7%
1989	34.1	16.1	4.4	15.2	13.6	111.8%
1990	39.8	19.1	5.4	16.4	15.3	107.2%
1991	48.1	21.6	7.1	18.8	19.4	96.9%
1992	56.5	25.5	8.1	22.6	22.9	98.7%

Key: P = pensions
LA = life assurance
LS = lump sum
OP = occupational pensions

^aFigures in this column are for financial years. Prior to 1989, they are available from *Inland Revenue Statistics*. The estimates from 1989 onwards were kindly provided by the Inland Revenue.

restriction of figures to taxpayers severely limits the value of this information.

A more fruitful line of investigation might be to use figures from the Association of British Insurers *Insurance Statistics* publication, which gives total payments from life insurance policies. These can be subtracted from the life insurance and occupational pension payments in the National Accounts to give an estimate of total occupational pensions in payment. Unfortunately, a small and unidentifiable proportion of the payments from life insurance funds is paid in the form of occupational pension payments where firms provide pensions on the basis of group life insurance policies taken out on behalf of their employees.

This still leaves lump-sum payments from occupational pensions, which are not recorded separately in the National Accounts or at all in the FES. For some earlier years, however, estimates of the cost of tax relief on lump-sum payments from occupational pension schemes are available from *Inland Revenue Statistics*, and from these the actual amounts of lump sums in payment can readily be calculated.

The first column in Table 2.13 shows total pension and life assurance payments recorded in the National Accounts; the second column shows life assurance payments recorded in ABI statistics; the third shows lump-sum pension payments calculated from Inland Revenue statistics. The numbers in the second and third columns are then subtracted from those in the first column to provide the best estimate, in the fifth column, for comparing with FES figures shown in the fourth column. The final column shows FES figures as a proportion of the estimate from published statistics.

For each year up to and including 1990, the FES figure is greater than that constructed from the published figures. Given that, as explained above, the ABI figure for life assurance, which we are subtracting from the National Accounts total, will contain a pension element, this is, perhaps, not surprising. In 1991 and 1992, the FES figures are very slightly below the published estimates, though only by 3 per cent and 1 per cent respectively.

Because of possible difficulties in interpreting the different sets of numbers, it may not be safe to conclude that the FES overestimates occupational pension payments in earlier years and underestimates them in later years. If the size of pension payments within the life assurance statistics is large, then it is possible that

the FES does not overestimate actual pension payments at all. In any case, there does seem to be a downward trend in the ratio between measured payments in the FES and measurable payments from published statistics.

For the year 1987, and only for this year, the Government Actuary's Department (GAD) produced figures showing the expenditure of occupational pension schemes on benefits.¹¹ These figures are presented here for the purposes of comparison but, as they are drawn from a sample survey, one can again not be totally confident that they are fully accurate representations of reality. According to the GAD figures, recorded pensions in payment were £13.2 billion, with a further £4 billion being spent on lump sums in respect of death or retirement. The amount spent on pensions is only £600 million more than recorded in that year's FES. The two sets of figures do at least seem to be reasonably comparable. Both surveys are capturing similar amounts of payments.

Independent sources showing numbers of people in receipt of occupational pensions and average amounts received proved impossible to find except for 1987 and 1991, again based on GAD data. At these dates, the Government Actuary records 6 million and 7 million pensions in payment respectively. This is not the same as the number of individuals receiving some occupational pension, however, since some individuals receive more than one pension; hence these are likely to be overestimates of the numbers receiving occupational pensions. This may go some way to explain the lower

¹¹Government Actuary, 1991. Some figures for 1991 are available in Pension Law Review Committee (1993, Appendix 4) but they refer only to private sector schemes. The report records private sector pension payments of £9.4 billion compared with £5.15 billion in 1987.

TABLE 2.14

Numbers receiving occupational pensions and average amounts (FES)

	<i>Number receiving (millions)</i>	<i>Mean amount (£ per week)</i>	<i>Median amount (£ per week)</i>
1985	4.98	40	21
1986	5.08	43	24
1987	5.19	47	26
1988	5.24	54	29
1989	5.52	54	31
1990	5.44	59	33
1991	5.74	64	35
1992	6.00	73	43

numbers of 5.19 and 5.74 million pension recipients in the 1987 and 1991 FESs respectively.

Table 2.14 shows numbers in receipt and mean and median amounts of receipt from the FES only. There appear to be no unexpected movements either in numbers receiving, which show a gradual increase with a small downward blip between 1989 and 1990, or in mean and median amounts received, which increase fairly steadily. The exception is the lack of increase in the mean receipt between 1988 and 1989 and the very large increase in both mean and median receipts between 1991 and 1992.

2.3.4 Self-employment income

With the exception of investment income, information on self-employment income is less reliable than that on any of the other income sources in the FES. In particular, the apparent distribution of self-employment income has caused many problems in measuring the actual distribution of overall income in the FES. In each year since the mid-1980s, a significant number of the self-employed have recorded nil or negative net profits. As the Department of Social Security (1995 among

TABLE 2.15
Self-employment income

	<i>FES/NA</i>	<i>Annual growth in NA</i>	<i>Per cent Annual growth in FES</i>
1985	63.2		
1986	65.5	18.2	22.5
1987	72.1	13.7	25.2
1988	83.8	16.5	35.3
1989	72.8	11.3	-3.3
1990	71.9	11.1	9.7
1991	74.9	-2.0	1.3
1992	74.1	3.9	2.7

others) and Goodman and Webb (1995) make clear, these apparently low incomes are generally matched by rather high levels of spending. This leads to the conclusion that in some way there is an under-reporting of self-employment incomes in the FES.

This is borne out by the figures in Table 2.15,¹² which show the FES recording between 63 and 84 per cent of the total recorded by the National Accounts. The 84 per cent figure for 1988 seems to be an outlier. From 1989 to 1992, the proportion recorded is quite steady at between 71 and 75 per cent of the total.

But there are two significant ways in which the straightforward self-employment income variable recorded in the FES differs from that reported in the NA. First, there is a difference of timing. The National Accounts cover income earned in the calendar year to which they refer. In the FES, recorded profits relate to the most recent accounting period for which figures are

¹²In the FES, we take self-employment income as the sum of personal income codes 326 and 328 less the self-employed loss code 307, in keeping with HBAI methodology. We use NA variable GITO. Note that the product codes P37 and P47 do not make allowances for losses and in some cases include regular drawings rather than profits.

available. They are thus frequently a year or more out of date. In low income statistics, the Institute for Fiscal Studies and the DSS have attempted to correct for this by uprating self-employment incomes from the date on which they are based to the date of interview using an average earnings index. Using these adjusted figures results in the self-employment income figures rising by approximately 8 per cent in most years, thereby bringing them approximately 6 percentage points closer to the NA aggregate.

There are also some minor definitional differences between the FES and the NA. However, these are no longer so serious as they were when Atkinson and Micklewright were writing, since the disaggregation of the personal sector account in the NA from 1980. In both the FES and the NA, self-employment income contains neither stock appreciation nor capital consumption, and is net of interest payments. It is difficult to be clear what other minor differences there might be between the two measures, and we make no attempt to institute corrections. Indeed, our figures for the proportions of self-employment income recorded are close to the adjusted incomes reported by Atkinson and Micklewright (1983).

One other point worth making is that the National Accounts include allowances for tax evasion by the self-employed. In 1980, this raised recorded self-employment incomes by one-seventh. It is at least plausible that incomes that are not declared for tax purposes will not be declared in the FES and so this could well account for a proportion of the difference. Other than this, Atkinson and Micklewright present evidence that a combination of under-reporting by respondents and differential non-response by the self-

employed is likely to be responsible for the underestimates in the FES. We see no reason to add to those observations.

2.3.5 Earnings

Earnings are, of course, by far the most important part of total income and, to get near to having total income right, one needs to be sure that earnings recorded in the FES are close to figures in external sources.

The main difference in definition between the FES-based and NA-based numbers relates to the exclusion of the value of company cars from the former. These were owned by around 550 individuals in each year's FES data. Incorporating a value for them in the total would bring the totals nearer together by less than one percentage point. Otherwise, the earnings figures from the FES are simply defined as last gross earnings plus subsidiary earnings and the value of luncheon vouchers and other employer-provided goods.¹³

The greater part of the information in the NA comes from a 1 per cent sample of PAYE income tax payers derived from the Inland Revenue. For those within the PAYE system, therefore, the NA should give an accurate picture of total earnings. (Standard errors are just one-quarter of one per cent.) By making use of National Insurance numbers, the National Accounts also make use of the same sample each year, except in so far as the population is changing. This should further

¹³Using the product codes for last pay (P4 and P14) causes a significant discontinuity in 1986 and 1987. These codes are set to zero if A250 (paid in last month) records no pay in last month. In 1986 and 1987, there are more than 500 instances of this occurring as against fewer than 100 in each of the other years. We have avoided this problem by including the earnings if A250 = 1 OR employment status (A200 or A201) = 1 AND A207 (reason away) = 0.

improve the accuracy of recorded year-on-year changes. Clearly, this does not capture the whole of earnings. In order to take account of those below the National Insurance lower earnings limit (LEL), an adjustment is made using FES data. Thus any differences between the NA and the FES must result from differences in incomes recorded above the LEL, since both sources are based on the same data for those earning below the LEL. Given that the National Accounts are based on a 1 per cent sample of all taxpaying employees, they should give an accurate picture of total earnings for those earning above the LEL.

While the annual amounts of FES earnings as a proportion of NA earnings average out at around 96 per cent, there is some fluctuation around this mean, with a low point of 93.3 per cent in 1989 and a high point of 98.6 per cent in 1990 (see Table 2.16). Year on year, these discrepancies could have a fairly substantial impact on recorded FES figures, especially given that the high and low points are in concurrent years. The FES records a spuriously large increase in total earnings between 1989 and 1990 and spuriously small ones between, for example, 1988 and 1989.

TABLE 2.16

Earnings

	FES/NA	Per cent	
		Annual growth in NA	Annual growth in FES
1985	95.6		
1986	96.5	8.0	9.0
1987	97.6	8.6	9.8
1988	96.6	11.9	10.7
1989	93.3	11.5	7.7
1990	98.6	10.5	16.8
1991	96.5	5.2	3.0
1992	96.2	3.9	3.6

Our figures suggest that the FES is, on average, capturing three percentage points more of total earnings than it did, according to Atkinson and Micklewright (1983), in the 1970s. We now turn to a description of the distribution of earnings found in the FES and how that relates to other sources.

Distribution of earnings

We have so far given no indication of how recorded earnings in the FES are distributed relative to earnings in the population as a whole. External information on this is available from the New Earnings Survey (NES), which contains detailed information on the earnings distribution. This information is largely concerned with full-timers — working 30 hours or more per week — so we concentrate on the earnings distribution of this group. Also the FES only has information on 'normal' hours worked, so we use normal earnings to make comparisons between the FES and the NES. The figures shown below thus use a different FES code from that used in producing the total earnings estimates above. Finally, the NES provides figures for those on adult rates only. We take this to refer to women over 18 and men over 21, which were the groups used by the NES before it switched to using just those on adult rates.

Like the National Accounts, NES data are based on a 1 per cent random sample of employees who are members of PAYE schemes. Questionnaires are filled in by employers on behalf of their employees rather than by the employees themselves. There is a 97.5 per cent response rate, though only about 78 per cent of employees covered by the questionnaires are used in the final tabulations, largely as a result of employees having left their employer. Those with earnings below the lower

TABLE 2.17
Male full-timers' earnings

	Percentile point				
	10th	25th	50th	75th	90th
<i>1985</i>					
Ungrossed FES	106	132	171	224	304
Grossed FES	104	130	169	221	299
NES	105	133	173	226	296
<i>1986</i>					
Ungrossed FES	108	140	182	243	330
Grossed FES	107	138	180	241	328
NES	111	142	185	244	321
<i>1987</i>					
Ungrossed FES	118	149	197	268	365
Grossed FES	117	148	195	264	358
NES	118	150	198	263	350
<i>1988</i>					
Ungrossed FES	125	160	213	287	389
Grossed FES	124	158	209	283	382
NES	127	163	216	289	384
<i>1989</i>					
Ungrossed FES	135	175	231	315	419
Grossed FES	131	172	227	311	411
NES	138	177	236	316	424
<i>1990</i>					
Ungrossed FES	151	192	256	352	472
Grossed FES	147	189	250	346	463
NES	151	193	258	348	468
<i>1991</i>					
Ungrossed FES	157	204	277	379	516
Grossed FES	153	200	272	374	507
NES	161	207	278	377	508
<i>1992</i>					
Ungrossed FES	159	210	285	395	542
Grossed FES	158	208	282	389	535
NES	170	219	296	402	544

earnings limit are largely excluded. The NES also excludes Northern Ireland.

Tables 2.17 and 2.18 show the 10th, 25th, 50th, 75th and 90th percentile points from the FES and the NES for full-timers (working 30 hours or more per week) in the years 1985 to 1992. Table 2.17 shows full-time men and Table 2.18 shows full-time women. The FES figures

TABLE 2.18
Female full-timers' earnings

	Percentile point				
	10th	25th	50th	75th	90th
<i>£ per week</i>					
<i>1985</i>					
Ungrossed FES	65	82	106	142	184
Grossed FES	65	82	105	141	183
NES	76	91	115	151	190
<i>1986</i>					
Ungrossed FES	72	88	115	154	209
Grossed FES	72	88	116	154	208
NES	80	97	123	164	210
<i>1987</i>					
Ungrossed FES	77	96	125	172	229
Grossed FES	77	96	125	171	229
NES	85	104	133	178	228
<i>1988</i>					
Ungrossed FES	80	101	137	189	252
Grossed FES	79	101	136	188	251
NES	92	112	145	199	258
<i>1989</i>					
Ungrossed FES	88	112	147	206	276
Grossed FES	87	111	146	204	275
NES	101	123	160	221	289
<i>1990</i>					
Ungrossed FES	96	124	166	236	317
Grossed FES	96	123	165	234	315
NES	111	136	178	245	317
<i>1991</i>					
Ungrossed FES	107	135	180	258	338
Grossed FES	107	134	179	258	338
NES	121	151	196	272	353
<i>1992</i>					
Ungrossed FES	109	143	193	271	373
Grossed FES	109	143	192	270	372
NES	129	161	211	296	387

are adjusted to exclude those with earnings below the LEL. Observations from Northern Ireland are also excluded. Because FES figures cover the whole calendar year while NES figures are taken from the earnings distribution in April of that year, the FES earnings figures have been adjusted to April of the year in

question using a monthly average earnings index. The FES figures are shown both based on an ungrossed-up distribution and based on a distribution grossed up using HBAI grossing factors.

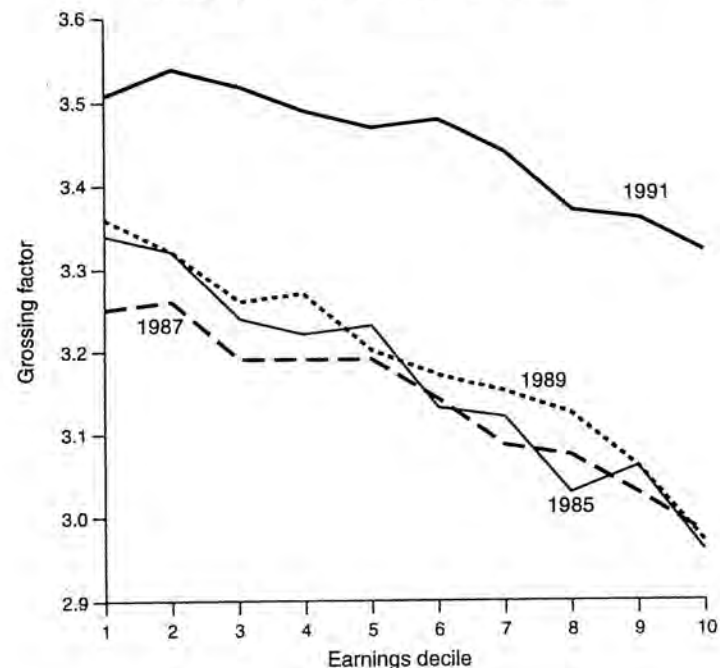
The two tables tell rather different stories. Among men, the ungrossed FES earnings distribution is not greatly dissimilar from the NES distribution, but grossing the FES has a significant effect in taking the FES distribution below the NES one. By contrast, for women, the ungrossed FES distribution lies considerably below the NES distribution, but grossing the FES has very little effect on the distribution. (Note that the particular distributions shown are dependent upon the assumption that adult wages start at age 21 for men and 18 for women. Increasing the age for women brought the FES distribution nearer the NES one but still left it below in each year.)

The differences between the grossed-up and ungrossed-up distributions are generally small. However, they show an interesting pattern in that the grossed distribution is consistently below the ungrossed distribution. Because the ungrossed FES earnings distribution is anyway below that recorded in the NES, grossing up actually takes the FES distribution further away from that recorded in the NES.

That earnings at virtually all percentile points in the grossed distribution are below those in the ungrossed distribution indicates that grossing factors based on family type give consistently greater weight to people further down the earnings distribution. This pattern is demonstrated in Figure 2.2, which shows the average grossing factor by decile of earnings among full-timers for alternate years from 1985 to 1991. In each year, there

FIGURE 2.2

Average grossing factors, by earnings decile



is a clear decline in average grossing factor as one moves up the earnings deciles.

This pattern reflects the fact that those from family types where earnings are, on average, low are under-represented in the FES. But to the extent that such groups (defined by family type, *not* economic status) are under-represented because those out of employment are under-represented, using high grossing factors for those in employment will skew the measured distribution. For example, grossing factors for young single people tend to be high, and young single people are likely to have relatively low earnings. But the grossing factors may be high not because single people in employment are

under-represented but rather because single people out of employment are under-represented. The grossing factors used would then give too high a weight to young single people in employment (and, conversely, too low a weight to those not in employment).

We tested this thesis for one of the years of data, 1990, by comparing the employment statuses of young single males in the FES with those recorded in the Labour Force Survey (LFS), which provides a detailed breakdown of employment status by age, sex and marital status. We looked at the employment status of single men in the FES under the age of 30, this being the cut-off age for one of the grossing-up factors and encompassing that group to whom we might be giving wrong weights because of their differing employment statuses. In fact, we found no significant difference between employment status in the FES and that in the LFS once the employment status codes in the two surveys had been adjusted to make them equivalent. This largely involved combining LFS codes to match the smaller number of FES codes, which proved relatively easy except that further information had to be used to identify students in the FES.

Table 2.19 shows the (raw) breakdown between employment statuses among single men under the age of

TABLE 2.19

Single men under 30, classified by employment status, FES and LFS, 1990

Employment status	Per cent	
	LFS	FES
Employee	60.4	62.5
Self-employed	6.9	5.5
Training scheme	5.2	5.7
Unemployed	9.4	9.1
Student	12.5	14.0
Other unoccupied	5.7	3.2

30 in the FES and the LFS for 1990. Students who are recorded as working are counted as employees in both cases. The proportions in each employment status are remarkably similar between the two surveys. While the LFS might not give a wholly accurate impression of labour market structure, it does provide the best available statistics, and this limited evidence suggests that the FES might not be sampling the employed and unemployed so inconsistently as the earlier figures from the FES alone might have suggested.

On the other hand, evidence from Section 2.3.2 dealing with social security, and in particular income support, shows very low sampling of especially the young unemployed on income support, lending credence to the argument that the problem is one of undersampling of the young unemployed and not of young single people as a whole. The evidence is inconclusive, but it is clear that the FES earnings distribution is below that of the NES and more so if grossed up in this particular way. This might be important to bear in mind when using the FES in income distribution analyses.

2.3.6 Total income

We can now come on to total (gross) income. This is effectively the sum of the above components and a small residual category.¹⁴ Table 2.20 shows that the FES appears to record about £9 in every £10 of total income seen in the National Accounts. This closeness results from the fact that the two least accurate components of

¹⁴From the FES, we use product code P53 plus housing benefit as calculated in HBAI statistics. From the NA, we use variable GIUA - GITY - GITS - GITR + our estimate of occupational pension income — see Section 2.3.3.

TABLE 2.20

Total income

	FES/NA	Per cent	
		Annual growth in NA	Annual growth in FES
1985	89.7		
1986	91.1	8.5	10.2
1987	93.3	8.7	11.2
1988	93.6	10.7	11.1
1989	88.7	12.5	6.6
1990	91.9	11.6	15.6
1991	92.9	5.4	6.5
1992	92.9	5.2	5.2

total income — investment and self-employment income — form relatively small parts of the overall total, while the most accurate components — earnings and social security — are the biggest income components.

Given what we have seen already, it is not surprising that there is a degree of fluctuation between years in the proportion of total income recorded. This is enough to cause some concern in interpreting trends in FES numbers between any two years. Thus an increase of just 6.6 per cent is recorded in the FES between 1988 and 1989 as against 12.5 per cent in the *Blue Book*. The following year, the *Blue Book* shows an increase of 11.6 per cent and the FES one of 15.6 per cent. But over a longer period, there is no evidence of a sustained divergence between the two.

2.4 Housing Costs

Having dealt with income, we could finish here, but housing costs form another important and interesting component of FES data that are used in the construction of data on living standards. We consider here just the

two most important components of housing costs — rents and mortgages.

2.4.1 Rents

The rent measure used in this section is derived in accordance with the HBAI series produced by the DSS.

Finding administrative data on rents is itself not easy. Information on council rents (both net and gross) in Great Britain is available in *Housing and Construction Statistics* (H+C). Information on rent levels for other tenure types is more limited but average private sector rents for 1988 and 1990 are available from the same source and are based on the 1988 and 1990 Private Renters Surveys.

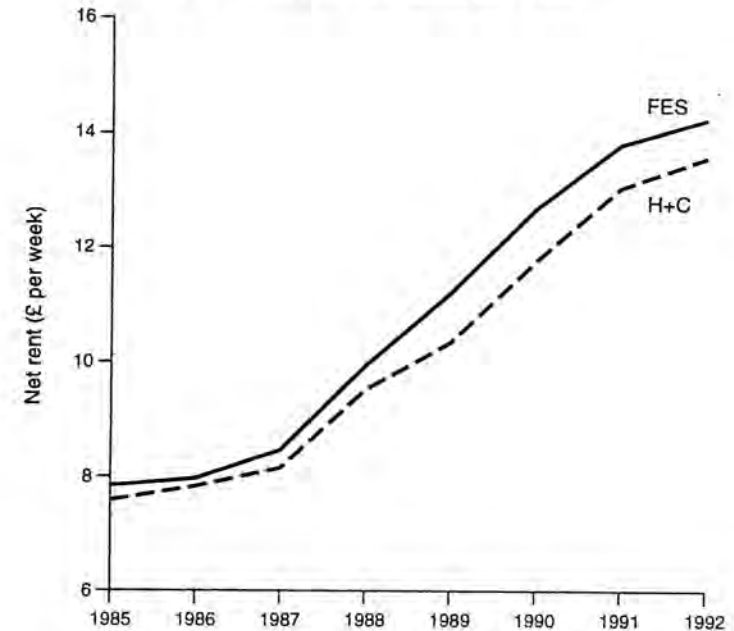
The figures available from the Private Renters Survey show average gross rents in 1988 at £30 per week and in 1990 at £43 per week. The first of these is within £2 and the second within £1 of the FES estimates, suggesting that the mean FES rents are very close to actual rents.

For council tenants, gross rents for those in England and Wales and in Scotland are shown in H+C and are derived from Department of the Environment, Chartered Institute of Public Finance and Accountancy (CIPFA),

TABLE 2.21
Average gross weekly council rents

	England and Wales		Scotland	
	FES	H+C	FES	H+C
1985	16.30	15.60	12.40	11.60
1986	16.70	16.40	12.70	13.00
1987	17.70	17.20	15.00	14.60
1988	18.70	18.90	15.90	16.20
1989	20.50	20.80	18.30	18.80
1990	23.30	23.80	21.10	21.00
1991	26.80	27.30	23.70	23.20
1992	30.10	30.50	24.30	24.80

FIGURE 2.3
Net council rents in England and Wales



Welsh Office and Scottish Office statistics. They are shown in Table 2.21 alongside the respective FES figures for council tenants. The FES and H+C figures are extremely close in almost all years. Between 1986 and 1992, average recorded council rents in England and Wales and in Scotland are never more than 50 pence different in the FES and H+C statistics. There do appear to be rather bigger differences in 1985, when the FES averages for England and Wales and for Scotland are both 70 or 80 pence higher than the H+C figures.

Net council rents for England and Wales from the FES and H+C statistics are shown in Figure 2.3. Though starting close, there is more divergence here than with gross rents. In the last two years, average net rents in the

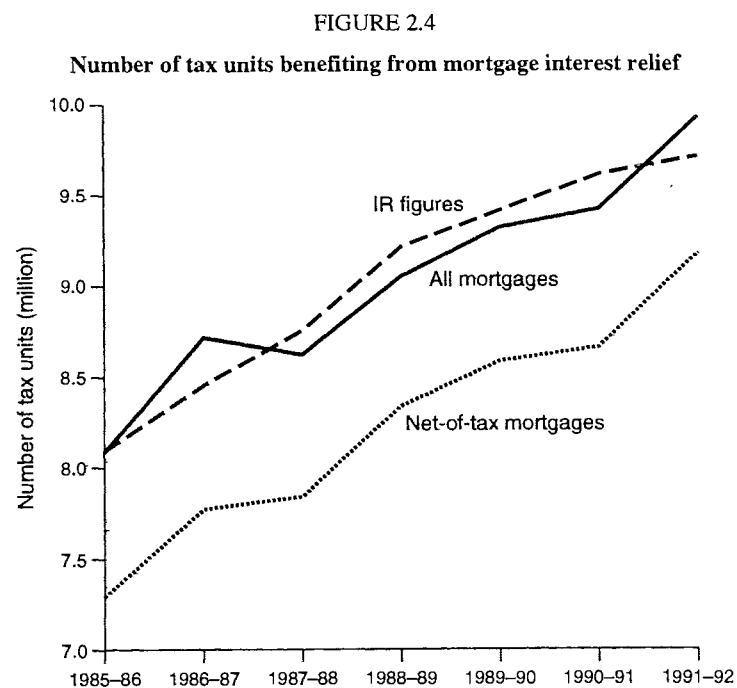
FES are nearly £1 higher than those in the administrative statistics. Nevertheless, given the complexity of the housing benefit system and of the data in the FES, this must be counted as a close representation of reality.

2.4.2 Mortgages

Getting hold of information external to the FES that shows the number of people or tax units with a mortgage is surprisingly difficult. Here, we use the FES to obtain an estimate of the number of tax units that have a mortgage by assuming that for each household with a mortgage, the cost of this is borne by the first tax unit alone. These figures are then compared with the Inland Revenue's figures for the number of tax units benefiting from mortgage interest relief.

Two counteracting factors resulting from the definitions of these series mean that they are not the same. First, where two or more tax units share the cost of a mortgage, the Inland Revenue figures will include all these tax units whereas the series grossed up from the FES will include only one tax unit. This will lead to a tendency for the Inland Revenue figures to be larger than those derived from the FES.

Second, not all mortgages receive mortgage interest relief. The Inland Revenue unofficially estimates that about 2–3 per cent of domestic mortgages do not receive it, but there are no official figures available. The FES contains a code, A163, that records whether the mortgage payment was gross or net of tax. Around 10 per cent of mortgage payments are recorded as being gross of tax. That the payment is recorded as being gross of tax does not necessarily mean that no mortgage interest relief was received for that mortgage. Some tax



relief is still given through local tax offices, as well as at source through MIRAS. These factors will tend to lead to the Inland Revenue figures being lower than those from the FES which include all mortgages, but higher than those obtained if mortgages whose payments are gross of tax are excluded.

Figure 2.4 shows the series for all mortgages recorded in the FES grossed up, the series excluding those whose payments are recorded as being gross of tax, and the series taken from the Inland Revenue.¹⁵ The Inland Revenue figures and the FES figures for all mortgages are very close together, with FES figures

¹⁵Inland Revenue Statistics 1992, Table 5.2.

below Inland Revenue ones for most of the period, but above at the start and end.

From the information contained in the FES, it is possible to derive a figure for total mortgage debt outstanding. For the years 1985 to 1991, this involves a calculation based on the amount of the last payment and the number of years that the mortgage has left to run. For 1992, the FES actually contains a code for the amount of principal still outstanding on the mortgage, B134. These figures are then grossed up using the HBAI grossing factors.¹⁶

Table 2.22 shows the difference between the series estimated from the FES for the total mortgage debt outstanding and the same series provided by the Council of Mortgage Lenders (CML), as a percentage of the CML figures. As can be seen, for the start of the period, the series are almost identical, but from 1987 on, the CML figures suggest significantly higher levels of debt outstanding than do the FES numbers.

TABLE 2.22

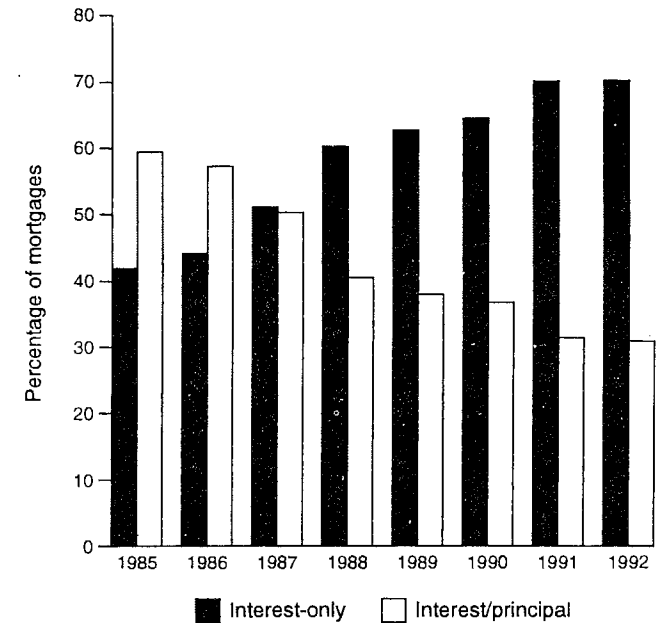
**Mortgage debt outstanding:
differences between FES and CML as a percentage of CML**

	<i>Percentage difference</i>
1985	2.5
1986	-0.5
1987	9.1
1988	13.5
1989	19.0
1990	17.7
1991	12.0
1992	13.2

¹⁶Calculations involving interest/principal mortgages are based on code B200. We do not use code B150, primarily because this is missing in roughly one-third of cases for each year in our sample period. Again, these calculations are in line with HBAI methodology.

FIGURE 2.5

Division of mortgages between interest-only and interest/principal



The proportion of interest-only mortgages has risen sharply during the period 1985–92, as shown in Figure 2.5. This is consistent with the fact that the Building Society Association and Department of the Environment 5 per cent sample survey of new building society mortgages records that around 80 per cent of new mortgages taken out in the second quarter of 1993 were interest-only ones. For the sample period as a whole, 77.7 per cent of mortgages were obtained from a building society.

2.5 Conclusions

It is hard to draw definite conclusions about what is ‘good’ and what is ‘bad’ in terms of the degree of

divergence between the Family Expenditure Survey and other sources of data. As we have seen, it is not always possible to find data sources that will give definitive answers. On the whole, though, the story seems to be a relatively encouraging one.

In most years, the FES records about £9 in every £10 that is recorded in the National Accounts. The two biggest parts of total income — earnings and social security benefits — appear to follow the National Accounts quite closely. Smaller income sources, such as investments and self-employment income, are both under-recorded and volatile. Even for total income and the more reliable components, there are still year-to-year fluctuations in the precision with which the FES follows National Accounts figures, and so year-on-year changes should often be treated with a degree of caution. Over longer periods, changes in the FES do appear to reflect real changes. None of our major components of income seemed to suffer from serious structural breaks.

Once one looks at smaller sub-components of income, as we have done with means-tested social security benefits, there is inevitably more fluctuation in the degree of accuracy. As, for example, with family credit, there appear to be cases where structural breaks in the data quality are evident. This is also true of accurate reporting of income support. Both this, and some evidence we presented on earnings distributions, suggest that the FES, especially in later years, is undersampling young unemployed individuals. This is an area of concern worthy of further research.

Finally, we can say that the housing costs figures, which we have looked at briefly, appear to be quite accurate reflections of what is recorded elsewhere in administrative and other statistics. So we have no

evidence that after-housing-costs measures of income based on the FES are any less accurate than before-housing-costs measures, despite the significantly greater complexity of their derivation.

References

- Atkinson, A., Gardiner, K., Lechene, V. and Sutherland, H. (1993) *Comparing Low Incomes in France and the United Kingdom*, University of Cambridge, Microsimulation Unit, Working Paper no. MU 9301.
- and Micklewright, J. (1983), 'On the reliability of income data in the Family Expenditure Survey 1970–1977', *Journal of the Royal Statistical Society, Series A*, vol. 146, pp. 33–61.
- and Sutherland, H. (eds), (1988), *Tax Benefit Models*, STICERD Occasional Paper no. 10, London: London School of Economics and Political Science.
- Blundell, R., Duncan, A. and Meghir, C. (1995), 'Estimating labour supply responses using tax reforms', Institute for Fiscal Studies, Working Paper no. 95/7.
- Central Statistical Office (1985), *UK National Accounts: Sources and Methods*, third edition, London: HMSO.
- Coulter, F. (1991), 'The Family Expenditure Survey and the distribution of income: the creation of a consistent income data series for 1971, 1976, 1981 and 1986', University of Bath, Economics Working Paper no. 04/91.
- Department of Social Security (1995), *Households Below Average Income: A Statistical Analysis, 1979–1992/93*, London: HMSO.
- Dorsett, R. and Heady, C. (1991), 'The take-up of means-tested benefits by working families with children', *Fiscal Studies*, vol. 12, no. 4, pp. 22–32.
- Duncan, A. and Giles, C. (1996), 'Labour supply incentives and recent family credit reforms', *Economic Journal*, vol. 106, no. 134, pp. 142–55.
- Fry, V. and Stark, G. (1993), *The Take-Up of Means-Tested Benefits, 1984–90*, Report Series no. 41, London: Institute for Fiscal Studies.
- Giles, C., Johnson, P., McCrae, J. and Taylor, J. (1996), *Living with the State: The Incomes and Work Incentives of Tenants in the Social Rented Sector*, London: Institute for Fiscal Studies.

How reliable is the FES?

- and McCrae, J. (1995), 'The IFS microsimulation tax and benefit model', Institute for Fiscal Studies, Working Paper no. 95/19.
- Goodman, A. and Webb, S. (1994), *For Richer, for Poorer: The Changing Distribution of Income in the United Kingdom, 1961–91*, Commentary no. 42, London: Institute for Fiscal Studies.
- and — (1995), *The Distribution of UK Household Expenditure, 1979–92*, Commentary no. 49, London: Institute for Fiscal Studies.
- Government Actuary (1991), *Occupational Pension Schemes 1987*, London: HMSO.
- Johnson, P. and Webb, S. (1992), 'The treatment of housing in official low income statistics', *Journal of the Royal Statistical Society*, Series A, vol. 155, pp. 273–90.
- Jones, J., Stark, G. and Webb, S. (1991), 'Modelling benefit expenditures using the FES', Institute for Fiscal Studies, Working Paper no. 91/13.
- Kemsley, W., Redpath, R. and Holmes, M. (1980), *Family Expenditure Survey Handbook*, London: Social Survey Division, OPCS.
- Pension Law Review Committee (1993), *Pension Law Reform: The Report of the Pension Law Review Committee*, chaired by Prof. R. Goode, London: HMSO.

3

How Much Do Consumers Spend? Comparing the FES and National Accounts*

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I remember M. G. Kendall stating ... that there are no bad samples. He really meant that there are all kinds of different sampling methods that good people could use, but which did not necessarily conform with the books. What matters is whether they could be evaluated. Could they be tested?

N. L. Webb,
discussion of Atkinson and Micklewright (1983)

3.1 Introduction

The Family Expenditure Survey (FES) has been used as a source of microeconomic data in a wide range of studies. The data on household expenditures, for example, have been used to look at the relationship between consumption growth and the interest rate in estimating the intertemporal elasticity of substitution at

*This study forms part of the research programme of the Economic and Social Research Council (ESRC) Centre for the Microeconomic Analysis of Fiscal Policy at the Institute for Fiscal Studies (IFS). Material from the Family Expenditure Survey made available by the Office for National Statistics (ONS) through the ESRC Data Archive has been used by permission of the Controller of HMSO. Neither the ONS nor the ESRC Data Archive bears any responsibility for the analysis or interpretation of the data reported here. Thanks must go to Tim Andrews, Orazio Attanasio, James Banks, Ian Crawford, Alissa Goodman, Paul Johnson and Guglielmo Weber for helpful comments.

the household and cohort level (see, for example, Attanasio and Weber (1993) and Deaton and Paxson (1994)). Also, the data have been used in the estimation of complete consumer demand systems to obtain estimates of price and income elasticities of demand (see, for example, Baker, McKay and Symons (1990) and Blundell, Pashardes and Weber (1993)) and in calculating the welfare changes resulting from indirect tax reform (see, for example, Banks, Blundell and Lewbel (1996)). It is therefore interesting to know how reliable the FES is as a source of data on household expenditures and incomes.

The robustness of the FES income data has been discussed elsewhere (see Atkinson and Micklewright (1983) and Johnson and McCrae (this volume)). This paper focuses on the reliability of the expenditure data by examining how well estimates of aggregate spending made using FES data compare with aggregate spending totals in the National Accounts — both for spending as a whole and for individual groups of commodities. This follows work done by Kemsley, Redpath and Holmes (1980) but drawing data from a longer period (1974–92) and using weighted grossing factors to adjust for differential non-response.

In any particular year, it is almost certain that the two sets of figures will not match. Estimates of total spending from the National Accounts and the FES capture two different measures of consumer spending. The FES is a survey of private households only, whereas the National Accounts also capture spending by the institutional population. The spending information in the FES is obtained through individual diary records and the measure of consumption this produces can most accurately be described as 'out-of-pocket expenditure'.

In the National Accounts, several goods are treated differently; spending on insurance, for example, is measured only by the administrative cost, not by the total amount of premium paid. Also, there is a greater extent of imputation in the National Accounts to capture the value of company cars, uniforms and employer-provided meals. The focus of this study will therefore be the stability of the ratio between FES and National Accounts data over time.

The plan is as follows. In the next section, we discuss the two sources of data on expenditure — the FES and the National Accounts. In Section 3.3, estimates of total spending from the FES are compared with total expenditure in the National Accounts. In Section 3.4, the focus turns to groups of commodities to see whether there are groups of goods where the FES does particularly 'well' or 'badly' in comparison with the National Accounts. Section 3.5 concludes.

3.2 Family Expenditure Survey and National Accounts

3.2.1 *The Family Expenditure Survey*

The Family Expenditure Survey is an annual survey conducted with the original aim of determining the basket of goods to be used in compiling the retail price index. Each year, it covers approximately 7,000 households (this represents a response rate of about 70 per cent). All members of participating households aged over 16 years are asked to complete diaries detailing all their spending over a two-week period. In the FES records, the information in the individual diaries is aggregated to the household level and averaged across the two-week period to create weekly household

expenditure figures for over 300 different goods and services.

There are several advantages in collecting data on consumer spending from individual and household surveys such as the FES. First, the coverage of goods and services is comprehensive. Second, it excludes all expenditure by businesses. Third, it provides a measure of the flow of goods and services at the time of purchase and at the prices paid by consumers.

However, the FES does not provide a measure of spending by all consumers. The FES is intended to provide a broadly representative sample of private households. It does not cover the institutional population of people living in old-aged people's homes, military barracks, students' halls of residence and residents of hostels and temporary homes. Also, until 1995, the FES did not ask household members aged less than 16 to keep expenditure diaries and the spending records therefore are for expenditure by adults only.

Among those households sampled, there is a potential problem associated with survey non-response. Nearly one-third of households initially approached do not respond and there are several reasons for thinking that these households differ in a systematic way from those households that do respond. In particular, non-response rates tend to be higher among richer households, among young households and among the very old (see Goodman and Webb (1994)).

Even if the sample were perfectly representative of the population as a whole, there may be a problem of under-reporting or over-reporting of expenditures by respondents. There may be several reasons for this, ranging from genuine errors on behalf of individuals through to a wish to conceal the true level of

consumption of some goods. This problem is likely to be worse for some goods, such as those bought and consumed away from home (e.g. ice-cream cornets) and those where high levels of consumption might be associated with guilt (e.g. chocolate or cigarettes) or guilt and forgetfulness (e.g. alcohol), than for others. There is also some evidence that the enthusiasm of respondents for keeping an expenditure diary, and hence the meticulousness with which they note down all items of spending, tends to diminish over the two-week period; records of spending by consumers tend to show significantly higher rates of spending in the first few days (see Central Statistical Office (1985)).

3.2.2 National Accounts

A definition of what is meant by consumers' expenditure in the National Accounts is given as follows:

Personal expenditure on goods and services, comprising,

(a) expenditure on goods, both durable and non-durable, on second hand goods, and on services, including the imputed rent of owner-occupied dwellings and the administrative costs of life assurance and superannuation schemes

(b) final consumption expenditure of private non-profit-making bodies serving persons.

Excluded are all business expenditure and expenses, interest and other transfer payments, and capital expenditure on dwellings.

(See Office for National Statistics (1996).)

Expenditure totals are estimated for individual goods using a number of different sources of data. These are summarised for all major components of consumers'

expenditure in Box 3.1. The data sources can broadly be grouped into three main types as follows:

- sample surveys of consumers' expenditure, including the FES and National Food Survey;
- statistics of retail and other trades' turnover, such as the Retailing Inquiry and the Retail Sales Index;
- statistics of supplies or sales of particular goods and services, such as cinema box-office receipts.

BOX 3.1

Data sources for National Accounts expenditure categories

Durables: Figures for motor vehicles are obtained from the *Motor Trades Inquiry*, conducted by the ONS, and from valuation of new vehicle registrations. Figures for other durables are estimated from trade surveys, the *Retailing Inquiry* and the *Retail Sales Index*.

Food: Data come from the *National Food Survey*, supplemented with trade sources.

Alcohol and tobacco: Alcohol figures are based on a continuous survey of retail outlets grossed up to align with figures from HM Customs and Excise (HMCE). Tobacco expenditure uses HMCE data on quantities of tobacco and relevant components of the RPI.

Clothing: Estimates are based on trade surveys, the *Retailing Inquiry* and the *Retail Sales Index*.

Energy: Data on energy expenditure are obtained by the Department of Trade and Industry from various energy suppliers.

Other goods: Estimates for household goods, medication and toiletries are based on the *Retailing Inquiry* and the *Retail Sales Index*. Figures for spectacles, books and cleaning materials are estimated from the FES.

Rent, rates and water: Figures for private rents use FES data. Data on local authority rents and estimates for domestic rates are supplied through the Department of the Environment and the Scottish, Welsh and Northern Ireland Offices.

Catering: Household spending on meals out and accommodation is estimated using the FES. Similar spending by students and by military personnel is estimated using the results of surveys by the Department for Education and Employment and by the Ministry of Defence, respectively.

continues ...

BOX 3.1 continued

Data sources for National Accounts expenditure categories

Motor services: Spending on motor licences is estimated using data from the Driver and Vehicle Licensing Agency. Imputed values of cars in kind are based on Inland Revenue tax data. Other spending on motor services, such as AA and RAC membership, is estimated from the FES.

Travel and communications: Estimates of air and sea travel are based on the *International Passenger Survey*. Spending on taxis and post is taken from FES data. Other components of travel are estimated using data from the Department of Transport.

Monetary services: Figures for life assurance and pension funds are based on inquiries conducted by the ONS. Figures for stamp duty come from the Inland Revenue. Spending on other financial services is estimated using Bank of England data.

Household and domestic services: The FES is used to derive estimates of spending on most household and domestic services.

Recreational and cultural services: Figures on TV and video repairs and entertainment admissions are based on the FES, although box-office receipts are used to estimate cinema admissions. Estimates of betting and gaming use duty receipts from HMCE. Figures for education spending are based on data from the Higher Education Funding Council and the Independent Schools Information Service.

Medical services: Figures from the Department of Health are used to derive estimates of spending on NHS prescription charges. The FES is used for private medical spending.

Source: Office for National Statistics, 1996.

Data on retail sales can cover the spending of a far higher proportion of the total population than can be covered by a household survey. However, businesses cannot be expected to provide detailed commodity analysis of their turnover each month. Hence, to obtain monthly expenditure figures for individual goods and services, figures obtained from detailed biannual benchmark surveys which cover all commodities in detail (the

Retailing Inquiry) are projected forward on the basis of monthly figures on total turnover (the Retail Sales Index). This is relatively straightforward in the case of specialist shops, such as furniture shops or clothing boutiques, which sell one commodity or a limited range of commodities. In the case of non-specialist shops, total turnover is ascribed to different goods and services on the basis of the commodity breakdown observed in the biannual bench-mark survey. The greater the range of goods sold by a particular shop, the greater the scope for prediction error.

In addition, the results of the retail surveys require adjustment to take account of the following: first, the retail surveys only cover Great Britain and therefore an adjustment must be made for estimated sales in Northern Ireland; second, the surveys do not cover sales by small traders who fall below the VAT threshold or sales by wholesalers; finally, the retail surveys do not differentiate between sales to individuals and sales to businesses.

The ONS¹ estimates that its figures for total consumer spending are subject to a margin of error of plus or minus 3 per cent. For individual commodity groups, the margins of error reported by the ONS tend to be higher than those for total expenditure, the rationale being that in the case of total expenditure, some of the errors associated with individual commodities will tend to cancel out. So, for example, the reliability of energy and tobacco estimates is given within (plus or minus) 3 per cent. For food, alcohol, clothing, travel and communications, the margin of error increases to between (plus or minus) 3 and 10 per cent. For durables,

¹From April 1996, the CSO and the Office of Population Censuses and Surveys merged to form the Office for National Statistics.

household goods and medical goods this increases to between (plus or minus) 10 and 20 per cent. For some individual items such as textiles and soft furnishings, hardware and recreational goods, the margins of error are greater than (plus or minus) 20 per cent (see Central Statistical Office (1985)).

3.3 Total Expenditure in the FES and National Accounts

3.3.1 The measurement of total spending in the FES

The measure of FES total household expenditure adopted in this section follows that used by Goodman and Webb (1995) in their study of household living standards. This measure is used to ensure a consistent definition of expenditure over the period, given coding changes in the FES. Two different measures of expenditure are defined for each household for before and after housing costs. The definition of gross housing costs is chosen to make the expenditure measures compatible with the Households Below Average Income (HBAI) measure of income used in Goodman and Webb (1994). Details of how the figures for total spending are constructed are given in Box 3.2. Details of the commodity composition of the spending figures are given in Appendix 3.A.

Adjustments are made to the FES measure of total expenditure to correct for a potential discontinuity caused by the change in the treatment of credit card expenditure in 1988. Between 1979 and 1987, credit card expenditure was recorded for all items specified on an individual's last statement, i.e. all items bought in the previous month. This was changed in 1988 when spending was recorded for items bought on credit within the two-week period. With no adjustment, the figures

BOX 3.2

Construction of the expenditure measures

FES total household expenditure
<i>plus</i>
Imputed expenditure on free school meals, free milk, concessionary coal and coke, and free food from employers
<i>less</i>
FES net housing expenditure
<i>equals</i>
Total household expenditure excluding housing costs
<i>plus</i>
HBAI gross housing expenditure (rent, mortgage interest, structural insurance)
<i>less</i>
Credit card expenditure divided by two (1979–87)
<i>less</i>
Retrospective recall expenditure on central heating repairs and house maintenance, holidays, furniture and carpets (over £50), moving expenses and moving fees
<i>plus</i>
Diary expenditure on all these items
<i>equals</i>
Total household expenditure including housing costs

Source: Goodman and Webb, 1995.

for 1979–87 cover credit card spending over a period that is twice as long; dividing by two will, therefore, make them more comparable with those post-1987. However, this adjustment is by no means perfect: it assumes that an individual's credit card spending is evenly spread within the month and is broadly similar from one month to the next.

A second adjustment is made for changes to retrospective recall codes in the FES. In cases of 'bulky' goods, such as durables, which are bought infrequently, individuals are asked to 'retrospectively recall' whether

they made a purchase over a longer time period. These retrospective recall codes are then used instead of the diary information in the construction of expenditure items. A problem arises, however, because the scope of goods covered by retrospective recall codes increased significantly in 1987, 1988 and 1991. In total, the effect of the change was to increase total household expenditure by 1 or 2 per cent each year. For the additional goods, therefore, the retrospective recall codes are subtracted from total expenditure and replaced with the diary expenditures.²

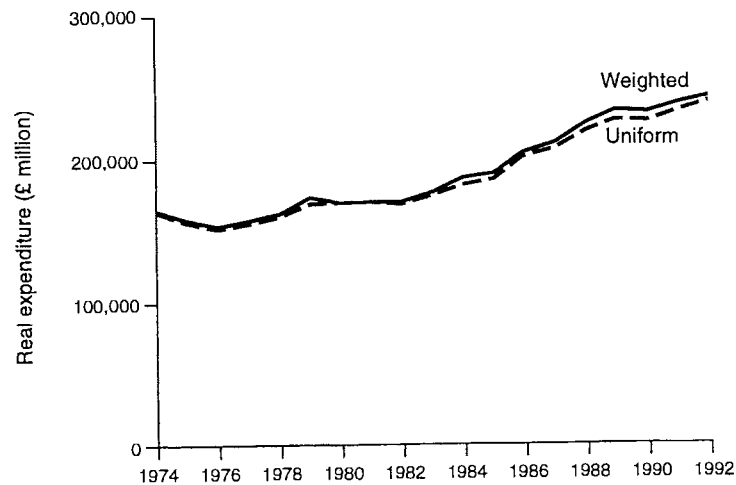
3.3.2 Grossing up

A simple way to gross up the FES expenditure data to obtain an estimate of total aggregate expenditure for the UK would be to multiply each household's spending by the ratio of the total number of households in the UK (approximately 20 million) to the number of households in the FES sample (approximately 7,000). However, as has already been mentioned, the response rate to the FES varies by household type and by income group, and uniform grossing in this way would produce an estimate of total spending for a population that contained too few households of particular types — such as young and very old households — compared with the actual UK population. In order to produce the 'right' number of households of different types according to the actual proportions in the UK population, therefore, differential weights are ascribed to different household types according to their degree of under-representation or over-representation in the FES.³ These weights are

²For further discussion, see Goodman and Webb (1995).

³There are several different dimensions in which under- or over-representation of households may occur. In Goodman and Webb (1994), a

FIGURE 3.1
FES aggregate real expenditure,
using weighted and uniform grossing factors



based on the 10-yearly population censuses, uprated each year.

Figure 3.1 shows the effect of weighted grossing. Real total household expenditure from the FES is grossed up to population totals in two ways: first, using uniform grossing factors for each household, and second, using the differential grossing factors for different household types. The discrepancy between the two reveals the extent to which differential survey response represents a potential problem, and any change in the ratio between the two would reflect a change in the response rates among different groups or a growing

further adjustment is made to the income distribution to account for the under-representation of the very rich. Information is used from the Inland Revenue Survey of Personal Incomes to ensure that there are the right number of rich households with the right average income level. However, because there is no similar additional information on the *expenditure* of the very rich, no adjustment has been made in this case.

discrepancy between the expenditure patterns of different groups with varying response rates.

In all years (1974–92), the uniform expenditure figures lie below the weighted ones. However, the two sets of figures are broadly similar, the weighted figures being only 1 or 2 per cent greater than the uniform ones. The greatest discrepancies occur between 1988 and 1991. Although the impact of differential weighting is relatively small, weighted grossing factors are used in what follows.

3.3.3 The measurement of total spending in the National Accounts

The measure of total spending that we use in this section is 'total household and tourist expenditure in the United Kingdom' (CDFC) minus 'expenditure by foreign tourists, etc in the United Kingdom' (CDFD). This is intended to be comparable to FES spending in that it excludes expenditure by tourists and private non-profit-making bodies. A detailed commodity breakdown of the total spending figures is given in Appendix 3.A.

Each year's total spending estimates are subject to routine revision as fuller information becomes available, such as the results of bench-mark Retailing Inquiry surveys. Subsequent revisions may also be made to the figures as the commodity composition of different groups changes in line with changing spending patterns. For most items, therefore, the ONS considers the estimates of spending for the most recent year to be less reliable than those for earlier years. Over time, the results of the revisions can be fairly significant, causing the estimates of total consumer spending to change by as much as 2 per cent. For example, the estimate published in the *Annual Abstract of Statistics* in 1986 for total

spending in 1984 was £186,450 million. By 1996, this estimate had been revised upwards by 2.6 per cent to £191,298 million.

Hendry (1994) provides a detailed discussion of both the extent of revisions to aggregate data and the implications for using these data in the estimation of consumption models. He found that the standard deviation of revisions to aggregate consumption figures for the 1960s and 1970s was 1.2 per cent. Taken with revisions to the aggregate income series of a similar magnitude, the original and revised consumption-income ratios were found to be not cointegrated.

The choice of aggregate consumption data can clearly make a difference both to the level of consumer expenditure and to the annual growth rates. In order to avoid any potential discontinuities, the most recently revised expenditure figures are chosen. These are listed in full in Appendix 3.B.

3.3.4 Comparing the FES and the National Accounts

The FES and the National Accounts capture two different measures of consumer spending. In particular, they differ in their coverage of consumers and in their treatment of different goods. These differences are considered in more detail below.

Coverage of consumers

The measure of aggregate spending estimated from the FES refers only to total spending by private households, whereas the National Accounts figures include spending by residents of institutions such as local authority homes

and military barracks, spending by tourists⁴ and spending by juveniles.⁵ In any particular year, therefore, the estimate of total spending from the FES is likely to be smaller than the National Accounts figure, to the extent that spending by residents of institutions is not financed by private households and, over time, changes in the size and/or composition of the residential population will cause the ratio between the two measures of total spending to vary.

In addition to having a broader coverage of consumers, the National Accounts figures for total consumer spending also include final expenditure by private non-profit-making bodies (PNBs) serving persons, e.g. charitable organisations. However, this is separated from expenditure by households in recognition of the fact that PNBs are producers of goods and services as well as being consumers of them.

Finally, in cases where estimates in the National Accounts are based on retail sales figures, these may include spending by businesses or spending by individuals on expense accounts. Therefore some adjustment is made to the final expenditure figures for particular goods where this is thought to be important. For example, 2 per cent of beer expenditure and 8 per cent of wine and spirits expenditure is assumed to be business related.

⁴The total spending by tourists in the UK is estimated separately in the National Accounts and can be subtracted from the National Accounts expenditure total to make it comparable to the FES.

⁵At present, spending by juveniles is captured indirectly by two items in FES 'miscellaneous expenditure' — 'children's pocket-money' and 'children's income — amount spent' (see Appendix 3.A).

Treatment of different goods

A detailed commodity breakdown of total spending in the FES and National Accounts is given in Appendix 3.A. There are several cases of goods that are included in total spending but excluded from National Accounts total spending and vice versa. In addition, there are goods that are included in both total spending figures but that are treated differently in the FES and National Accounts. Some of these are discussed below.

Goods that are included in the FES but excluded from the National Accounts include property transactions and holidays (the National Accounts include figures for travel agents' commission and accommodation).

Goods that are included in the National Accounts but not included in the FES include betting and gaming and the administrative cost of life assurance and pension funds (premiums for life insurance policies and pension contributions are excluded altogether from the FES spending measure). Also included are the costs of board and lodging in local authority and private residential and nursing homes and the costs of board and lodging in student halls of residence.

The National Accounts include several imputed values which are not present in the FES. The most important of these, in terms of total spending, is an imputed value for owner-occupation based on the notional rent that would be charged on the property in the private rented sector. The total imputed value of owner-occupation was £23,257 million in 1990. However, the National Accounts figures do not include mortgage interest payments which are included in the HBAI measure of housing costs expenditure used here. The discrepancy between the estimates of total housing

costs from the National Accounts and those from the FES will therefore depend on the relative proportions of mortgage holders and outright owners among home-owners, on the numbers of new mortgage holders for whom a higher proportion of the monthly mortgage payment is interest not capital, and on the relativity between the size of monthly mortgage payments and private sector rents. These issues will be further discussed below. Also included in the National Accounts is an imputed value for company cars and an imputed value for uniforms and food for those in military barracks and for live-in staff of residential homes.

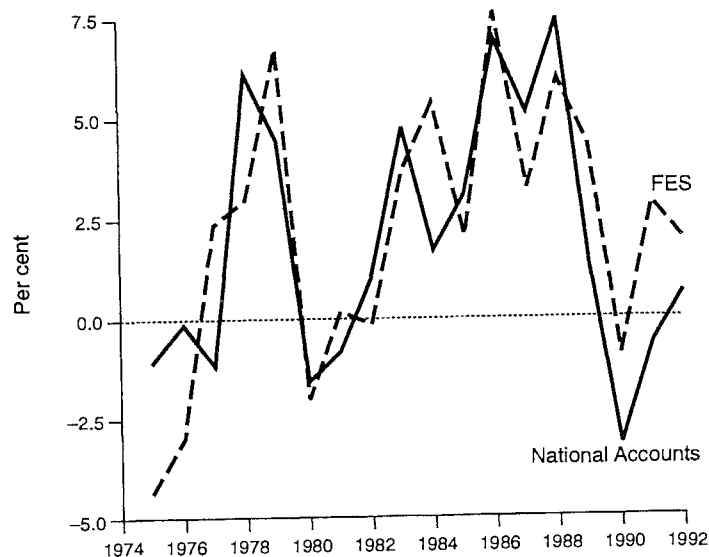
The National Accounts differ from the FES in the treatment of insurance premiums. The FES records the full value of premiums paid, while in the National Accounts, expenditure on insurance is defined to include only the administrative cost to the insurance company, i.e. total premiums minus any claims received. This avoids the problem of double counting which would otherwise arise when individuals paid for replacement goods using money received from an insurance company. The necessary adjustments are made using data from the Association of British Insurers which estimates that the administrative cost is covered by 35 per cent of house insurance premiums and 8 per cent of motor insurance premiums.

3.3.5 Growth rates in real consumer spending, 1974–92

The starting-point is to look at whether the main patterns — booms and busts — in real total consumers' expenditure in the National Accounts between 1974 and 1992 are also present in the FES household data. The

FIGURE 3.2

Annual growth rates in real total expenditure in the FES and National Accounts



FES sample data are grossed up using the differential grossing factors. Both series are deflated using the same retail price index (1987 = 100). The figures are listed in full in Appendix 3.B.

Figure 3.2 plots the annual growth rates in total real expenditure (including housing costs) in the FES and National Accounts. The FES data do appear to pick up most of the broad trends in total consumer spending found in the National Accounts. Both series of data show periods of negative growth in real consumer spending in the mid-1970s, in the early 1980s and in the early 1990s. They show periods of relatively high positive growth in real expenditure in the late 1970s and in the mid- to late 1980s. In terms of magnitude of growth rates, the FES seems to match the National

TABLE 3.1

Comparing the growth rates in the FES and National Accounts

	Total expenditure			Non-housing expenditure		
	(1) FES (%)	(2) National Accounts (%)	(1) - (2) Difference (% points)	(3) FES (%)	(4) National Accounts (%)	(3) - (4) Difference (% points)
1975	-4.32	-1.09	-3.22	-4.22	-1.12	-3.11
1976	-2.95	-0.12	-2.83	-3.20	-0.26	-2.94
1977	2.35	-1.14	3.50	2.39	-1.13	3.52
1978	2.97	6.10	-3.13	3.55	6.26	-2.71
1979	6.75	4.42	2.33	6.77	4.53	2.25
1980	-2.00	-1.56	-0.44	-2.50	-2.03	-0.47
1981	0.19	-0.82	1.01	-0.90	-2.04	1.13
1982	-0.10	1.06	-1.16	-0.16	0.27	-0.43
1983	3.67	4.73	-1.06	3.16	5.17	-2.01
1984	5.35	1.71	3.64	5.47	2.02	3.45
1985	2.08	3.10	-1.02	0.69	3.20	-2.51
1986	7.61	6.93	0.69	7.78	7.09	0.69
1987	3.26	5.15	-1.89	4.50	5.21	-0.70
1988	5.98	7.45	-1.47	5.02	7.64	-2.62
1989	4.30	1.36	2.94	1.21	1.21	0.00
1990	-0.90	-3.15	2.25	0.51	-1.90	2.42
1991	2.90	-0.59	3.49	-0.96	-1.00	0.04
1992	2.02	0.67	1.35	3.95	-0.30	4.25

Accounts fairly well in estimating the size of the peaks in spending growth in the late 1970s and in 1986 and the trough in the early 1980s.

However, there are several discrepancies between estimated growth rates in consumer spending between the FES and National Accounts. In comparison with the National Accounts, the FES overpredicts the size of the trough in spending growth in the mid-1970s and underpredicts the size of the peak in 1988 and the trough in 1990. The FES also appears to lag behind the National Accounts in picking up the peaks in consumer spending growth in 1978 and 1983-84. Table 3.1 shows the size of these discrepancies. For each year, it gives the growth rates in FES and National Accounts spending figures — for both total and non-housing expenditure —

and also the difference in percentage points between the growth rate in the National Accounts and the growth rate in the FES. A negative figure for the difference indicates that the National Accounts showed a higher growth rate than the FES.

For total expenditure, the biggest differences between the growth rates in the two datasets occurred between 1975 and 1978, when consumer growth in the FES lagged behind growth in the National Accounts, and between 1989 and 1991, when growth in consumer spending fell by more in the National Accounts than in the FES. In all years between 1980 and 1988, except 1984, the difference between the two growth rates is less than two percentage points. Similar patterns are found in the growth rates of non-housing expenditure, compared in columns (3) and (4). Towards the end of the period, however, there is more discrepancy between the FES growth rates for total spending and for non-housing expenditure, with non-housing expenditure matching the National Accounts more closely than total spending.

As a final measure of the extent to which patterns in total spending in the National Accounts are picked up in the FES, Table 3.2 reports correlation coefficients for growth rates in total consumer spending in the FES and in the National Accounts. These are calculated for the period 1974–92 and for three sub-periods — 1974–84,

TABLE 3.2

Correlation between growth rates in the FES and National Accounts	
<i>Period</i>	<i>Correlation coefficient</i>
1974–92	0.74
1974–84	0.69
1978–88	0.79
1982–92	0.76

Note: All coefficients are significant at the 5 per cent level.

1978–88 and 1982–92 — in order to see whether there has been any change in the correlation between the two series over time. For all four periods, the correlation coefficients are significant, positive and close to 0.7.

3.3.6 Levels of consumer spending, 1974–92

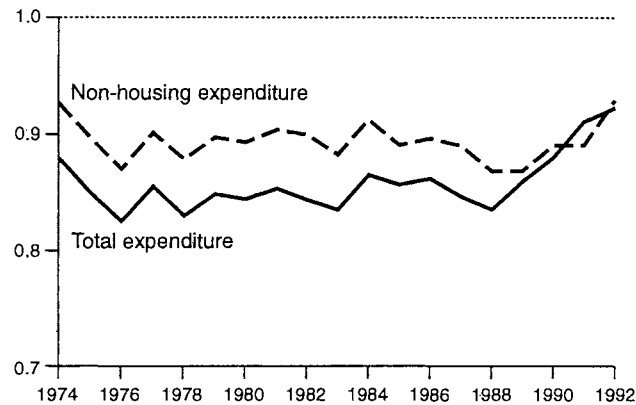
In 1992, total consumer spending in the National Accounts totalled £363,458 million. The grossed-up figure for total spending in the FES for the same year was £335,247 million. Given that the National Accounts expenditure figures have a broader coverage of consumers (covering the institutional population, for example) and goods (including the imputed value of home-ownership and company cars, for example), it is not surprising that the FES figure lies below the National Accounts figure. The key question will be whether the ratio between the two sets of figures has remained relatively constant over the period.

Figure 3.3 plots the ratio of FES total spending to National Accounts total spending, both including and excluding housing costs from 1974 to 1992.⁶ Looking first at the ratio of total spending including housing costs, across the period as a whole, the ratio of FES spending to National Accounts spending averages 86 per cent. But there is some fluctuation around this mean, with a high of over 92 per cent in 1992 and a low of less than 83 per cent in 1976. The standard deviation for the period as a whole is 2.50 per cent. From 1988 to 1992, there is a steady increase in the FES measure of total spending including housing costs as a proportion of National Accounts spending. This is consistent with the picture of growth rates in Figure 3.2, which showed

⁶The measure of non-housing expenditure in the National Accounts is calculated by extracting total spending on 'rents etc'.

FIGURE 3.3

Total spending in the FES as a proportion of total spending in the National Accounts, including and excluding housing costs



spending growth rates in the FES at higher levels than in the National Accounts during the recession. These figures compare favourably to a similar analysis carried out by Slesnick (1992) using data from the Consumers' Expenditure Survey (CEX) and the National Income and Products Accounts (NIPA) in the US. He found that the ratio of per capita total expenditure in the CEX and NIPA was 0.95 in 1961, but by 1989 this had fallen to 0.65. Definitional differences between the two datasets could explain only half the difference.

Figure 3.3 also shows the proportion of non-housing expenditure in the FES as a proportion of non-housing expenditure in the National Accounts. For almost all of the period, the figures for FES non-housing expenditure as a proportion of non-housing spending in the National Accounts are higher than those for total spending including housing costs; the average across the period as a whole is nearly 90 per cent. There is less variation in the ratio of non-housing expenditures in the FES and

National Accounts over the period than in the ratio of total spending figures. The standard deviation of the ratio of non-housing spending is 1.67 per cent (compared with 2.50 per cent above).

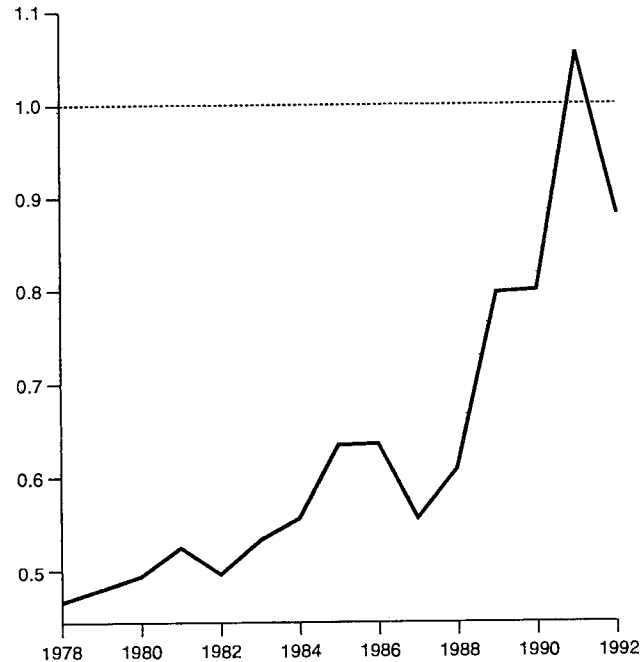
The fact that the two ratios for total and non-housing expenditure are different points to a discrepancy in the estimated size of housing costs between the National Accounts and the HBAI measure used in estimating housing costs from the FES. The fact that the ratio of FES to National Accounts non-housing expenditure is larger than the ratio of total spending figures means that the National Accounts estimate of housing costs tends to be larger than that in the FES. In other words, the measure that includes an imputed value for owner-occupation, as in the National Accounts, leads to a larger estimate of housing costs than one that includes direct mortgage interest payments, as in the FES.

However, from 1988, the difference between the total spending and non-housing expenditure ratios is eroded as the ratio of total spending figures increases relative to the ratio of non-housing expenditure figures. This points to an increase in the FES measure of housing costs relative to the National Accounts measure. This can be seen clearly in Figure 3.4, which plots the ratio of the HBAI measure of housing costs estimated from the FES relative to housing expenditure in the National Accounts. This proportion has increased from less than 0.5 in 1978 to nearly 1 in 1992 (and was more than 1 in 1991).

One possible explanation for this increase could be the growth in the number of new mortgage holders following the housing boom in the late 1980s. The HBAI measure of gross housing costs includes mortgage interest only, not repayment of capital, and for new

FIGURE 3.4

FES as a proportion of National Accounts: housing costs



mortgage holders this represents a larger proportion of monthly mortgage payments. A further factor could be the high levels of interest rates during this period. Both these factors would increase the estimate of housing costs in the FES relative to the National Accounts estimate based on the imputed value of owner-occupation. In the next section, the figures for total spending are broken down into commodity groups and some of these issues are analysed in more detail.

3.4 Commodity Groups in the FES and National Accounts

In this section, the focus shifts from total spending to the component commodity groups. A comparison is made of spending on different commodities between the FES and National Accounts to see whether there are goods for which the FES picks up National Accounts spending particularly well or badly. In previous work, it has been shown that there are differences between the ratios of grossed-up FES and National Accounts data for different goods. Baker, McKay and Symons (1990), for example, compare uniformly grossed-up FES data against National Accounts spending for 14 different goods between 1978 and 1986. Taking the period as a whole, they find that the grossed-up FES captures nearly all National Accounts expenditure on fuel, but less than 40 per cent of the spending on spirits. Under-reporting of alcohol spending in the FES is discussed further in Atkinson, Gomulka and Stern (1989). For policy analysis that uses FES expenditure data, such as the simulation of the revenue effects of indirect tax reform, what matters, however, is not the absolute level of the ratio of grossed-up FES to the National Accounts, which can simply be adjusted for, but the stability of this ratio over time. It will therefore be important to see whether differences in spending on particular commodity groups between the National Accounts and the FES have increased or decreased over time.

Non-housing expenditure is decomposed into 10 commodity groups: food, fuel, clothing, alcohol, tobacco, household goods and services, leisure goods and services, travel and communications, other non-durable goods and services, and durable goods. Data series for aggregate spending in the National Accounts

on each of these 10 groups can be obtained on a reasonably consistent basis since 1979 from the *Annual Abstract of Statistics*.

In allocating individual goods and services to different commodity groups, there is an opportunity to exclude altogether items that appear in only the FES or the National Accounts in order to make the series more comparable. Betting and gaming and the administrative costs of life assurance and pension policies are dropped from the National Accounts. Spending on holidays, property transactions and miscellaneous expenditure items are excluded from the FES. Table 3.3 shows the percentage of total non-housing FES spending captured by the 10 commodity groups. This percentage has fallen over time, pointing to an increase in the importance of the excluded expenditure items —property transactions, holidays and miscellaneous spending.

TABLE 3.3
Comparing the FES and the National Accounts:
spending on the 10 commodity groups

	<i>Spending on 10 groups in FES as a percentage of FES total (non-housing) spending (%)</i>	<i>Spending on 10 groups in FES as a percentage of spending on 10 groups in National Accounts (%)</i>
1978	93.92	84.06
1979	92.21	84.23
1980	92.99	84.97
1981	93.56	86.78
1982	92.87	86.02
1983	92.67	85.83
1984	91.65	85.91
1985	91.77	83.93
1986	91.31	84.80
1987	89.97	83.08
1988	87.61	79.47
1989	88.45	80.23
1990	88.05	81.96
1991	86.59	80.99
1992	86.49	84.06

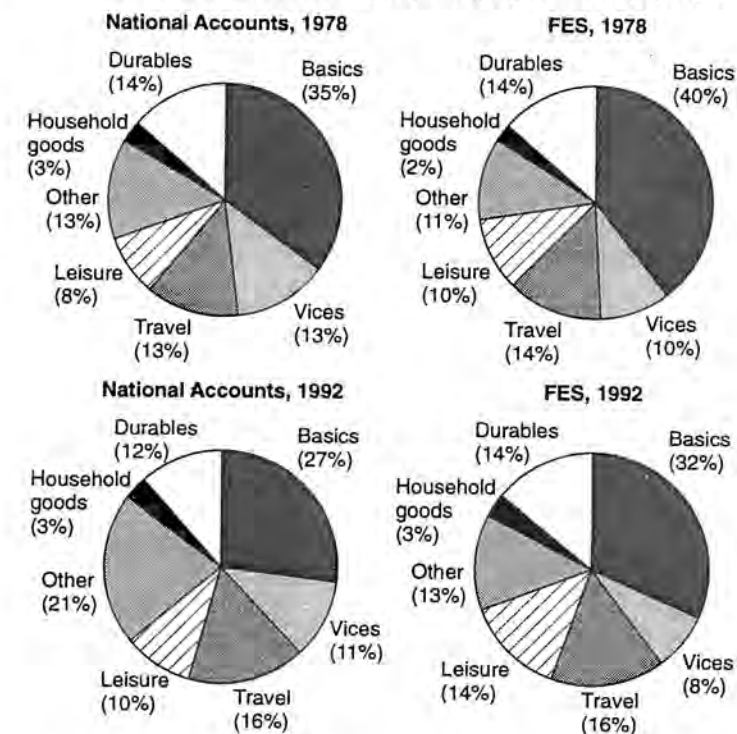
Even with these exclusions, however, it is not possible to make the commodity groups in the FES and National Accounts perfectly comparable. First, the spending figures in the National Accounts include spending by tourists and there is no estimate of the size of tourist spending for individual goods and services. This is likely to cause a greater discrepancy with the FES spending figures for some goods (such as meals out) than for others. As with figures for total spending, the National Accounts measures also include expenditure by the institutional population. Second, as discussed above, some goods and services, such as insurance premiums, are treated differently in the FES and National Accounts. Third, there have been changes in the grouping and nomenclature of individual items in the FES across the period in line with changing consumers' expenditure patterns. While every effort has been made to ensure consistency over time in the composition of the commodity groups, discontinuities may persist. For some commodity groups, therefore, a change in the ratio of spending on a particular group of goods and services measured in the FES and in the National Accounts may reflect a change in the commodity composition rather than any underlying change in the reliability of either data series. Finally, as has already been discussed above, when it comes to individual commodity items, the margins of error associated with National Accounts estimates become fairly large, increasing to as much as (plus or minus) 20 per cent for some goods such as textiles, soft furnishings and hardware goods. This will reduce the usefulness of a comparison between the National Accounts and the FES spending totals as a test of the reliability of the FES.

To see the extent to which spending on the 10 commodity groups in the National Accounts is picked up in the FES, Table 3.3 shows total spending on the 10 groups in the FES as a percentage of spending on the 10 groups in the National Accounts. These percentages tend to be smaller than the figures for total non-housing expenditure shown in Figure 3.3 which average around 90 per cent across the period as a whole. However, this is to be expected since the figures for total spending in the National Accounts are adjusted for tourist spending in the UK. No such adjustment is possible in the case of the commodity groups since estimates are not made of tourist spending on individual goods and services. Over the period as a whole, there appears to be no significant change in FES spending on the 10 commodity groups relative to the National Accounts. However, the figures are low for the period 1988–91.

Figure 3.5 shows the relative importance of spending on the commodity groups in the FES and the National Accounts at the beginning and end of the period under consideration (1978–92). Differences emerge in the proportions spent on particular commodities between the FES and the National Accounts, and the proportions vary over time. Spending on basic goods (defined as food, fuel and clothing) is the largest component of total (non-housing) spending in the FES and National Accounts, but is 5 percentage points larger in the FES than in the National Accounts. Over the period 1978–92, the amount spent on basics has fallen as a proportion of the total — from 35 per cent to 27 per cent in the National Accounts and from 40 per cent to 32 per cent in the FES. The proportion spent on ‘vices’ (alcohol and tobacco) has also fallen over the period, by 2 percentage points in both the FES and the National Accounts. As

FIGURE 3.5

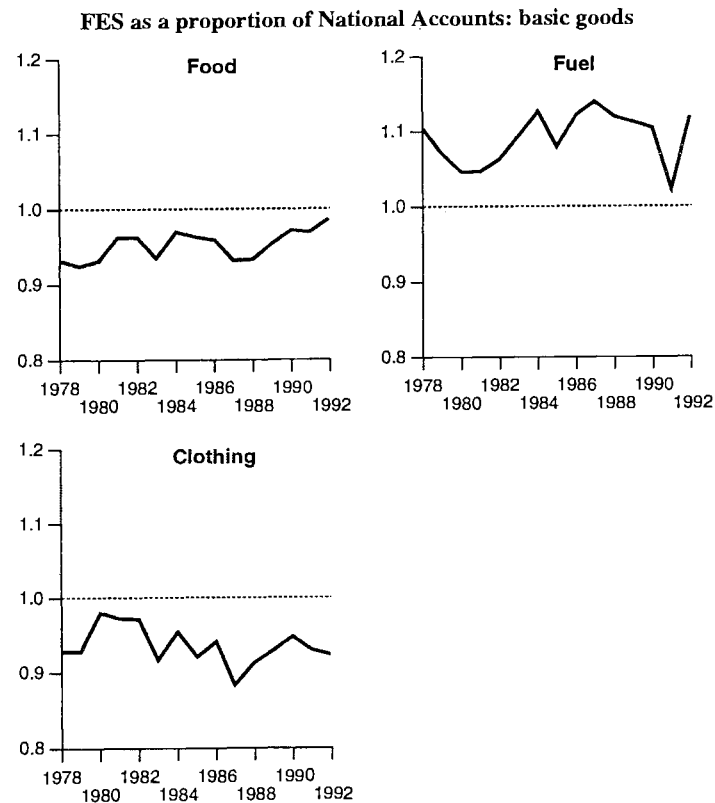
Breakdown of total (non-housing) spending by commodity groups



might be expected, given the known under-reporting of spending on alcohol, the proportion spent on vices is smaller in the FES than in the National Accounts. The proportion spent on leisure goods and services is higher in the FES than in the National Accounts and has increased by slightly more over the period — from 8 per cent to 10 per cent in the National Accounts compared with 10 per cent to 14 per cent in the FES. The proportions spent on durables, household goods and services, and travel and communications are very

similar in the FES and National Accounts data and have also been fairly stable over the period. The proportion spent on other non-durable goods and services increased slightly over the period in the FES — from 11 per cent to 13 per cent. In the National Accounts, however, there was a substantially larger increase, from 13 per cent to 21 per cent. With these changes in mind, we consider grossed-up FES spending as a proportion of National Accounts expenditure for each of the commodity groups.

FIGURE 3.6

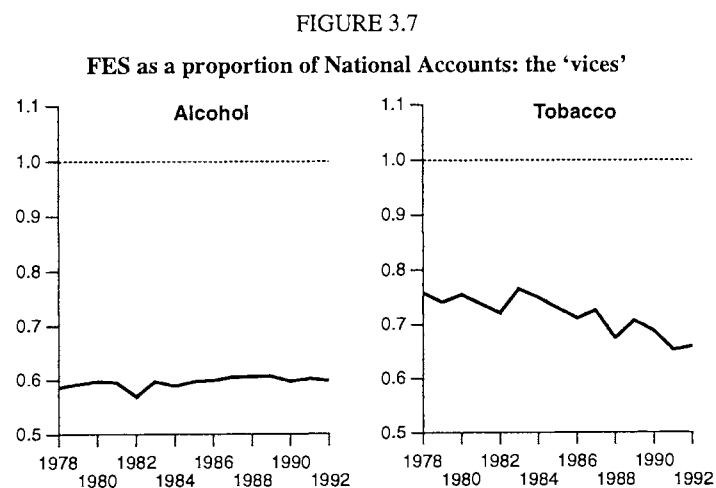


3.4.1 Basic goods: food, fuel and clothing

Figure 3.6 shows FES spending on basic commodity groups — food, fuel and clothing — as a proportion of National Accounts figures. For each of these three groups, the FES predicts a relatively high proportion of total spending in the National Accounts. The mean ratios over the period are 95 per cent in the case of food, 93 per cent in the case of clothing and 108 per cent in the case of fuel. The series are also reasonably stable over the period: the standard deviations are 1.93 per cent for food, 2.58 per cent for clothing and 3.48 per cent for fuel. For all three commodity groups, there is a high degree of consistency in the component commodities in the measures in both the FES and National Accounts over time and a high degree of comparability in the individual components of each group between the National Accounts and FES which makes it straightforward to create the three commodity groups on a consistent basis between the two datasets.

3.4.2 The 'vices': alcohol and tobacco

Figure 3.7 plots FES spending on alcohol and tobacco as a proportion of total expenditure on these goods in the National Accounts. For both commodities, there is a problem of under-recording. The FES captures only 60 per cent of National Accounts spending on alcohol and approximately two-thirds of spending on tobacco. This could be due to the FES sample design: in not sampling residents of institutions such as student halls of residence and military barracks, the FES may be omitting groups of the population with relatively high levels of alcohol and tobacco consumption. Alternatively, the under-recording may be the result of under-reporting by respondents of their consumption of



these 'guilty' commodities. In previous studies of the under-recording of alcohol spending, Kemsley, Redpath and Holmes (1980) and Atkinson and Micklewright (1983) concluded that sample design is a more important factor than under-reporting; the skewed distribution of alcohol consumption means that the non-sampling by the FES of heavy drinkers — who include seamen, publicans, hoteliers and restaurateurs — can lead to considerable under-recording.

Across the period as a whole, the proportion of National Accounts expenditure on alcohol predicted by the FES is very stable around 60 per cent. The standard deviation for this series is only 0.80 per cent. The problem of under-recording of tobacco expenditure by the FES is smaller than that of alcohol: the FES picks up between two-thirds and three-quarters of spending on tobacco. However, there does appear to be a steady increase in the extent of under-recording over the period. The growing discrepancy between the FES and National Accounts cannot be explained by changes in

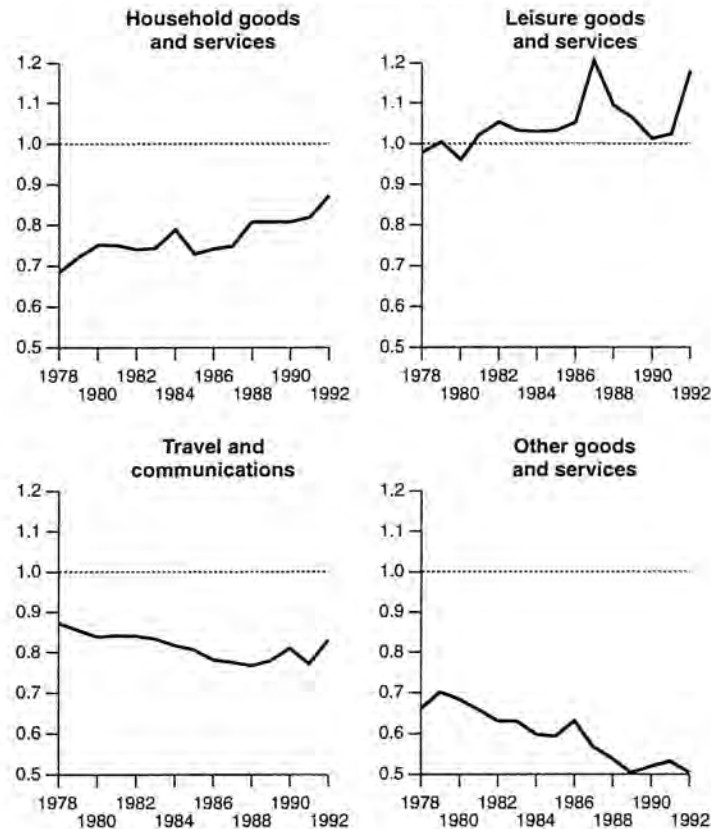
commodity composition, which is consistent over time between the FES and National Accounts. The increase in under-recording could be attributable either to a growing problem of under-reporting as the social stigma associated with smoking increases or to a growing concentration of smokers in the groups undersampled — or not sampled at all — by the FES.

3.4.3 Other non-durable expenditure

Figure 3.8 summarises FES spending as a proportion of National Accounts spending for all other non-durable expenditure items — household goods and services, leisure goods and services, travel and communications, and other non-durable goods and services. In comparison with expenditure on basic items, the ratios of FES and National Accounts spending for these commodity groups tend to be lower (with the exception of leisure goods and services) and more variable over the period.

The FES estimates of total spending on leisure goods and services tend to be higher than the National Accounts figures, and the mean over the period is 105 per cent, although the standard deviation is 6.68 per cent — the highest among all non-durable goods and services. There is little apparent trend across the period as a whole, but a notable 'blip' occurs in 1987 which is probably attributable to a change in the commodity composition of the group of leisure goods and services in the FES. There is also a sharp upturn between 1991 and 1992. In the case of the other three groups of commodities shown in Figure 3.8, there do appear to be trends in the relativity between the FES and the National Accounts over time.

FIGURE 3.8

FES as a proportion of National Accounts:
other non-durable goods

Across the period as a whole, the FES appears to pick up an increasing proportion of spending on household goods and services — from just under 70 per cent in 1978 to over 80 per cent in 1992. However, as Figure 3.5 shows, household goods and services make up only a very small proportion of total expenditure. In the case of travel and communications and other non-durable goods and services, the proportion of National Accounts

spending picked up by the FES declines. For travel and communications, however, any change is relatively small — overall, the series appears relatively stable with a mean of around 81 per cent and a standard deviation across the period of 3.29 per cent.

The proportion of National Accounts spending on other goods and services picked up by the FES declines by almost 20 percentage points between 1979 and 1992, and by the end of the period, the FES picks up barely half of total spending on this group. The standard deviation for the period is 6.52 per cent. One possible reason for the large — and growing — discrepancy between the FES and National Accounts in the case of other goods and services is that, in the National Accounts, this group contains a high proportion of spending by non-households, and hence a high proportion of spending not picked up by the FES, including spending on meals out and hotel accommodation by tourists, spending by students on board and lodging in university and college accommodation, charges for those in local authority residential and nursing homes, and the cost of meals and accommodation for residents of private residential care and nursing homes. In the case of spending on meals out, hotel accommodation and self-catering, the National Accounts estimates are actually based on FES data, but the FES figures are increased by nearly 40 per cent to take account of non-household spending — including tourist expenditure — under-recording and the value of employer-provided or employer-subsidised meals. It is not surprising, therefore, that the simple grossed-up FES figures do not match the National Accounts figures.

Some of the expenditure items omitted from the FES are large. For example, in 1990, the estimated spending by tourists on meals out and accommodation was £3,684 million and the estimated cost of board and lodging in private residential care and nursing homes was £3,794 million. Furthermore, there is reason to think that the size of the expenditures excluded by the FES has been growing over the period 1979–92, given the increase in the number of residents of nursing and residential homes. In 1980, the number of places in private and voluntary residential homes for elderly and physically disabled people was approximately 50,000. By 1992, this figure had reached 185,000. A similar increase was observed in the number of places in private and voluntary nursing homes (non-acute, non-psychiatric) from around 20,000 in 1980 to 135,000 in 1992.⁷ Also, there has been an increase in the number of students in full-time further education. These changes in the size and composition of the non-institutional population whose spending is captured by other goods and services in the National Accounts may explain why the amount spent on other goods and services as a proportion of total spending increased from 13 per cent to 21 per cent in the National Accounts but only by 2 percentage points in the FES between 1979 and 1992, as shown in Figure 3.5.⁸

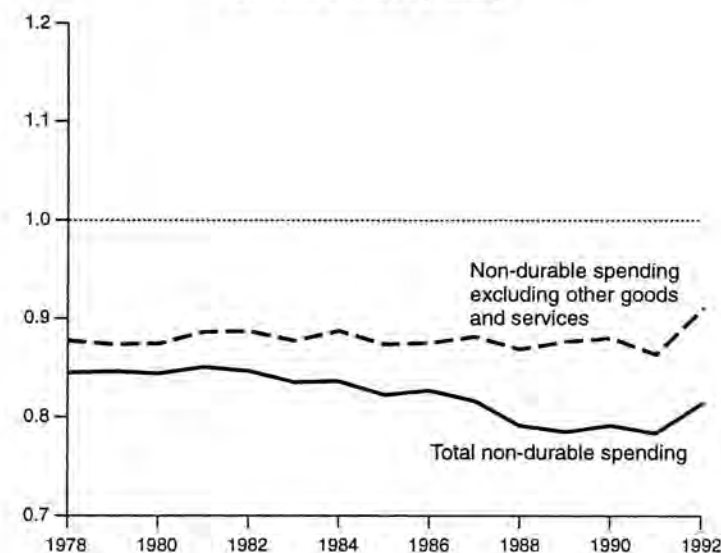
⁷See Laing (1993).

⁸In considering the impact of these changes in the size and composition of the institutional population, there will be a corresponding change in the composition of private households that are sampled by the FES which could further affect the ratio between spending observed in the FES and in the National Accounts. This would be the case if, for example, the remaining households sampled were on average younger and richer than the total population. However, the impact of the changing composition of private households is likely to be spread across several commodity groups; the effect of an increase in the number of residents of residential and

3.4.4 Total non-durable expenditure

Figure 3.9 combines the commodity groups discussed above — basic items, vices and other non-durable goods and services — and presents the ratio of total non-durable non-housing expenditure in the FES and in the National Accounts. This ratio is of particular importance, given the wide use of total non-durable non-housing spending as the chosen consumption measure in the estimation of intertemporal models of consumption growth (see, for example, Attanasio and Weber (1993) and Deaton and Paxson (1994)). The average of the ratio over the period as a whole is 82 per

FIGURE 3.9
FES as a proportion of National Accounts:
total non-durable spending



nursing homes falls directly on the commodity group of other goods and services.

cent and its standard deviation is 2.33 per cent. There is some evidence of a downward trend in the ratio, particularly towards the end of the period.

One likely cause of this downward trend is the fall in the proportion of National Accounts spending on other non-durable goods and services captured by the FES, discussed above, so Figure 3.9 also presents the ratio of non-durable expenditures excluding spending on other goods and services. This ratio is higher than that for total non-durable spending, with a mean of nearly 88 per cent, and the standard deviation of the series is smaller — 1.11 per cent compared with 2.33 per cent. The stability of this series over this period is very encouraging for the reliability of the FES. If other non-durable goods and services can explain the downward trend in the ratio of non-durable expenditures between the FES and the National Accounts, there is little reason for thinking that the downward trend is caused by any change in under-reporting in the FES itself. As discussed above, the trend in the ratio of other non-durable goods and services over the period is consistent with the changes in the size and composition of the institutional population that have occurred over the period.

3.4.5 Durables

Figure 3.10 shows total spending on durable goods in the FES as a proportion of total durable expenditure in the National Accounts. The series shows considerable volatility over time: the proportion of durable spending in the National Accounts picked up in the FES ranges from around 85 per cent to over 110 per cent, with a standard deviation of 10.67 per cent — the highest among all 10 commodity groups. One possible reason

FIGURE 3.10
FES as a proportion of National Accounts:
total durable spending, unadjusted



for the variability is a change in the commodity composition of the group of durable goods in the FES in 1987 and 1988. A second reason, however, could be the change in the scope of retrospective recall codes in the FES in 1991. From this time, households were asked about the amount they spent on furniture and furnishings they purchased over the previous three months, rather than just within the two-week period. The effect of this change was to increase the number of non-zero observations and hence increase the grossed-up figure for total spending on these items.

A further possibility is the difference between the National Accounts and the FES in the timing of motor vehicle expenditures. In the National Accounts, the figures for spending on motor vehicles are compiled

FIGURE 3.11
FES as a proportion of National Accounts:
total durable spending, adjusted



from data on vehicle registrations. The FES, on the other hand, picks up spending on vehicles at the time of purchase. It is therefore possible that the FES figures are more directly comparable with figures from the National Accounts lagged one period — and indeed this is apparent in the data.

Figure 3.11 plots the ratio of total durable spending in the FES and National Accounts after making the two adjustments discussed above, i.e. adjusting for the change in retrospective recall codes in spending on furniture and furnishings and lagging the National Accounts series for vehicle spending by one year. The effect of these two adjustments is to increase the mean of the durables ratio from 95 per cent to 96 per cent and

to reduce the standard deviation from 10.67 per cent to 8.95 per cent. However, even with these changes, the ratio of durable expenditures in the FES and National Accounts is highly volatile.

3.5 Conclusions

This paper has looked at the reliability of the expenditure data in the Family Expenditure Survey by comparing grossed-up spending figures from the FES against the National Accounts. The FES does not capture all consumer spending in the National Accounts; it covers a smaller group of consumers — private households only — and many goods are treated differently. But what is important for much of the empirical work that uses FES data — for example, models of intertemporal consumption growth and behavioural models for analysing the effects of indirect tax reform — is the consistency of FES data over a longer period. In particular, it would be of concern if there were any increase in the extent to which the FES under-recorded spending because of increased under-reporting by respondents or a change in the survey sample.

From the results in this paper, there is little sign that this is the case. The results for aggregate spending totals — including and excluding housing costs — show that the proportion of total spending picked up by the FES is high (compared with countries such as the US) and relatively stable; the standard deviation of the ratio of total spending in the FES and National Accounts is smaller than the 3 per cent margin of error reported by the Office for National Statistics for its expenditure measures.

For individual commodity groups, the picture is similarly encouraging. Although there is greater variability in the ratios of FES and National Accounts spending figures — and this is particularly the case for durables⁹ — for most commodity groups, the ratios do not change significantly over time. However, a small note of caution should be sounded about tobacco expenditure in the FES, which appears as a successively smaller proportion of the National Accounts figure over time.

Appendix 3.A. Commodity Composition of Total Expenditure: FES and National Accounts

3.A.1 Total expenditure in the FES

Below are the individual commodity components of total expenditure in 1990, listed by broad commodity groups. Over the period 1974–92, there have been several changes to the coding of expenditure items in the FES and not all of these individual codes are present in all years of the sample. However, this list is broadly representative of the goods and services in each of the component groups across the entire period.

Food

bread rolls etc.
 flour
 biscuits etc.
 cakes and other bakery purchases
 breakfast cereals
 beef and veal
 mutton and lamb
 pork
 bacon and ham (uncooked)

⁹Many empirical studies of consumption behaviour use definitions of total spending that exclude durable expenditure.

offal and other meat
 ham, cooked
 sausages and sausage-meat
 meat — cooked and canned
 poultry, game
 fresh, smoked and canned fish
 fish and chips
 eggs
 butter
 margarine
 milk — fresh
 cheese
 skimmed milk
 other milk products
 lard, cooking fats and oils, other fats
 fresh vegetables, including tomatoes
 canned vegetables
 frozen vegetables
 potato products and processed potatoes
 raw potatoes
 fresh fruit
 fruit juices and tomato juice
 other processed fruit
 tea
 coffee
 cocoa and other food drinks
 sugar
 syrup, honey, jam, marmalade
 ice-cream
 soft drinks
 sweets and chocolates
 canned and packeted food, including baby food
 pickles, sauces, flavourings
 take-away food (cold)
 take-away food (hot)
 food undefined
 meals out (work) — fish and chips
 meals out (work) — sandwiches etc.
 meals out (work) — non-alcoholic drinks
 meals out (on) — fish and chips and other
 meals out (on) — sandwiches etc.
 meals out (on) — non-alcoholic drinks
 meals out (on) — soft drinks, ice-cream

meals out (off) — fish and chips only
meals out (off) — other meals including salad
meals out (off) — cakes etc.
meals out (off) — non-alcoholic drinks
meals out (off) — soft drinks
meals out (off) — ice-cream
meals out (off) — sweets and chocolate
meals out (off) — specified other food
meals out (off) — hot: full meals and snacks
meals out (off) — toasted sandwiches etc.
meals out (off) — cold: sandwiches etc.
school meals — total paid last week

Alcohol

alcoholic drink (off) — beer, stout, ale, shandy
alcoholic drink (off) — cider, perry
alcoholic drink (off) — fortified wines
alcoholic drink (off) — non-fortified wines
alcoholic drink (off) — wine unspecified
alcoholic drink (off) — spirits, liqueur
alcoholic drink (off) — undefined
alcoholic drink (on) — beer, stout, ale, shandy
alcoholic drink (on) — cider, perry
alcoholic drink (on) — fortified wines
alcoholic drink (on) — non-fortified wines
alcoholic drink (on) — wine unspecified
alcoholic drink (on) — spirits, liqueur
alcoholic drink (on) — undefined
alcoholic drink (home) — beer, stout, ale, shandy
alcoholic drink (home) — cider, perry
alcoholic drink (home) — fortified wines
alcoholic drink (home) — non-fortified wines
alcoholic drink (home) — wine unspecified
alcoholic drink (home) — spirits, liqueur
alcoholic drink (home) — undefined

Tobacco

cigarettes
pipe tobacco
cigars and snuff

Fuel

oil for central heating
rent — net amount for services in rent
gas — amount paid in last account
electricity — amount paid in last account
gas — payment — board budget scheme
electricity — payment — board budget scheme
gas — amount last slot meter rebate
electricity — amount last slot meter rebate
second dwelling electricity account
second dwelling gas account
coal
coke
gas — slot meter
electricity — slot meter
other fuel, including paraffin

Clothing

men's outer clothing
men's underwear and hosiery
women's outer clothing
women's underwear and hosiery
boys' outerwear
boys' underwear and hosiery
girls' outerwear
girls' underwear and hosiery
clothing materials
men's and boys' headgear
haberdashery, women's and girls' headgear
infants' outerwear
infants' underwear and hosiery
clothing charges
miscellaneous purchases of clothing
men's footwear
women's footwear
children's footwear
footwear undefined

Household goods

furniture

soft floor coverings
hard floor coverings
household textiles
mattresses
gas cookers
electric cookers
electric washing machines
fridges
gas and electric appliances — spare parts
other gas appliances
electrical tools
small electrical/electronic equipment
china, glass, pottery
major household appliances
electrical consumables
garden tools and accessories
kitchen equipment, tableware, utensils
other household hardware
toilet-paper
stationery and paper goods
food for animals and pets
other expenditure on pets and animals
matches, polishes, cleaning materials
soap, soap products
repairs to gas, electrical appliances

Household services

telephone — household share of account
contents insurance
bank charges
moving house (retrospective recall)
property transaction — purchase and sale
property transaction — sale only
property transaction — purchase only
other payments
second dwelling — rent, rates, repairs
second dwelling — telephone
postage and poundage
telephone (not account), telemessages
stamp duties to central authorities
licences other than TV and driving
domestic help, window cleaning etc.

repairs to footwear
repairs to clothing, personal goods
cleaning and dyeing
laundry and launderette
subscriptions to trade unions, professional associations etc.
other subscriptions
miscellaneous expenditure on services
legal fees
private entertainment
funeral expenses

Personal goods and services

spectacles
medicines — non-NHS
cosmetics
other toilet requisites
NHS prescription charges
leather and travel goods
smokers' requisites
decorative fancy goods
jewellery and watches
household articles
toilet soap
NHS payments — dentists etc.
private medical fees
hairdressing etc.

Motoring expenditure

vehicle road tax — amount paid last year
vehicle insurance — amount paid last year
cost of new car/van bought outright
cost of second-hand car/van bought outright
cost of motor cycles
vehicle road tax — amount refunded
new cars — hire-purchase
second-hand cars — hire-purchase
new and second-hand motor cycles — hire-purchase
motor-cycle spares and accessories
driving licence
cars — durable accessories and fittings
car spare parts

petrol
diesel oil
other motor oils
garage rent, rates and ground rent
AA and RAC subscriptions
motor vehicle repairs and servicing
other road motor vehicle costs

Fares

school travel — amount paid last week
bus and tube and/or rail — season ticket
season ticket — bus and coach
season ticket — rail and tube
season ticket — other
other vehicles and boats
other vehicles and boats — repairs etc.
other vehicle accessories
combined bus/rail/tube — non-season
rail and tube fares (non-season)
bus and coach fares (non-season)
air travel
water travel
taxi fares and hired cars with driver
hire of self-drive cars
contribution to travel in friends' cars
other personal travel (e.g. coach trips)
transportation (e.g. furniture delivery)

Leisure goods

TVs and audio equipment
home computers
telephones, answering machines
video-recorders
TVs, radios — spare parts
musical instruments
records
purchase and hire of video-cassettes
toys
photo and optical goods
hobbies
sports goods

books
newspapers
magazines
seeds, plants etc.
fertilisers etc.
repairs to TV

Leisure services

education — amount paid in last three months
leisure classes fees paid — amount
children outside household — education fees last quarter
TV licence — amount paid last year
TV rental — amount paid on last account
cable/satellite TV rental
video-recorder — amount of last rental
maintenance allowance expenditure
money sent abroad
holiday — package — UK — six days or under
holiday — package — UK — one week or more
holiday — package — Eire — six days or under
holiday — package — Eire — one week or more
holiday — package — other — six days or under
holiday — package — other — one week or more
holiday — hotel — UK
holiday — hotel — Eire
holiday — hotel — other
holiday — self-catering — UK
holiday — self-catering — Eire
holiday — self-catering — other
second dwelling — TV licence
dances and miscellaneous entertainment
money spent abroad
money paid to relative for holiday
cinema admissions
theatres, concerts
participant sports
spectator sports, including football admissions
TV rental — slot meter
charitable gifts
cash gifts and tips

Miscellaneous expenditure

children's income — amount spent
miscellaneous expenditure on goods
interest on credit cards
credit cards annual fee
children's pocket-money — under 16

**3.A.2 Total expenditure in the National Accounts:
component categories**

Food

bread and cereals
fish
oils and fats
potatoes
sugar
coffee, tea and cocoa
other manufactured food
meat and bacon
milk, cheese and eggs
fruit
vegetables
confectionery
soft drinks

Alcoholic drink

beer
wine, cider and perry
spirits

Tobacco

Fuel and power

electricity
coal and coke
liquid gas
kerosene
gas
wood

fuel oil

Household goods and services

furniture, pictures etc.
major appliances
hardware
other cleaning materials, matches
dry-cleaning
shoe repairs
service in kind
carpets and other floor coverings
textiles and soft furnishings
household soap
laundry
other repairs
house contents insurance
domestic services

Transport and communication

motor vehicles
boats, aircraft and bicycles
oil
garage rents
motor vehicle: other costs
motor vehicle: repairs
driving lessons
self-drive hired cars
British Rail fares
buses and coaches
domestic air travel (including Eire)
taxis
short sea journeys
pleasure cruises
coastwise car ferry
travel agents' commission
postal services
caravans
petrol and diesel
VED
motor vehicle and motor-cycle accessories
AA and RAC subscriptions

motor vehicle: insurance
driving tests
company cars — imputed value
other rail fares
international air travel
air travel — emigration
long sea journeys
sea travel to Eire
internal traffic (water and sea) within UK
expenditure on board ship
removals
telecommunications

Recreation, entertainment and education

radio, TV and other durable goods
video-cassette hire
TV licences
horticultural goods
photographic film and processing
football pools
bingo (betting and gaming)
gaming machines
fun-fairs
spectator sports and general entertainment
cinemas
newspapers
university fees
other education fees
radio, TV and VCR hire
TV repairs
sports goods, toys, games, camping equipment
pets
records and tapes
off- and on-course betting
casino gambling
lotteries and competitions
bingo admissions
social subscriptions
books
magazines
school fees

Other goods and services

spectacles
total payments to NHS by persons
subscriptions to private health insurance
hairdressing
other goods
catering: other food in kind
board and lodging — private nursing homes
financial services charges
miscellaneous services
survey fees
accident insurance
pharmaceutical drugs
private medical expenses
toilet articles, perfumery
jewellery, silverware, watches and clocks
catering: meals out and accommodation
catering: local authority residential homes
administration costs of life assurance and pension funds
stamp duties
undertaking
stockbroker charges

Appendix 3.B. Total Spending: National Accounts and FES

Below are listed the National Accounts and FES figures for total spending — including and excluding housing costs — used in Section 3.3. The FES figures given are the average weekly household expenditures. Also listed are the means of the weighted grossing figures used.

	National Accounts annual expenditure figures (£ thousand)		Family Expenditure Survey weekly expenditure figures (£)		Grossing factor
	Total expenditure	Non- housing expenditure	Total expenditure	Non- housing expenditure	
1974	51,861	45,787	44.37	41.27	2,989
1975	63,792	56,306	52.82	49.19	2,793
1976	74,144	65,354	58.74	54.55	2,813
1977	84,894	74,844	68.42	63.57	2,881
1978	97,696	86,261	75.47	70.51	2,991
1979	115,685	102,247	89.50	83.58	3,120
1980	134,171	118,018	104.93	97.57	3,053
1981	149,011	129,453	118.51	109.05	2,825
1982	163,473	140,915	125.40	115.27	2,918
1983	179,009	154,952	133.69	122.26	3,135
1984	191,298	166,084	144.92	132.52	3,122
1985	209,158	181,776	155.70	140.54	3,195
1986	231,213	201,242	170.56	154.28	3,178
1987	253,308	220,593	182.34	166.83	3,106
1988	285,536	249,092	199.80	181.09	3,187
1989	311,886	271,677	220.94	194.79	3,165
1990	330,637	291,722	235.52	209.96	3,358
1991	347,989	305,741	255.31	218.67	4,478 ^a
1992	363,458	316,235	268.66	234.71	3,231

^aIn 1991, households were dropped from the first quarter of the year because of missing poll tax information. The grossing factors for the remaining households are, therefore, correspondingly higher.

References

- Atkinson, A., Gomulka, J. and Stern, N. (1989), 'Modelling alcohol expenditures in the FES: a tobit approach', LSE/ICERD, Discussion Paper no. 123.
- and Micklewright, J. (1983), 'On the reliability of income data in the Family Expenditure Survey 1970–1977', *Journal of the Royal Statistical Society*, series A, vol. 146, pp. 33–61.
- Attanasio, O. and Weber, G. (1993), 'Consumption growth, the interest rate and aggregation', *Review of Economic Studies*, no. 60, pp. 631–49.
- Baker, P., McKay, S. and Symons, E. (1990), 'The simulation of indirect tax reforms: the IFS Simulation Program for Indirect Taxation', Institute for Fiscal Studies, Working Paper no. W90/11.

- Banks, J., Blundell, R. and Lewbel, A. (1996), 'Quadratic Engel curves, indirect tax reform and welfare measurement', *Economic Journal*, vol. 106, pp. 1227–41.
- Blundell, R., Pashardes, P. and Weber, G. (1993), 'What do we learn about consumer demand patterns from micro data?', *American Economic Review*, vol. 83, pp. 570–96.
- Central Statistical Office (1985), *UK National Accounts: Sources and Methods*, third edition, London: HMSO.
- Deaton, A. and Paxson, C. (1994), 'Intertemporal choice and inequality', *Journal of Political Economy*, vol. 102, pp. 437–67.
- Goodman, A. and Webb, S. (1994), *For Richer, for Poorer: The Changing Distribution of Income in the United Kingdom, 1961–91*, Commentary no. 42, London: Institute for Fiscal Studies.
- and — (1995), *The Distribution of UK Household Expenditure, 1979–92*, Commentary no. 49, London: Institute for Fiscal Studies.
- Hendry, D. (1994), 'HUS revisited', *Oxford Review of Economic Policy*, vol. 10, no. 2, pp. 86–106.
- Kemsley, W., Redpath, R. and Holmes, M. (1980), *Family Expenditure Survey Handbook*, London: Social Survey Division, OPCS.
- Laing, W. (1993), *Financing Long-Term Care: The Crucial Debate*, London: Age Concern.
- Office for National Statistics (1996), *Business Monitor MQ25: Consumers' Expenditure*, March, London: HMSO.
- Slesnick, D. (1992), 'Aggregate consumption and saving in the postwar United States', *Review of Economics and Statistics*, pp. 585–97.

4

Comments on the Two Studies

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I welcome these two papers, and not just because they give a generally clean bill of health to the Family Expenditure Survey (FES). In terms of openness and credibility, it is important that the FES should be critically examined by outside independent researchers. It is also important to get feedback from users and to understand better the way FES data are used outside the Office for National Statistics (ONS) and the Government Statistical Service. These comments can help improve our methods and fieldwork practices: all leading to better data and maintaining or enhancing the reputation of the FES as a rich and reliable data source.

I found the results of grossing up the FES data very interesting. The comparisons in the papers of weighted figures and unweighted (or uniformly weighted) figures show that many of the main figures are little affected by differential weighting. This is, of course, very comforting to those who have used unweighted data over the years. These broad conclusions are similar to those found in a fairly recent internal study which reweighted the data using the inverse of the stratum response rates. This made little difference to the main expenditure and income aggregates.

However, reweighting and grossing-up are important issues and the ONS is not complacent about these rather comforting findings. There is an interdepartmental group looking at grossing up the FES. The intention is

that, in due course, a set of weights will be released with the FES dataset, so that all users can access a common set of weights. We will still be interested in feedback from users about the value of doing this and the behaviour of the weighted data.

Another development to the FES, which ties in with a point in Sarah Tanner's paper, is about spending by children. Hitherto, only those aged 16 and over have completed the two-week expenditure diary. Pocket-money given to children has been recorded as such by the adults and there has been no information about how that money is spent. Since April 1995, we have been collecting information about spending by children. This is collected using a simplified version of the two-week diary, but on a voluntary basis: non-participation by a child does not make the household a non-responding one. The incentive payment to children is £5 instead of the £10 for adults. This innovation seems to be working well. A preliminary look at some of the data shows that children's spending is concentrated in a few areas: for example, sweets and toys.

The time-series aspect of both the papers is particularly important. In many areas, it shows the broad consistency of FES data over time. Many of the deficiencies of FES data — the biases and under-recordings — appear to be reasonably constant over time. This means, as the papers point out, that trends and changes over time can be seen, monitored and analysed. Again, although this is comforting for the analyst, there are lessons for the ONS on areas for improvement; though the consequences for the data of such improvements would be inconvenient for the analyst.

I welcome these papers looking at the expenditure and income components of the FES. I would like to thank the authors for their work. These are important contributions to our understanding of the quality, robustness and reliability of FES data. I am pleased that IFS has been able to hold this meeting to present the results of this interesting work to a wider audience. I would like to thank IFS for a very interesting and enjoyable meeting.

**ONS Comments on Sarah Tanner's Paper
'How much do consumers spend?
Comparing the FES and National Accounts'**

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The Office for National Statistics (ONS) would like to thank Sarah Tanner of the Institute for Fiscal Studies (IFS) for producing this most useful comparative analysis of the Family Expenditure Survey (FES) and National Accounts household expenditure estimates. The conclusions are encouraging but we are not complacent about them. The results raise a number of issues and such comparisons will require ongoing monitoring.

In fact, we have been carrying out very similar comparisons to these in Consumers' Expenditure Branch for many years. This has been done, not primarily to make a comparison between the totals as alternative overall expenditure estimates, but rather as a quality control and source validation technique. As a result, our comparisons have been carried out at a more detailed level but without putting together such a systematic overview as has been done here by Tanner.

In evaluating the meaning of these comparisons, it is important to consider first what consumers' expenditure (CE) is made up of. Box 3.1 in Tanner's paper shows the sources of CE estimates. CE may be thought of as something of a patchwork quilt. For many items, there is a choice of possible sources and methodologies available. Overall accuracy and stability over time are

what determine which particular source and method are chosen for any one component. We aim to make these choices at a fairly detailed level. For some items, there are several sources — for example, food consumption can be determined from retail sales, the FES or the National Food Survey (NFS), and CE chooses the last. For most other goods (including energy items), there is an overlap between retail sales, other sales estimates and the FES, and a variety is chosen. For most services items, though, there is often only one source, the FES.

For each component, then, we make a choice. In practice, that choice seldom changes much over time, although we do aim to validate the choice fairly continuously. At present, the FES contributes approximately 28 per cent of the total CE estimate. Along with food, estimated from the NFS, this makes approximately 40 per cent of the total derived from household surveys. The remainder comes from Retail Sales Inquiries or other sales estimates.

It should be clear, though, that CE is not, like the FES, based on a homogeneous dataset. Also, CE has to conform to international standards, set in law, which the source data are not necessarily following; conceptual adjustments to CE are sometimes required. This means that the link between CE and its sources is often opaque, in direct contrast with the FES which has a single micro-dataset which can be examined directly by researchers.

This brings us to the point about what is actually being compared in these sorts of comparisons, especially when getting down to the more detailed component levels. For example, when a comparison is made between FES and CE estimates for most services, where the FES is actually the main CE source, the differences between the estimates will be the

adjustments made in the National Accounts process. The paper describes some of these but they are worth reiterating. Adjustments may be made to allow for tourist expenditure, for example in the case cited of meals and accommodation, for known incomplete coverage or under-recording, for the institutional population, or for National Accounts balancing adjustments.

The latter point requires some expansion and it is necessary to say something about the way in which the National Accounts are compiled and balanced. CE is but one element in a complete and consistent set of accounts. Except for most recent periods, an input-output framework is used which balances final expenditure, income and output. The identity between these three measures is established for each of 123 industries and commodities. The strength of this approach is that the overall picture must be consistent and coherent. Balancing is achieved by placing adjustments in various components of the matrix, not just in CE, of course. This approach may then be the source of discrepancies between CE and FES estimates.

It is also important not to fall into the 'relativity trap'. While we believe that the balancing process gives us great confidence in the overall accuracy of National Accounts estimates, and indeed macroeconomic policy is based on them, they should not be taken as infallible, especially at the detailed component level. This paper, like most work on the subject, puts the National Accounts estimate in the denominator, creating the aura of a reference standard about it. Shifts in the FES/CE ratio, though, might also be revealing some problem in the consistency of the CE data source or of its treatment in the compilation process. Shifts in the comparative

ratio should therefore stimulate questioning of all possible elements of the comparison.

Researchers with international interests may wish to hear of developments around the European Union. Eurostat, the Statistical Office of the EU, recently ran a task force to consider the use of household budget surveys in national accounts. This has allowed us to gain a better understanding of how other countries tackle similar problems. ISTAT, the Italian National Statistical Office, has carried out some unpublished comparisons of survey / national accounts ratios. These have revealed some problems with the ratios changing somewhat in recent years. The UK is very fortunate, not only in having a reliable survey source that compares reasonably well with the National Accounts, but in having continuous survey data to work with at all. Of the present EU member states, only the UK, Italy, Spain and the Netherlands have any long runs of annual data. In the future, over half of all member states have committed themselves to continuous surveys; however, two of the largest countries — France and Germany — have not at this stage. A number of countries consequently do not use household survey expenditure data in their national accounts at all. The sort of comparisons that we are considering here, based on the presence of continuous annual surveys, are a major factor in allowing the survey data to be used with confidence in the national accounts.

A new development currently being worked on within the ONS is the construction of a Social Accounting Matrix (SAM). An article on the construction of the SAM appears in the September 1996 edition of *Economic Trends*. A SAM attempts to describe sets of fully articulated flows within the

economy, so as to demonstrate whom-to-whom relations. For the household sector, we will be attempting to show how the products of certain industry groups are consumed by, for instance, various family types or income groups. This will require a close match between all the source data inputs. The SAM will be constrained to National Accounts aggregate totals but the family type information will necessarily come from household survey sources. This will require us in future work to look even more carefully into the relationships between the CE and FES datasets.

The relationships set out in Tanner's paper are statistically very important and interesting. We are pleased with the conclusions but do not feel that they suggest any room for complacency. Explaining the levels of and fluctuations in the ratios over time is a difficult exercise with which we will persist. The ONS will be continuing to monitor these ratios closely and on a continuous basis.