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A Comparison of Poverty Rate Estimates Using Expenditure and Income Data

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A COMPARISON OF POVERTY RATE ESTIMATES USING EXPENDITURE AND INCOME DATA

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Report on a comparative study of poverty rate estimates in five EEC countries using income data from the Luxembourg Income Study database and expenditure data from Family Budget Surveys.

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1. Introduction

The debate on whether poverty should be measured in terms of income or consumption is almost as old as the debate on the concept of "poverty" itself. For several reasons, the approach adopted by Eurostat is to use consumption expenditure data from Family Budget Surveys (FBSs) carried out in the EEC member-states in order to derive estimates of poverty rates for the entire population of the corresponding countries and for particular population groups within them. This is, for example, the approach adopted in the study "Poverty in figures: Europe in the early eighties" carried out for Eurostat by the Institute of Social Studies Advisory Service [hereafter ISSAS (1990)]. The objective of the present study is to compare the poverty estimates of that study with poverty estimates derived using the income data of the Luxembourg Income Study (LIS) data base for a number of EEC countries, following the methodology of ISSAS (1990). The present study should be read in conjunction with Hagenaars (1988) [and, to a lesser extent, Smeeding et al (1990)] which discusses the theoretical possibilities and potential drawbacks of carrying out poverty research using the data of the LIS data base. It should be stressed from the outset, that this study is not an attempt to answer the question "should poverty measured in terms of income or consumption?", since this is an issue which cannot be resolved empirically.

The present study is organised as follows. Section 2 discusses methodological issues. Section 3 provides poverty estimates for the entire population of the countries under consideration using both consumption and income data, whilst section 4 provides similar estimates for specific socioeconomic groups within them. Moreover, in these sections an attempt is made to identify the reasons that these sets of estimates may differ. Finally, section 5 concludes the paper.

2. Some notes on methodological issues

The main reason one may be interested in carrying out poverty research is in order to evaluate the welfare position of the most deprived members of the society and suggest efficient poverty alleviation policies. Therefore, a variable which can serve as a reasonably close approximation to the (unobservable) welfare level of an individual or a household should be selected. Standard neoclassical microeconomic theory suggests that, other things being equal, an individual's welfare level is determined in the short-run by his/her levels of consumption and leisure and in the long-run by his/her level of "life-cycle" or "permanent" income [see Deaton and Muellbauer (1980]. These notions of welfare are closely related to the concepts of "full income" and "earnings capacity" suggested, respectively, by Becker (1965) and Garfinkel and Haveman (1977). Taking into account that there are enormous difficulties in evaluating leisure in monetary terms, most empirical poverty studies use either current consumption or current income as an indicator of welfare. Current consumption is usually considered as a better approximation to life-cycle income than current income, because individuals and households tend to save and dissave in different periods of their life-cycles in an attempt to smooth out their consumption in order to maximise their welfare (assuming that welfare

is a concave function of consumption). Within this framework, it can be argued that current consumption is a better indicator of welfare than current income [see Sen (1976a) and Deaton (1980)]. This, of course, does not mean that an individual's consumption does not fluctuate over time. It does so since needs are not evenly distributed over the life-cycle and capital markets may be far from perfect, particularly for the poor. In the latter case, poor households are unable to borrow and their current consumption is determined by their current and not their life-cycle income. Nevertheless, even in this case, current consumption is as good an approximation to life-cycle income as current income. On the other hand, the use of current income instead of current consumption may have some advantages for the purposes of poverty research. Using current income one can avoid classifying as poor households with low recorded consumption which, keeping life-cycle factors constant, have the earnings capacity to finance a higher level of consumption but choose not to do so. Further, Income Surveys tend to record the actual current income of individuals or households, whereas FBSs record the current consumption expenditure of households which is only an approximation to their current consumption. Nonetheless, it should also be noted that it is very difficult to record accurately the incomes of households or persons involved in particular types of economic activity; especially those involved in family business and farming, where proper records of costs and revenues are not always kept.

Ideally, the income concept used in poverty studies should include, apart from net cash income, income in kind provided by the employers and consumption of own production (including home production) as well as an imputed value for non-cash provisions by the government. Similarly, for the purposes of poverty research, the concept of consumption expenditure should include, apart from purchases, consumption of own production, consumption of income in kind, imputed rent for owner-occupied accommodation and an imputed value for the consumption of goods and services provided either freely or at reduced prices by the state. For all the imputations market prices should be used (instead of factory gate prices). Of course, it should be recognised that this is a rather prohibitive list of requirements and such a data set may be very close to being "an economist's pipe dream". In practice, there are very few (if any) data sets covering the entire population of any country in the world which fulfil these requirements. Most of the data sets used for quantitative poverty analysis were not collected with the objective of poverty research in mind and, as a result, they do not contain all the pieces of information mentioned above. Further, it is extremely difficult to evaluate in monetary terms some of the components of income and consumption expenditure mentioned above (for instance, value of government services provided freely or at reduced prices and home production).

Let us turn, now, to the particular data sets from which the poverty estimates reported in the present study are derived. The LIS data base brings in one location the primary data of Income Surveys from different countries and presents them in a form that allows international comparisons. It is a researcher-oriented project and, since micro-data are involved, the flexibility offered to the researcher is enormous. However, during the period of the execution of the empirical part of this study (November 1990), only six of the twelve EEC member-states were represented in LIS with data

sets covering their entire population in the late seventies or the eighties. These countries are (survey years in parentheses): France (1979), Germany (1984), Italy (1986), Luxembourg (1985), the Netherlands (1983) and the United Kingdom (1979). Further, in LIS there are two more data sets whose samples do not cover the entire population of the relevant countries [France (1981) and Germany (1981)] and one data set which covers the entire population of an EEC member-state, but outside the reference period of the ISSAS (1990) report [United Kingdom (1969)]. The sources of these data sets are rather heterogeneous. The French data set is derived from an income tax survey, the data sets for Germany and Luxembourg are based on yearly waves of household panel studies, the Italian data set is an income survey, the Dutch data set comes from an enquiry into the use of public services and the British data set is derived from a family expenditure survey. These six LIS data sets will be used for the derivation of poverty estimates in the next two sections. Since Luxembourg is the only EEC member-state not covered in ISSAS (1990), no comparisons of the LIS estimates with the estimates of that report can be made. Instead, a detailed analysis of measurement and decomposition of poverty in Luxembourg is provided in an Appendix. It should be noted that, until recently, a weakness of the LIS data base was the lack of detailed documentation. However, such a documentation is available now [Hackauf et al (1990)].

The FBSs-based poverty estimates which are reported in the next two sections are reproduced from ISSAS (1990). They have been derived after fitting the distribution function corresponding to the beta-Lorenz curve suggested by Teekens (1987) to the grouped decile consumption expenditure data provided by the National Statistical Institutes of the EEC member-states to Eurostat. In ISSAS (1990) there are estimates of poverty rates for both the entire population and particular population groups for all EEC countries except Luxembourg in the late seventies and the eighties. For some countries estimates for two survey years are available while for others there are estimates for only one year. The fact that (with two exceptions) no primary data were provided to Eurostat and used in ISSAS (1990), restricts substantially the ability for analytical poverty research using these data. No detailed documentation for these FBSs is available at the moment but some information about sampling procedures and definitions can be found in the publications of Eurostat "Family Budgets: Comparative Tables". From the point of view of homogeneity, it seems that despite the fact that the FBSs are not completely harmonised across EEC member-states yet, the data used in ISSAS (1990) are far more homogeneous than the LIS data in terms of sampling procedures employed for their collection and definitions of variables [in fact, an attempt to harmonise FBSs in the EEC member-states is currently under way; see Verma (1989) and Ménard (1990)]. Nonetheless, the reader should be reminded that for institutional and historical reasons the definitions of particular variables may differ across countries (for example, the definitions of "unemployed", "secondary education graduate", etc).

Regarding their population coverage, it seems that the sampling frames of both the LIS data sets and, to a lesser extent, the FBSs tend to exclude some of the most marginalised segments of the population from their samples (homeless, persons living in institutions and, some surveys, households

headed by foreign nationals). Of course, these exclusions are likely to have serious consequences for the results of quantitative poverty research. Due to their nature, some LIS data sets tend to exclude even larger numbers of economically vulnerable population members (for instance, persons and households not filling tax returns in the French LIS data set). Nevertheless, population weighting schemes provided by the institutions which carried out the surveys are also available in the LIS data sets for all the countries included in the present study apart from the United Kingdom. The use of these weighting schemes can make the samples of the corresponding surveys more representative of the entire population of these countries. However, as Hagenaars (1988) points out, some of these weighting schemes are not designed in such a way as to ensure representativity of the sample, but to ensure that certain amounts are equal to the corresponding totals at the national level. As it is demonstrated below, these schemes may have a significant impact on the results of poverty research; particularly on the results of identification of groups in risk and on poverty decomposition analysis. It is not clear whether a weighting procedure making the samples of the FBSs representative of the most recent Population Censuses of the Community member-states was used in order to obtain the grouped estimates of decile consumption expenditure of the FBS data.

An attempt to test the representativity of the samples of the (weighted) LIS data sets and FBSs used in this study with respect to the corresponding data of the national Population Censuses around 1980 is provided in Table 1. The Censuses data reported there refer to the population shares of the private households in each country and they are from tables 15 and 16 of Eurostat (1988). Unfortunately, the only grouping factors used in Tables 4-8 of section 4 for which there are data available in this publication are "household size" and "type of household". No clear picture emerges from the top panel of this table. For example, in the cases of Germany and the Netherlands larger households ("5 members" and "6 members or more") are under-represented in the samples of both the FBS and the LIS data set. The evidence is exactly the opposite for France where large households are over-represented and "1 member" households under-represented in both samples. The last row of this panel of the table reports the mean absolute error for the six groups, which can provide a rough test of the representativeness of the corresponding samples. In the cases of Italy and the United Kingdom this error is lower in the FBS data (even though in the latter case this is not evident in Table 1 due to rounding), whilst in the cases of France, Germany and the Netherlands it is lower in the (weighted) sample of the LIS data base. With few exceptions, the relevant population shares of the two sets of samples do not appear to be dramatically different than the shares of the corresponding Population Census.

In the second panel of Table 1 the FBS and LIS samples are grouped by "type of household" and the relevant population shares are compared with the population shares derived from the tables of Eurostat (1988). Due to the fact that in Eurostat (1988) and ISSAS (1990) a child is defined as a household member up to the age of 14 whereas in the standardised LIS data a child is defined as a person up to the age of 18, the corresponding populations shares are not strictly comparable. Logically, one would expect that the population shares of the groups "couple + 1 child", "couple + 2

TABLE 1. A COMPARISON OF POPULATION SHARES REPORTED IN POPULATION CENSUSES AROUND 1980 WITH THE RELEVANT SHARES OF THE FBS AND LIS DATA

	France			Germany			Italy			Netherlands			United Kingdom		
	Pop. Cens.	FBS data	LIS data	Pop. Cens.	FBS data	LIS data	Pop. Cens.	FBS data	LIS data	Pop. Cens.	FBS data	LIS data	Pop. Cens.	FBS data	LIS data
Household size															
1 member	24.6	21.5	23.1	30.8	31.6	32.2	17.9	17.9	13.2	22.8	26.3	22.3	21.7	20.7	23.9
2 members	28.5	29.3	28.5	28.7	30.5	28.8	23.6	23.2	23.6	29.5	26.2	30.3	31.7	32.3	31.3
3 members	18.8	19.0	18.8	17.5	17.6	17.7	22.1	22.2	24.3	15.5	16.1	15.9	17.1	16.8	15.9
4 members	16.1	16.8	16.9	14.5	13.7	14.4	21.5	21.7	24.9	20.3	20.1	21.2	18.1	19.0	18.1
5 members	7.4	8.1	7.6	5.7	4.8	5.4	9.5	9.6	9.8	7.9	7.1	7.6	7.4	8.0	7.3
6 members or more	4.6	5.4	5.1	2.8	1.9	1.8	5.4	5.5	4.2	3.9	3.8	2.7	3.9	3.2	3.6
mean absolute error		1.1	0.5		0.9	0.6		0.2	2.0		1.4	0.7		0.7	0.7
Type of household [1]															
one person, less than 65	13.2	9.3	10.9	16.3	16.5	17.9	8.1	8.7	5.3	13.7	17.5	12.4	9.0	8.9	11.6
one person, 65 or more	11.4	12.2	12.2	14.5	15.1	14.3	9.8	9.2	7.9	9.1	8.8	9.9	12.7	11.8	12.3
couple, no children	27.4	24.3	27.3	27.6	25.3	27.8	22.9	18.0	23.1	28.8	22.4	29.0	30.9	25.8	29.9
couple + 1 child	9.7	15.9	11.2	8.7	15.5	9.2	10.2	9.2	12.1	7.3	9.6	8.6	7.1	6.7	9.1
couple + 2 children	9.2	14.7	12.0	6.7	12.9	8.5	10.4	8.6	12.6	12.4	15.8	15.2	10.0	10.0	13.5
couple + 3 children	3.3	6.6	4.5	1.6	4.1	2.3	2.8	2.0	3.1	3.3	4.6	4.1	2.9	3.0	4.7
couple + 4 chil. or more	1.1	4.0	2.3	0.4	1.3	0.3	0.8	0.5	0.6	0.8	1.6	0.8	0.9	0.5	1.8
mono-parental household	1.8	4.7	2.0	1.5	3.9	1.4	1.1	0.9	1.0	1.5	1.2	2.6	1.9	4.0	3.3
other	22.8	8.2	17.6	22.5	5.4	18.3	33.5	42.9	34.2	23.1	18.5	17.4	24.6	29.3	13.7
mean absolute error		5.4			4.9			2.5			2.9			1.7	

1. The definition of a "child" used in the LIS data is different than that of the Population Censuses and the FBS data.

children", "couple + 3 children", "couple + 4 children or more" and "mono-parental household" of the FBSs (and the Population Censuses) to be lower than the corresponding shares of the LIS data. For the same reasons, the population share of the group "other" should be lower in the LIS data sets than in the FBSs. Surprisingly, it turns out that in the cases of France, Germany and the Netherlands the evidence of this panel of Table 1 points to the opposite direction. This raises questions regarding the representativity of either one or both samples. Careful inspection of the evidence of this panel reveals that the population shares of the groups "couple + 1 child", "couple + 2 children", "couple + 3 children", "couple + 4 children or more" and "mono-parental household" of the LIS data are almost always lower than those of the Population Censuses, as one would anticipate. Similarly, the LIS population share of the group "other" is almost always lower than that of the corresponding Population Census. Further, the evidence of the lower panel of Table 1 suggests that, with the exception of the United Kingdom, the population shares of the FBSs are substantially different than those of the Population Censuses. More specifically, in the cases of France, Germany and the Netherlands households with children are over-represented in the FBSs samples (in the cases of France and Germany the over-representation is very significant), while the group "other" (and the group "couple, no children" in the case of the Netherlands) is under-represented. In the Italian FBS the evidence is exactly the opposite. The last row of Table 1 reports the corresponding mean absolute errors of the FBSs (no such errors are reported for the LIS data sets, since the definitions of the Population Censuses and the LIS data differ). Some of these errors are very large; particularly those for France and Germany. The evidence of the lower panel of Table 1 may imply that the samples of the FBSs used in ISSAS (1990) were not weighted in order to become representative of the total population and that such a weighting is more than essential in the future.[1] On the contrary, the weighted LIS samples seem to represent the entire population of their countries rather satisfactorily. Nevertheless, it would be very interesting to have information on some other grouping factors in order to test the representativity of the two samples (for example, socio-economic category of the household head, economic situation of the household members, etc).

The concept of income used in this study - before adjustment for household size and composition - is "disposable household income" (the standardised DPI variable of the LIS data base; hereafter "income"). It includes income from labour, capital, self-employment, pensions and transfer payments net of taxes and mandatory contributions. Careful inspections reveals that its components vary slightly across the countries of our sample. Further, this concept does not include some of the components of the "ideal" concept of income for poverty research mentioned earlier, since information on these components does not exist in the LIS data files (most notably, non-cash provisions by the government and consumption of own production). Similarly, although no detailed documentation is

1. It should be noted that the grouping of Table 16 of Eurostat (1988) refers to "two adults + children", whereas that of the FBSs data to "couples + children". Logically, the population shares of "two adults + children" must be at least as large as those of "couples + children". Therefore, the FBS samples of France, Germany and the Netherlands may be even less representative of the entire population than the lower panel of Table 1 suggests.

available, it seems that the content of the term "consumption expenditure" used in ISSAS (1990) - consumption of purchased commodities, plus consumption of own production and imputed rent for owner-occupied accommodation - varies across countries and is not always very close to the "ideal" concept of consumption expenditure for the purposes of quantitative poverty analysis cited above.

In the next two sections, when poverty estimates are derived using the LIS data an attempt is made to be as close as possible to the methodology followed in ISSAS (1990). Following ISSAS (1990), the distributions used are distributions of households. Since living in a household involves economies of scale and the needs of adults and children differ, some standardisation is required in order to be able to compare the welfare levels of households with different compositions. This standardisation is provided by the use of household equivalence scales. Several such scales can be found in the literature. For the purposes of the present study, the household equivalence scales used in ISSAS (1990) are utilised. These scales assign a weight of 1 to the first adult in the household, a weight of 0.7 to each subsequent adult and a weight of 0.5 to each child in the household. These scales are also used by the OECD and have been used in earlier research on poverty in the EEC [O'Higgins and Jenkins (1989)]. The distributions used are distributions of equivalent household expenditure [ISSAS (1990)] and equivalent household income [LIS data]. In order to derive these distributions, the total household expenditure/income is divided by the number of equivalent adults in the household. It should be stressed that the results of poverty measurement and decomposition are likely to be influenced by the choice of the particular equivalence scales used. Although there is no consensus regarding the size of the "correct" household equivalence scale, these particular scales are relatively large in comparison with most other household equivalence scales used in empirical research [see, for example, Kapteyn and van Praag (1976), Hagenaars (1986) and Buhmann et al (1988)]. Further, as noted earlier, a child is defined as a person up to the age of 14 in ISSAS (1990) and as a person up to the age of 18 in the standardized LIS data files. Therefore, the household equivalence scales used differ accordingly. This difference should be kept in mind, particularly when the results of poverty measurement and decomposition by demographic characteristics of the population are presented. Moreover, it can be argued that it may not be very appropriate to base the quantitative poverty analysis on household distributions because such a methodology implicitly assigns equal weights to a small and a large household in poverty. An alternative could have been to calculate the level of equivalent household expenditure/income and then assign it to each household member (distribution of expenditure/income per equivalent adult).

The last methodological issue concerns the level of the poverty lines to be utilised. Several methods for constructing poverty lines can be found in the literature [see, for example, Orchansky (1965), Kilpatrick (1973), Goedhart et al (1977), van Praag et al (1980, 1982) and Hagenaars (1986)]. In the sections of the ISSAS (1990) report corresponding to sections 3 and 4, an explicitly "relativist" approach is adopted and two poverty lines are used. They are defined as 40% and 50% of the mean equivalent household expenditure of the entire population of a country in the survey year under consideration [nevertheless, an attempt to use an "absolutist" notion of poverty is also employed in

ISSAS (1990) when Community-wide poverty lines are calculated and when intertemporal poverty changes are examined]. Following ISSAS (1990) the poverty lines for the LIS-based poverty estimates are defined as 40% and 50% of the mean equivalent household income of the countries under examination. Obviously, as noted in ISSAS (1990), these poverty lines are rather arbitrary and do not correspond to any "objective" (subsistence level determined by experts) or "subjective" (poverty threshold evaluated by the population members) notions of the poverty line. Moreover, if such lines are used for cross-country or inter-temporal comparisons the resulting indices are, effectively, measures of the level of inequality in the distribution of expenditure/income focusing at the bottom of the distributions rather than poverty measures. This point should be kept in mind when national poverty rates are compared in section 3.

In the next two sections an attempt is made to compare poverty estimates reported in ISSAS (1990) with corresponding poverty estimates derived using LIS data for as close survey years as possible. As a result, poverty estimates from ISSAS (1990) for the following countries and years are reproduced: France (1979), Germany (1983), Italy (1985), the Netherlands (1985) and the United Kingdom (1981). In ISSAS (1990) four types of estimates are reported: (a) estimates of national poverty rates using national poverty lines, (b) estimates of national poverty rates using Community-wide poverty lines, (c) estimates of poverty rates for particular population groups using national poverty lines, and (d) estimates of intertemporal changes of national poverty rates. Since the LIS data base currently contains only one data set covering the entire population in the late seventies and the eighties for each of the six EEC countries mentioned above, no EEC-wide poverty line can be calculated and no intertemporal poverty trends can be computed. Therefore, estimates of the types (b) and (d) cannot be derived using the LIS data and we are confined to comparing estimates of types (a) and (c) with the corresponding estimates of ISSAS (1990).

3. National poverty estimates

Estimates of poverty rates (proportion of households or persons below the poverty line) for the entire population of France, Germany, Italy, the Netherlands and the United Kingdom are reported in Table 2. In general, using both expenditure and income data, (relative) poverty based on national poverty lines appears to be higher in France, Italy and the United Kingdom than in Germany and the Netherlands. However, their relative ranking is affected by the use of income or expenditure data (as well as by the use of households or persons as reference units). Using expenditure data, poverty appears to be higher in France than in Italy irrespective of the level of the poverty line used (40% or 50% of the national mean expenditure) or the reference unit (household or person). They are followed by the United Kingdom, Germany and the Netherlands (the only exception being that the poverty rate among persons in the Netherlands is higher than that of Germany when the 50%-poverty line is used). Using income data, the highest poverty rates are recorded in Italy, followed by France. The ranking of Germany, the Netherlands and the United Kingdom depends on the poverty line and the reference

TABLE 2. PERCENTAGE OF HOUSEHOLDS, PERSONS, CHILDREN AND ELDERLY BELOW 40% AND 50% OF THE NATIONAL MEAN EQUIVALENT CONSUMPTION EXPENDITURE AND INCOME IN FIVE EEC COUNTRIES

Country (Reference year)	Poverty line as 40% of National average								Poverty line as 50% of National average							
	Households		Persons		Children		Elderly		Households		Persons		Children		Elderly	
	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
France (1979/1979)	10.4	6.8	10.7	8.3	10.7	9.8	18.9		18.0	14.2	19.1	16.5	20.7	20.5	30.4	
Germany (1983/1984)	3.8	4.3	4.2	4.3	5.9	6.0	6.0	4.4	9.2	10.3	9.9	11.0	13.7	14.8	28.2	12.8
Italy (1985/1986)	8.7	8.1	9.3	9.9	9.0	12.1	12.8	6.5	14.7	15.8	15.5	18.2	15.1	22.0	20.0	14.4
Netherlands (1985/1983)	2.5	6.4	3.6	7.2	5.5	5.4	1.6		7.9	10.0	11.4	12.2	17.7	12.5	5.2	
United Kingdom (1981/1979)	6.3	4.3	6.5	4.3	9.1	5.8	10.8		14.1	14.9	14.6	12.8	20.1	13.4	23.8	

The first reference year is the year of the Family Budget Survey and the second the year of the Income Survey

C: Consumption expenditure

I: Income

unit.

If consumption fluctuates less than income over the life-cycle of a person or a household, as the life-cycle hypothesis suggests, ceteris paribus in a particular point in time the variance of a country's income distribution must be higher than the variance of the corresponding distribution of consumption expenditure. This implies that, other things being equal and employing the particular type of relativist poverty lines used in this study, poverty rates derived using income data should be higher than poverty rates derived using expenditure data. This prediction is only partly confirmed by the findings of Table 2. In general, the expenditure-based poverty rates of Germany, Italy and the Netherlands are lower than the corresponding income-based rates. The reverse is true for France and the United Kingdom. In fact, the recorded expenditure-based and income-based poverty rates do not differ substantially in the cases of Germany, and Italy (with the exception of the poverty rate among persons when the 50%-poverty line is used in the latter country) but they do so in the cases of the Netherlands, France and, to a lesser extent, the United Kingdom. For instance, when the 40%-poverty line is used, the poverty rate among households (persons) in the Netherlands is only 2.5% (3.6%) using expenditure data, whereas the corresponding figure using income data is 6.4% (7.2%).

Some tentative suggestions can be offered regarding the reasons that the expenditure-based estimates are higher than the corresponding income-based estimates in France and the United Kingdom. In the latter case the income data refer to 1979 whereas the expenditure data to 1981. Between these two years dramatic macroeconomic policy changes took place in the United Kingdom. Taking into account that some of these changes involved cuts in the transfer payments and some others caused a sharp rise in unemployment, one would expect inequality and poverty to increase between 1979 and 1981. Hence, the fact that the expenditure-based and income-based poverty estimates of Table 2 for the United Kingdom do not seem to conform with the predictions of the life-cycle hypothesis may be attributed to the difference in their reference period. The corresponding differences in the French estimates cannot be attributed to differences in the sampling period since both income and expenditure data refer to 1979. However, although the expenditure data come from a FBS covering the entire population, the income data come from the state income tax files and do not cover households which did not fill tax returns. Since most of these households are likely to be located close to the bottom of the income scale, this omission probably results to an under-estimation of the "true" poverty rate. In addition, it is likely that there was considerable under-reporting of income from sources other than wages, salaries and pensions [Hackauf et al (1990, p. 63)]. Since in most countries disproportionately many households receiving property income are located close to the top of the distribution and property income is under-reported, the poverty line used in the French income-based poverty estimates may be lower than the "true" poverty line and, hence, the corresponding poverty rates may be biased downwards.

Table 2 also reports estimates of the proportions of children and (for Germany and Italy) elderly - that is, persons aged over 65 - below the poverty line. A comparison of these proportions

with the corresponding poverty rates for persons can provide an indication about the validity of the assertion that children and elderly are particularly vulnerable to being poor in EEC countries. The results for children using income data suggest that this assertion is correct. Irrespective of the poverty line used, the poverty rates for children are always higher than the corresponding rates for the entire population in all the countries under examination. The relevant expenditure-based estimates reveal a similar although not so clear pattern. It should be reminded though that the expenditure-based estimates are not strictly comparable with the corresponding income-based estimates since the definition of a child differs in the two sets of estimates. Regarding the elderly, the income-based estimates suggest that the above assertion is correct for Germany but not for Italy (no such estimates can be derived for France, the Netherlands and the United Kingdom using the LIS data). The corresponding expenditure-based estimates suggest that this assertion is correct for all the countries under consideration apart from the Netherlands. Nevertheless, it should be noted that the results regarding both children and elderly depend to a large extent on the equivalence scales used. If it was assumed that the needs of a child are lower in comparison to the needs of an adult than those implied by the equivalence scales used in this study [see, for example, the size of the relevant scales estimated in Muellbauer (1977), Deaton et al (1989) and Tsakloglou (1991)], the denominator for the calculation of the equivalent household expenditure/income of the households with children would be lower and, hence, their equivalent income higher and fewer of them would fall below the poverty line. Similarly, if it was assumed that the needs of an elderly person are lower than the needs of a working-age adult, a lower weight would be attached to the equivalence scale of the elderly and fewer of them would be classified as poor [see, for instance, the scales suggested in Buce and Salathe (1978) and Tedford et al (1986)].

Table 3 reports the absolute number of households and persons in poverty in 1980 or 1985 using the expenditure-based and income-based poverty estimates of Table 2 under the (strong, in some cases) assumption that the distributions of expenditure and income remained unchanged between the corresponding survey years and 1980 or 1985. The total number of households or persons in poverty in the five countries using expenditure-based and income-based estimates appears to be strikingly similar, particularly when the 50% poverty line is used; 11,780 households or 35,154 persons using expenditure-based estimates and 11,789 households or 35,075 persons using income-based estimates. However, although the two comparable sets of estimates are not dramatically different in the case of Germany, they are so in the case of France. For the rest of the countries the differences depend on the level of the poverty line and the reference unit.

Before proceeding to the presentation of poverty estimates for particular population groups, two points should be raised. The first concerns the effects of weighting. Since, the instructions to the LIS users recommend the use of weighting schemes,[1] the income-based estimates of Table 2 and the

1. "We strongly recommend that all statistical operations performed using the LIS databases use the weighting variable HWEIGHT", *Instructions for preparing and submitting a job request to the LIS system*, (1989, p. 5).

TABLE 3. ABSOLUTE NUMBER OF HOUSEHOLDS AND PERSONS BELOW 40% AND 50% OF THE NATIONAL MEAN EQUIVALENT CONSUMPTION EXPENDITURE AND INCOME IN FIVE EEC COUNTRIES AROUND 1980 AND 1985

Country (Reference year)	40%-poverty line				50%-poverty line			
	Households		Persons		Households		Persons	
	C	I	C	I	C	I	C	I
France (1980)	2009	1314	5757	4466	3503	2763	10313	8909
Germany (1985)	949	1074	2590	2621	2306	2582	6074	6749
Italy (1985)	1628	1516	5301	5643	2760	2967	8880	10427
Netherlands (1985)	129	330	515	1030	403	510	1661	1778
United Kingdom (1980)	1258	859	3678	2433	2808	2967	8226	7212

(The figures represent thousands of households or persons)
C: Consumption expenditure
I: Income

rest of the tables in section 3 have been derived using the suggested weighting procedure. As noted in section 2, the use of these weights is likely to affect the results of quantitative poverty research and it is not clear whether the original FBSs data samples were reweighted. For this reason, estimates of national poverty rates and the corresponding poverty lines are reported in Appendix 1 along with the relevant sample sizes before and after weighting the LIS samples. If the weighted poverty line is higher than the corresponding unweighted line, high income groups were under-represented in the original sample. This is the case of Germany and the Netherlands, whereas in France, Italy and Luxembourg the low income groups were under-represented in the original sample.[1] The evidence of Appendix 1 suggests that the use of weights does not have a very significant impact on the estimates of the poverty lines and aggregate poverty rates in the cases of Germany, Italy, the Netherlands and Luxembourg. The case of France, though, is completely different. The weighted poverty lines and poverty rates are considerably lower than the corresponding weighted ones. In fact, the unweighted poverty rates of Appendix 1 for France are very similar to those of ISSAS (1990) which are reproduced in Table 2. However, the main effect of the use of weights is likely to be on the identification of high-poverty groups and their contribution to aggregate poverty. An example of this effect is presented in

1. The results of poverty analysis for Luxembourg using the LIS data are reported in Appendix 4. As noted in section 2, no weights are available for the United Kingdom in the LIS data base.

Appendix 2, using the methodology described in the next section. In this example the LIS data for France (1979) are used and the population is grouped according to the type of household. With respect to the population shares, one group is seriously under-represented in the original sample ("one person, 65 or more") and another over-represented ("other"). Similarly, the ratio of the poverty rate of some groups over the national poverty rate (relative poverty rate) is considerably lower/higher in the unweighted than in the weighted sample ("mono-parental household"/"couple, no children"). Finally, and most importantly from a policy point of view, as a result of the above factors the contribution to aggregate poverty of some groups is overstated ("couple, no children") whilst that of other groups is seriously understated ("one person, 65 or more", "one person, less than 65").

The second point that should be raised concerns the distribution used. The estimates of poverty rates for persons reported in Table 2 refer to the percentage of persons living in households which fall below the poverty line defined as 40% or 50% of the mean equivalent expenditure/income of the distribution of expenditure/income per equivalent household. As noted in section 2, an alternative and, perhaps, more consistent approach would be to assign the value of the equivalent expenditure/income to each household member and then derive the poverty lines as proportions of the mean of the distribution of income/expenditure per equivalent adult. The latter approach can be considered as more consistent since it assigns equal weights to each person for the derivation of the poverty lines, while the former gives equal weights to each household irrespective of its size. The results can be very different using these approaches. The fact the LIS data base contains primary data allows a comparison of poverty rates using these approaches. The relevant estimates are reported in Appendix 3. What may seem striking with these estimates, at least at first sight, is that the estimated proportions of persons living in poverty according to the poverty lines derived from the distribution of income per equivalent household are always higher than the corresponding proportions according to the poverty lines derived using the distribution of income per equivalent adult. This is due to the fact that in all the reference countries a negative relationship can be observed between household size and equivalent income. As a result, when the distribution of income per equivalent adult is used instead of the distribution of income per equivalent household, relatively more reference units appear close to the bottom than close to the top of the distribution and the mean of the new distribution is lower than the mean of the old one.

4. Identification of poverty groups

In this section poverty estimates for specific socioeconomic groups of the countries under consideration are reported, using expenditure and income data and employing the 50%-national poverty lines. For this purpose, following ISSAS (1990), the population of each country is grouped into mutually exclusive and exhaustive groups using eight alternative grouping factors. These factors are: type of household, household size, economic situation of household members, as well as socio-economic category, age, sex, educational attainment and economic activity of the household head. As

in section 3, the expenditure-based estimates are reproduced from ISSAS (1990), while the income-based estimates are derived using the data of the LIS data base. If the grouping of the population according to any particular factor is not possible, because the corresponding variable does not exist in the relevant source, the corresponding space in the tables is left blank. The grouping of the population according to each factor is that of ISSAS (1990). If an identical grouping of the population is not possible using the LIS data, a grouping as close as possible to that of ISSAS (1990) is presented and an explanation is given in a footnote in the relevant table. The codes on the left of the tables are those of ISSAS (1990).

The results of poverty identification are reported in Tables 4-8. Four types of estimates are presented in each of these tables: the population share of the group, that is the total number of households in the group over the total number of households in the survey; the poverty rate of the group, that is proportion of households in the group with equivalent expenditure/income less than half the national mean equivalent expenditure/income; the relative poverty rate of the group, that is the ratio of the poverty rate of the group over the national poverty rate; and the (percentage) contribution of the group to the aggregate poverty, which is equal to the product of the relative poverty rate by the population share of the group. Following ISSAS (1990) the groups with poverty rates between 50% and 100% higher than the national average (relative poverty rate between 150 and 200) will be called "risk groups" and groups with poverty rates over 100% higher than the national average (relative poverty rate over 200) will be called "high risk groups". Estimates of the population share, poverty rate and relative poverty rate of each group using FBSs data are reported in ISSAS (1990). The corresponding contribution of each group to aggregate poverty - which is very important from a policy point of view, since it is essential for the design of poverty alleviation policies - was calculated using the information reported in ISSAS (1990). It should be noted that in ISSAS (1990) no poverty rates were estimated if the relevant group was represented in the national sample by less than 50 households. No such restriction was applied to the LIS-based estimates.

Some differences in the results of poverty identification and decomposition using expenditure and income data can be expected on a priori grounds. If the postulates of the life-cycle and permanent-income hypotheses are correct, households and persons are expected to save and build up their assets during their working lives and dissave and run down their assets either in the later stages of their lives when they are out of the labour market or during periods of unforeseen hardship (eg unemployment). Further, if the capital markets function relatively well, individuals are expected to borrow in the early stages of their life cycles and repay their loans in later stages when they receive higher incomes. As a result of these factors, ceteris paribus, one can expect the relative poverty rates of the groups of households headed by persons actively participating in the labour market to be lower using income data. Similarly, it can be anticipated that the relative poverty rates of households headed by very old, very young and unemployed persons would be lower using expenditure data. Further, if the population shares of these groups are similar in the corresponding LIS and FBS data sets, equivalent differences can be expected to appear in the percentage contributions of these groups

to aggregate poverty.

Before proceeding to a presentation and discussion of the results, two preliminary remarks are required. Firstly, since the main objective of this section is to provide a comparison of poverty identification results using expenditure and income data, the following discussion will focus mainly on the comparison of relative poverty rates, population shares and contributions to aggregate poverty. The group poverty rates reported in columns (2) and (6) of Tables 4-8 are interesting, but since the corresponding national poverty rates differ, they are not very useful for the purposes of poverty identification. Secondly, since the definition of a child used in ISSAS (1990) is not identical to that used in the LIS data, some of the respective poverty identification and decomposition results in the second panels of Tables 4-8 where the grouping factor is the "type of household" are not comparable.

4.1. France

The first set of comparative poverty estimates for population groups using expenditure and income data is that for France, which is reported in Table 4. The group population shares in columns (1) and (5) do not differ substantially, with one exception. When the population is grouped according to the "economic situation of the household members" the population share of households where the head, the spouse and at least another member are economically active is considerably higher in column (5) than in column (1). The corresponding shares of the groups "only head economically active" and "head and spouce economically active" are higher in column (1) than in column (5). This discrepancy is very large and is, probably, due to different definitions of "economically active person" used in the corresponding surveys. Further, as noted earlier and contrary to what was expected, the population shares of households with children are higher in column (1) than in column (5).

Turning to the identification of groups in risk or high risk, the results are relatively different when expenditure and income data are used. Using income data, three high risk groups are identified. These groups are households headed by farmers or agricultural workers, couples with four children or more and households with six members or more (obviously, there is a considerable overlapping between the last two groups). The last two groups are classified as groups in risk using the expenditure data, as well. However, regarding the group of households headed by farmers or agricultural workers, the expenditure-based poverty rate is only slightly above the national average, whereas, the corresponding income-based rate is over four times larger than the national average.[2] This discrepancy is, probably, due to the particular definition of income used in the income survey. As noted earlier, the income data for France used in this study come from income tax files. A large part of the income of farmers and agricultural workers is likely to be income in kind either from their own production or from the production of their employer, and this income is not taxable. However, when

2. Note also that using the LIS data and the 50%-national poverty line, almost 60% of the households of the group are classified as poor.

TABLE 4. IDENTIFICATION OF POVERTY GROUPS: FRANCE

Code	Socio-economic group	Poverty measured in terms of: Consumption expenditure (1979) — Popul. share (1)	Poverty rate (2)	Contrib. to aggr. poverty (3)	Relative poverty rate (4)	Income (1979) — Popul. share (5)	Poverty rate (6)	Contrib. to aggr. poverty (7)	Relative poverty rate (8)
1100	Socio-economic category of the household head [1]								
1101	manual worker (ind./serv.)	24.8	16.6	22.9	92	26.4	16.5	30.7	116
1102	non-manual worker	29.0	5.4	8.7	30	29.9	4.1	8.6	29
1103	self-employed (ind./serv.)	6.6	12.2	4.5	68	8.2	13.1	7.6	92
1104	farmer/agricultural worker	5.3	21.3	6.2	118	4.3	59.9	18.1	423
1105	unemployed	2.1	26.2	3.1	145				
1199	other	32.1	30.7	54.7	170	31.2	15.9	35.1	112
1200	Type of household								
1201	one person, less than 65	9.3	10.7	5.5	59	10.9	13.0	10.0	92
1202	one person, 65 or more	12.2	37.6	25.5	208	12.2	17.6	15.2	124
1203	couple, no children	24.3	15.2	20.5	84	27.3	8.2	15.7	58
1204	couple + 1 child	15.9	9.4	8.3	52	11.2	9.5	7.5	67
1205	couple + 2 children	14.7	11.9	9.7	66	12.0	13.9	11.9	98
1206	couple + 3 children	6.6	19.1	7.0	106	4.5	15.2	4.8	107
1207	couple + 4 childr. or more	4.0	32.3	7.2	179	2.3	34.1	5.6	241
1208	mono-parental household	4.7	20.9	5.5	116	2.0	23.8	3.3	168
1299	other	8.2	23.7	10.8	132	17.6	21.0	26.1	148

(continued)

1. In columns (5)-(8) group 1105 is included in group 1199.

Code	Socio-economic group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1300	Household size								
1301	1 member	21.4	26.2	31.1	145	23.1	15.5	25.2	109
1302	2 members	29.3	16.5	26.9	91	28.5	8.6	17.3	61
1303	3 members	19.0	11.6	12.2	64	18.8	12.9	17.1	91
1304	4 members	16.8	12.9	12.0	72	16.9	14.7	17.6	104
1305	5 members	8.1	18.2	8.2	101	7.6	17.7	9.6	125
1306	6 members or more	5.4	32.5	9.8	180	5.1	36.6	13.2	258
1400	Economic situation of the household members								
1401	only head econ. active	29.3	15.6	25.4	87	24.4	22.4	38.6	158
1402	head and spouse econ. act.	28.6	7.8	12.4	43	24.7	3.9	6.9	28
1403	head spouse and others ac.	4.3	13.0	3.1	72	15.6	13.0	14.4	92
1404	other	37.8	28.2	59.2	157	35.3	16.2	40.2	114
1500	Age group of the household head								
1502	aged less than 25	4.1	8.9	2.0	49	3.5	14.5	3.6	102
1503	aged 25-44	36.9	11.4	23.4	63	36.3	12.0	30.7	85
1504	aged 45-64	32.3	15.9	28.5	88	34.8	17.3	42.7	123
1505	aged over 64	26.7	31.2	46.3	173	25.3	12.9	23.1	91
1700	Sex of the household head								
1701	male	78.3	15.9	69.2	88	79.0	13.2	73.8	93
1702	female	21.7	25.8	31.1	143	21.0	17.7	26.2	125
1800	Educational attainment of the household head								
1801	none	31.1	31.3	54.1	174				
1802	primary	24.6	19.9	27.2	110				
1803	secondary	36.8	8.7	17.8	48				
1804	higher	7.0	1.8	0.7	10				

this income is consumed it is recorded as imputed consumption expenditure in the FBSs. Therefore, using the income data many households of this group are classified as poor whereas using expenditure data they are above the poverty line. Using the expenditure data there is only one group classified as "high risk"; households with one member aged 65 or more - relative poverty rate: 208. The corresponding rate using the income data is only 124. Naturally, there is also a substantial difference in the relative poverty rates of the group of households headed by persons "aged over 64"; relative poverty rates: 183 using expenditure data, 91 using income data. These results are contrary to the predictions of the life-cycle hypothesis.

Further, in Table 4 and the subsequent tables an inverse-U relationship can be detected between relative poverty rate and household size. In fact, the poverty rates of the group "6 members or more" are always substantially higher than the national poverty rate, irrespective of whether expenditure or income data are used. To a large extent, this is a consequence of the particular equivalence scales used in this study. If it was assumed that the household economies of scale are larger than those implied by these scales, the weights assigned to the rest of the household members apart from the head of the household would be lower, the equivalent expenditure/income of the large households would be higher and fewer of them would be classified as poor. It is true that the problem of the "correct" equivalence scales cannot be resolved empirically. However, it would be very interesting to carry out a study of the sensitivity of the poverty estimates to the use of different sets of values of equivalence scales.

As a result of differences in population shares and relative poverty rates, some contributions to aggregate poverty recorded in columns (3) and (7) are considerably different. For example, the contribution to aggregate poverty of the group of households headed by farmers or agricultural workers is only 6.2% using expenditure data but 18.1% using income data. On the contrary, the contributions of the groups "one person, 65 or more" and "aged over 65" are 25.5% and 46.3% respectively using expenditure data, but only 15.2% and 23.1% using income data.[1]

4.2. Germany

Table 5 presents the results of identification of poverty groups and poverty decomposition for Germany. The population shares in column (1) are not substantially different than those in column (5), with two exceptions. The first exception is when the population is grouped by the economic situation of household members. The proportion of households where the head, the spouce and at least another member are economically active is 22.4% in the LIS sample but only 3.1% in the FBS sample. The corresponding shares of households where either only the head or only the head and the spouce are economically active are considerably lower in the LIS data. Presumably, as with the French data

1. Of course, the biggest differences are observed when the population is grouped according to the economic situation of the household members. However, since it is very likely that these differences emanate from differences in the relevant definitions, they are not discussed here.

TABLE 5. IDENTIFICATION OF POVERTY GROUPS: GERMANY

Code	Socio-economic group	Poverty measured in terms of: Consumption expenditure (1983) Popul. share (1)	Poverty rate (2)	Contrib. to aggr. poverty (3)	Relative poverty rate (4)	Income (1984) Popul. share (5)	Poverty rate (6)	Contrib. to aggr. poverty (7)	Relative poverty rate (8)
1100	Socio-economic category of the household head								
1101	manual worker (ind./serv.)	21.9	10.9	25.9	118	21.3	8.2	16.8	79
1102	non-manual worker	28.5	3.5	10.8	38	31.0	2.3	6.8	22
1103	self-employed (ind./serv.)	5.9	2.1	1.3	22	3.8	5.4	2.0	52
1104	farmer/agricultural worker	1.6	10.0	1.7	108	4.0	24.0	9.4	233
1105	unemployed	2.3	26.9	5.7	291	3.9	35.6	13.3	345
1199	other	39.8	12.4	53.6	135	36.1	14.8	51.7	143
1200	Type of household								
1201	one person, less than 65	16.5	7.3	13.1	79	17.9	11.6	20.1	112
1202	one person, 65 or more	15.1	14.5	23.8	156	14.3	10.7	14.8	103
1203	couple, no children	25.3	7.7	21.2	84	27.8	7.7	20.7	75
1204	couple + 1 child	15.5	4.8	8.1	52	9.2	7.5	6.7	73
1205	couple + 2 children	12.9	8.2	11.5	88	8.5	12.9	10.7	125
1206	couple + 3 children	4.1	12.4	5.5	134	2.3	17.7	4.0	172
1207	couple + 4 childr. or more	1.3	22.8	3.2	247	0.3	57.9	1.8	562
1208	mono-parental household	3.9	16.2	6.9	175	1.4	30.7	4.1	297
1299	other	5.4	12.4	7.3	134	18.3	9.6	17.1	94
1300	Household size								
1301	1 member	31.5	11.5	39.4	125	32.2	11.2	34.8	108
1302	2 members	30.5	7.9	26.2	85	28.8	8.3	23.3	81

(continued)

Code	Socio-economic group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1303	3 members	17.6	5.7	10.9	61	17.7	8.8	15.0	85
1304	4 members	13.7	8.0	11.9	87	14.4	10.8	14.7	104
1305	5 members	4.8	12.8	6.7	138	5.4	13.7	7.2	133
1306	6 members or more	1.9	26.5	5.5	287	1.8	28.1	4.9	273
1400	Economic situation of the household members								
1401	only head econ. active	34.7	9.2	34.7	99	15.1	11.0	16.1	107
1402	head and spouse econ. act.	17.8	4.0	7.7	43	14.1	2.3	3.1	22
1403	head spouse and others ac.	3.1	5.7	1.9	62	22.4	5.8	12.7	56
1404	other	44.5	11.6	56.1	126	48.4	14.5	68.1	141
1500	Age group of the household head								
1502	aged less than 25	3.8	11.3	4.7	123	4.0	27.2	10.5	264
1503	aged 25-44	34.3	9.6	35.8	104	33.6	10.5	34.1	101
1504	aged 45-64	34.7	7.1	26.8	76	36.1	7.1	24.8	69
1505	aged over 64	27.2	11.3	33.4	122	26.3	12.0	30.6	116
1700	Sex of the household head								
1701	male	72.3	8.6	67.6	93	74.3	8.9	64.3	87
1702	female	27.7	11.0	32.4	120	25.7	14.3	35.7	139
1900	Economic activity of the household head								
1901	agriculture					3.5	21.7	7.4	210
1902	manufacturing industry					32.8	8.0	25.5	78
1903	construction					5.1	10.6	5.3	103
1904	government services					8.9	5.2	4.5	51
1905	other services					34.1	9.0	29.8	88
1999	none					15.6	18.1	27.5	176

sets, this huge discrepancy is the result of differences in the definitions used in the relevant surveys. The second exception is that the population shares of the small groups of households headed by farmers or agricultural workers and unemployed persons are much smaller in the FBS sample than in the LIS sample. Furthermore, as in the corresponding French data set, households with children are substantially over-represented in the FBS.

Using the LIS data seven high risk groups can be identified: household headed by farmers or agricultural workers, households headed by unemployed persons, couples with four children or more, mono-parental households, households with six members or more, households with heads aged less than 25 and households headed by persons working in agriculture. With two exceptions, the groups which are classified as high risk groups using the LIS data are classified as risk ("mono-parental households") or high risk groups ("unemployed", "couple + 4 children or more" and "6 members or more") using the FBS data, as well. The exceptions are the group of households headed by "farmers or agricultural workers" and the group of households headed by persons "aged less than 25".[1] Probably, the difference in the case of the former group may be due to the reasons mentioned in the last subsection; that is, a large part of the expenditure of agricultural households is expenditure of income in kind which is not recorded in the income surveys. Regarding the latter group, this result is consistent with the predictions of the life-cycle hypothesis. Households headed by persons aged less than 25 are at the beginning of their life-cycles (presumably, many of them are households headed by students) and although their incomes are still low they are able to finance a relatively high level of consumption either through borrowing or through transfers from their parents or other households. As a result, using income data many of them are classified as poor, whereas using expenditure data they are not. A similar result - the relative poverty rate of households headed by persons aged less than 25 being higher using income than expenditure data - is also observed in most of the tables of the present section.

Once again, as a result of differences in definitions, population shares and relative poverty rates, the contributions to aggregate poverty of some groups differ substantially when expenditure and income data are used. Apart from the differences in the group contributions when the population is grouped according to the "economic situation of the household members" which may be attributable to differences in definitions, there are marked differences in the contributions of the groups "farmer/agricultural worker" (1.7% using expenditure data against 9.4% using income data), "unemployed" (5.7% against 13.3%) and "aged less than 25" (4.7% against 10.5%). Further, relatively large differences can be observed in the contributions of the groups "manual" worker", "one person,

1. The group of households with heads working in "agriculture" is not among the exceptions because no breakdown of the population by "economic activity of the household head" is reported in ISSAS (1990). Nevertheless, note that some inconsistency appears to exist in the German LIS data file, since the population share of households headed by persons working in agriculture is lower than the share of households headed by "farmers and agricultural workers". Furthermore, the population share of the group "other" when the population is grouped by the "socio-economic category of the household head" is substantially higher than the share of the "other" group when the population is grouped by the "economic activity of the household head".

less than 65" and "one person, 65 or more"; 25.9% against 16.8%, 13.1% against 20.1% and 23.8% against 14.8% when using expenditure and income data, respectively.

4.3. Italy

According to the authors of the ISSAS (1990) report, some obvious inconsistencies could be detected in the Italian FBS data. However, the evidence of Table 1 suggests that this data set cannot be considered as unrepresentative of the entire population; at least in comparison to the corresponding LIS data set. Further, in ISSAS (1990) there is no population breakdown by age group, sex, educational attainment and economic activity of the household head. The results of poverty identification and decomposition for Italy are reported in Table 6. With few exceptions (households with one or four members, or one member aged less than 65 or headed by non-manual workers) the population shares of the FBS and the LIS data set are not very different when the population is grouped according to socio-economic category of the household head, type of household and household size. Nonetheless, the relevant population shares are dramatically different when the population is grouped according to the economic situation of the household members. Once again, as in the cases of France and Germany, the population shares of households where either only the head or only the head and the spouce are economically active are substantially higher in the FBS than in the LIS data set. However, unlike France and Germany, the group whose population share is dramatically higher in the LIS than in the FBS data set is not the group "head, spouce and others economically active", but the group "other". No obvious explanation can be offered for that discrepancy, apart from a possible difference in the definitions used in the expenditure and the income surveys.

In the first four panels of Table 6 both the expenditure and the income survey identify the same risk or high risk poverty groups. These are the groups "farmer/agricultural worker", "unemployed", "couple + 4 children or more" and "6 members or more". Further, the group "5 members" is classified as risk group using the LIS, but not the FBS data. A notable characteristic of the corresponding relative poverty rates is that they are lower when expenditure data are utilised; an observation consistent with the predictions of the life-cycle hypothesis. Further, the LIS data identify the groups of households headed by persons aged less than 25 or with no educational attainment or working in agriculture as high risk groups and the group of households headed by persons working in the construction industry as a risk group. With respect to the contributions to aggregate poverty, apart from the fourth panel, the main differences in the figures of columns (3) and (7) are in the third panel. In general, the recorded contribution of small households (1 and 2 members) to aggregate poverty is higher when FBS data are used and the contribution of households with 3, 4 and 5 members is higher using the LIS data.

TABLE 6. IDENTIFICATION OF POVERTY GROUPS: ITALY

Code	Socio-economic group	Poverty measured in terms of: Consumption expenditure (1985) — Popul. share (1)	Poverty rate (2)	Contrib. to aggr. poverty (3)	Relative poverty rate (4)	Income (1986) — Popul. share (5)	Poverty rate (6)	Contrib. to aggr. poverty (7)	Relative poverty rate (8)
1100	Socio-economic category of the household head								
1101	manual worker (ind./serv.)	22.9	15.8	24.6	108	21.5	18.4	25.2	117
1102	non-manual worker	19.3	7.5	9.8	51	23.3	5.2	7.7	33
1103	self-employed (ind./serv.)	14.3	8.9	8.7	60	14.8	13.9	13.1	88
1104	farmer/agricultural worker	6.0	25.1	10.2	171	5.5	33.1	11.5	210
1105	unemployed	1.8	35.7	4.6	243	0.7	56.7	2.5	359
1199	other	35.7	17.4	41.4	118	34.2	18.6	40.1	118
1200	Type of household								
1201	one person, less than 65	8.7	12.0	7.1	82	5.3	10.7	3.6	68
1202	one person, 65 or more	9.2	21.0	13.1	143	7.9	17.8	8.9	113
1203	couple, no children	18.0	13.8	16.9	94	23.1	9.1	13.3	58
1204	couple + 1 child	9.2	6.9	4.3	47	12.1	10.4	7.9	66
1205	couple + 2 children	8.6	11.2	6.6	76	12.6	16.1	12.8	102
1206	couple + 3 children	2.0	16.9	2.3	115	3.1	28.1	5.6	178
1207	couple + 4 childr. or more	0.5	37.9	1.3	258	0.6	57.2	2.3	362
1208	mono-parental household	0.9	10.3	0.6	70	1.0	20.4	1.3	129
1299	other	42.9	16.3	47.6	111	34.2	20.4	44.2	129
1300	Household size								
1301	1 member	17.9	20.8	25.3	142	13.2	14.9	12.5	95
1302	2 members	23.2	13.9	21.9	95	23.6	9.4	14.0	59
1303	3 members	22.2	9.2	13.9	62	24.3	12.6	19.4	80
1304	4 members	21.7	12.1	17.9	82	24.9	16.4	25.9	104
1305	5 members	9.6	16.6	10.8	113	9.8	29.2	18.1	185
1306	6 members or more	5.5	26.9	10.1	184	4.2	38.4	10.1	243

(continued)

Code	Socio-economic group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1400	Economic situation of the household members								
1401	only head econ. active	50.8	17.0	58.7	116	32.0	21.7	44.0	138
1402	head and spouse econ. act.	25.2	10.1	17.3	69	19.0	4.1	4.9	26
1403	head spouse and others ac.	7.0	13.1	-6.2	89	8.3	9.2	4.8	58
1404	other	17.0	15.2	17.6	103	40.8	17.9	46.2	113
1500	Age group of the household head								
1502	aged less than 25					0.9	36.1	2.0	229
1503	aged 25-44					32.9	13.4	27.8	85
1504	aged 45-64					42.7	17.0	45.9	107
1505	aged over 64					23.5	16.3	24.3	103
1700	Sex of the household head								
1701	male					82.7	15.6	81.8	99
1702	female					17.3	16.6	18.3	105
1800	Educational attainment of the household head [1]								
1801	none					10.0	33.7	21.3	213
1802	primary					63.6	17.4	70.2	110
1803	secondary					20.2	6.1	7.8	38
1804	higher					5.6	1.2	0.4	8
1900	Economic activity of the household head								
1901	agriculture					5.5	33.1	11.5	210
1902	manufacturing industry					14.2	9.1	8.2	58
1903	construction					5.8	26.2	9.6	166
1904	government services					13.1	7.7	6.4	49
1905	other services					26.6	12.9	21.7	82
1999	none					34.9	19.3	42.6	122

1. In columns (5)-(8) 0.6% of the sample did not provide relevant information.

4.4. The Netherlands

The evidence of Table 7 suggests that the results of poverty identification and decomposition using the FBS and LIS data sets for the Netherlands are remarkably different. Starting from the population shares, the results of Table 1 suggest that in the FBS sample childless couples and one-member households aged less than 65 are seriously under-represented. In addition, it seems that there is a difference in the definitions used in the corresponding surveys regarding the grouping factor "educational attainment of the household head". In the FBS data the population shares of households headed by persons who had completed secondary or higher education are substantially higher than the corresponding shares of the LIS data set. On the contrary, the population shares of the two data sets are relatively similar when the grouping factor is "economic situation of the household members".

Of the eight groups which are classified as risk ("self-employed", "farmer/agricultural worker", "unemployed", "one person, less than 65", "5 members" and "agriculture") or high risk groups ("6 members or more" and "aged less than 25") using the LIS data, only one is classified as high risk group using the FBS data ("5 members"). On the contrary, there are three groups ("manual worker", "4 members" and "primary") which are classified as risk groups in the FBS data set, but not in the LIS data set.[1] For some of these differences the possible explanations which were offered in similar circumstances in earlier subsections can also be offered here ("farmer/agricultural worker", "aged less than 25" and "agriculture"), while for some others the difference can be attributed either to the fact that the groupings of the two surveys are not identical ("manual worker" and "unemployed") or to sample deficiencies (very few households of a particular group included in the sample of the FBS; for instance, "6 members or more"). Further, no comparison of relative poverty rates can be made for the group "one person, less than 65" because no such rate is reported in ISSAS (1990), despite the fact the sample of the Dutch FBS contains far more than 50 households belonging to this group. Taking into account that the incomes of the "self-employed" tend to fluctuate more than the incomes of the rest of the population, it is not surprising that the relative poverty rate of that group is higher when poverty is measured in terms of income than in terms of expenditure. This is something that can be observed in the relevant rows of the top panels of Tables 4-6, as well. However, in none of these tables is the poverty rate of the group higher than the poverty rate of the entire population, irrespective of whether poverty is measured in terms of expenditure or in terms of income. Why the evidence of the Netherlands points to the opposite direction is not immediately obvious.[2] Finally, two rather unusual

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1. Further, in the second panel of Table 7 there are two non-comparable groups ("couple + 4 children or more" and "other") which are classified as high risk groups only when the LIS data are used and another ("couple + 3 children") which is classified as such only when FBS data are utilised. The figures in parentheses in Table 7 (and in Table 8 in subsection 4.5) are not reported in ISSAS (1990), but can be calculated using the rest of the information contained in that report.

2. It is interesting to note that the FBS-based relative poverty rate of the group of households headed by "self-employed" persons in the Netherlands (96) is considerably higher than the corresponding rates of Tables 4-6 for France, Germany and Italy (68, 22 and 60, respectively).

TABLE 7. IDENTIFICATION OF POVERTY GROUPS: NETHERLANDS

Code	Socio-economic group	Poverty measured in terms of: Consumption expenditure (1985) — Popul. share (1)	Poverty rate (2)	Contrib. to aggr. poverty (3)	Relative poverty rate (4)	Income (1983) — Popul. share (5)	Poverty rate (6)	Contrib. to aggr. poverty (7)	Relative poverty rate (8)
1100	Socio-economic category of the household head [1]								
1101	manual worker (ind./serv.)	19.6	12.4	30.4	156	49.1	5.5	26.9	55
1102	non-manual worker	30.2	4.2	15.6	52				
1103	self-employed (ind./serv.)	4.2	7.7	4.0	96	5.2	17.3	9.0	172
1104	farmer/agricultural worker	3.5	9.3	4.1	117	2.9	15.6	4.5	156
1105	unemployed					5.1	19.9	10.2	198
1199	other	42.4	8.5	45.1	107	37.7	13.2	49.5	131
1200	Type of household								
1201	one person, less than 65	17.5				12.4	15.2	18.8	152
1202	one person, 65 or more	8.8	7.5	8.3	95	9.9	4.9	4.9	49
1203	couple, no children	22.4	4.2	11.8	53	29.0	3.2	9.2	32
1204	couple + 1 child	9.6	7.0	8.4	87	8.6	6.7	5.7	67
1205	couple + 2 children	15.8	10.8	21.3	136	15.2	5.1	7.8	51
1206	couple + 3 children	4.6	21.3	12.2	267	4.1	7.4	3.1	74
1207	couple + 4 childr. or more	1.6				0.8	30.1	2.5	300
1208	mono-parental household	1.2				2.6	15.4	3.9	153
1299	other	18.5	7.6	17.8	95	17.4	25.5	44.2	254
1300	Household size								
1301	1 member	26.7	4.4	14.7	56	22.3	10.6	23.6	106
1302	2 members	26.2	3.3	10.8	41	30.3	3.3	9.9	33
1303	3 members	16.1	6.4	12.9	81	15.9	13.3	21.1	133
1304	4 members	20.1	13.9	34.9	175	21.2	9.8	20.7	97
1305	5 members	7.1	25.2	22.5	316	7.6	19.6	14.8	196

(continued)

1. In columns (1)-(4) group 1105 is included in group 1199 and in columns (5)-(8) group 1102 is included in group 1101.

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Code	Socio-economic group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1306	6 members or more	3.8	(8.8)	(4.2)	(111)	2.7	37.1	9.9	370
1400	Economic situation of the household members								
1401	only head econ. active	41.0	8.9	45.6	112	34.2	7.3	24.8	73
1402	head and spouse econ. act.	12.6	4.4	6.9	55	14.8	2.9	4.3	29
1403	head spouse and others ac.	1.1	(11.5)	(1.6)	(145)	1.8	11.3	2.0	112
1404	other	45.3	8.1	45.9	102	49.3	14.0	69.0	140
1500	Age group of the household head								
1502	aged less than 25	5.2	9.8	6.4	123	5.7	32.2	18.4	321
1503	aged 25-44	47.9	10.8	64.7	135	42.6	6.7	28.6	67
1504	aged 45-64	26.9	4.7	15.8	59	30.9	13.4	41.3	134
1505	aged over 64	20.0	5.3	13.3	66	20.8	5.7	11.8	57
1700	Sex of the household head								
1701	male	77.7	9.0	87.4	112	78.5	9.4	73.7	94
1702	female	22.3	4.5	12.5	57	21.5	12.3	26.3	122
1800	Educational attainment of the household head [2]								
1801	none					8.6	8.3	7.2	83
1802	primary	19.1	13.0	31.0	163	35.3	10.1	35.6	101
1803	secondary	61.6	8.3	63.9	104	47.4	10.6	50.0	106
1804	higher	19.3	2.0	4.8	25	5.3	5.7	3.0	57
1900	Economic activity of the household head [3]								
1901	agriculture	3.5	9.8	4.3	122	2.9	15.6	4.5	156
1902	manufacturing industry	13.0	10.1	16.4	127	11.7	6.6	7.7	66
1903	construction	5.3	9.4	6.2	118	4.9	8.1	4.0	81
1904	government services	11.0	2.7	3.7	34				
1905	other services	24.8	8.5	26.4	106	35.2	5.7	20.1	57
1999	none	42.4	8.1	42.9	101	45.4	14.1	63.7	141

2 - In columns (1) (4) group 1801 is included in group 1802 and in columns (5) (8) 2.4% of the sample did not provide relevant information

results should be highlighted. Firstly, unlike the rest of the countries examined here, both the FBS-based estimates and the LIS-based estimates point out that the poverty rates of the groups "one person, 65 or more" and "aged over 65" are lower than the national poverty rate. Secondly, unlike many empirical studies which document a strong negative link between poverty and education [see, for example, Fishlow (1972), van Ginneken (1980), Anand (1983) and Tsakloglou (1990)], the LIS-based poverty estimates suggest that the poverty rate of the educational group "none" is lower than that of the group "primary" and the latter is, in turn, lower than that of the group "secondary". This result is not confirmed in ISSAS (1990) using FBS data.

The most striking differences between the FBS-based and LIS-based estimates for the Netherlands can be observed in columns (3) and (7), where the contributions of the various groups to the aggregate poverty rate are reported. In almost every panel of Table 7, there are notable differences. In the first panel, the contribution of the group of households headed by "workers" (manual and non-manual) to aggregate poverty is substantially higher using expenditure rather than income data (46.0% against 26.9%) while the corresponding FBS-based contributions of the groups "self-employed" and "other" (including "unemployed") are substantially lower (4.0% and 45.1% against 9.0% and 59.7%, respectively). In the third panel the FBS-based contributions of the households with 1, 3 and 6 or more members are lower and those of the households with 4 and 5 members higher than the relevant LIS-based contributions. Similarly, in the fourth panel, using expenditure data the contributions of the groups "only head economically active" and "other" are 45.6% and 46.9%, whereas using income data they are 24.8% and 69.0%, respectively. When the population is grouped by the age of the household head, the contribution of the group "aged less than 25" is almost three times larger using income data (18.4% against 6.4%) and that of the group "aged 45-64" over two and a half times larger (41.3% against 15.8%). Not surprisingly, the contribution of the group "aged 25-44" is significantly higher using expenditure data (64.7% against 28.6%). In the same pattern, the contribution of households headed by women is more than twice as high using expenditure rather than income data (12.5% against 26.3%)[1] and when the population is grouped according to the sector of economic activity of the household head there are considerable differences in the percentage contributions of the groups "manufacturing industry", "services" and "none". As has been argued above, within a life-cycle framework, people are expected to save during most of their employment period and dissave when they are out of the labour market. This can explain some part of the differences in the percentage contributions. However, most of these differences are very large and rather difficult to be justified within such a framework. In conclusion, the differences in the results of poverty identification and decomposition using the FBS and LIS data sets are so large that it can be safely speculated that it is very likely that at least one of them provides a distorted profile of the poor in the Netherlands.

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1. Note also that the poverty rate of households headed by females is substantially lower than the national average using expenditure data, but higher using income data.

4.5. The United Kingdom

The income and expenditure data sets for the United Kingdom used in this study are the only strictly comparable FBS and LIS data sets. Both come from Family Expenditure Surveys and, consequently, the sampling procedures followed and the definitions used in them are identical. Further, neither sample has been weighted and the evidence of Table 1 suggests that both represent the population of the United Kingdom relatively well. These are, in fact, the only data sets which can allow relatively safely a rough test of some aspects of the life-cycle hypothesis. It is a pity that the FBS and LIS data sets do not refer to the same year (and, further, between 1979 and 1981 significant policy changes which are likely to have had a serious impact on the distributions of income and expenditure took place). In spite of this, it is interesting to note that the results of poverty analysis reported in Table 8 are very similar using expenditure and income data.

The differences in the population shares of the various groups are not very large, with the exception of the "other" group when the population is grouped according to the sector of economic activity of the household head. Further, using the LIS data we were unable to achieve a population breakdown identical to that of ISSAS (1990) when the population is grouped according to the socio-economic category of the household head. Using the LIS data, four risk ["1 member", "6 members or more", "other" (economic situation of household members), and "female")] and four high risk groups ["unemployed and other", "one person, 65 or more", "aged over 65" and "none" (economic activity of the household head)] are identified. Exactly, the same groups are identified as risk or high risk groups using the expenditure data, as well. A notable characteristic of the corresponding relative poverty rates is that, in general, they are lower using expenditure rather than income data. Similarly, in most groups where the relative poverty rates are extremely low using income data, the corresponding rates using expenditure data are higher. As explained earlier, using the particular relativist poverty lines of this study, these findings are to be anticipated if the postulates of the life-cycle and permanent-income hypotheses that households smooth out their consumption over time in an attempt to maximise their intertemporal welfare are correct.

With respect to the percentage contributions of the various groups to aggregate poverty, the evidence of columns (3) and (7) points out that in most cases where there are significant differences they are, probably, consequences of life-cycle factors. More specifically, the contributions to aggregate poverty of households headed by persons who are actively participating in the labour market are higher using expenditure data rather than income data. See, for instance, the percentage contributions of the groups "manual worker", "non-manual worker", "aged 25-44" and all the groups but the last when the population is grouped by the economic situation of the household members and by the economic activity of the household head. Naturally, in the corresponding panels, the contribution of groups headed by persons who do not participate actively in the labour market are higher using income data. Further, for no obvious reason, the percentage contributions of the two-member households to the aggregate poverty is considerably higher using expenditure rather than

TABLE 8. IDENTIFICATION OF POVERTY GROUPS: UNITED KINGDOM

Code	Socio-economic group	Poverty measured in terms of: Consumption expenditure (1981) Popul. share (1)	Poverty rate (2)	Contrib. to aggr. poverty (3)	Relative poverty rate (4)	Income (1979) Popul. share (5)	Poverty rate (6)	Contrib. to aggr. poverty (7)	Relative poverty rate (8)
1100	Socio-economic category of the household head [1]								
1101	manual worker (ind./serv.)	29.7	8.9	18.9	64	35.5	4.5	10.8	30
1102	non-manual worker	24.3	4.0	6.9	28	25.1	1.9	3.2	13
1103	self-employed (ind./serv.)	6.6	9.3	4.4	66				
1104	farmer/agricultural worker	0.9	14.7	0.9	105	1.2	19.5	1.5	131
1105	unemployed	6.1	37.4	16.3	267				
1199	other	32.4	22.7	52.5	162	38.2	33.0	84.5	221
1200	Type of household								
1201	one person, less than 65	8.9	8.9	5.7	64	11.6	14.9	11.5	100
1202	one person, 65 or more	11.8	27.8	23.4	199	12.3	32.5	26.8	218
1203	couple, no children	25.8	12.0	22.1	86	29.9	16.0	32.1	107
1204	couple + 1 child	6.7	5.0	2.4	36	9.1	3.8	2.3	25
1205	couple + 2 children	10.0	11.8	8.4	84	13.5	6.8	6.2	45
1206	couple + 3 children	3.0	25.2	5.4	180	4.7	13.9	4.4	93
1207	couple + 4 childr. or more	0.5	(11.2)	(0.4)	(80)	1.8	37.5	4.6	252
1208	mono-parental household	4.0	25.5	7.3	182	3.3	35.1	7.7	235
1299	other	29.3	11.9	24.9	85	13.7	4.7	4.3	32
1300	Household size								
1301	1 member	20.7	25.0	37.0	178	23.9	24.0	38.4	161

(continued)

1. In columns (5)-(8) group 1103 is included in groups 1101 and 1102 and group 1105 is included in group 1199.

Code	Socio-economic group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1302	2 members	32.3	10.8	24.9	77	31.3	16.6	34.8	111
1303	3 members	16.8	7.1	8.5	50	15.9	7.3	7.8	49
1304	4 members	19.0	9.8	13.3	70	18.1	6.9	8.4	46
1305	5 members	8.0	17.2	9.8	123	7.3	10.5	5.1	70
1306	6 members or more	3.2	28.3	6.5	203	3.6	23.1	5.6	155
1400	Economic situation of the household members								
1401	only head econ. active	24.0	13.4	23.0	95	24.2	7.1	11.5	48
1402	head and spouse econ. act.	26.0	5.7	10.6	41	21.7	0.9	1.3	6
1403	head spouse and others ac.	7.3	2.4	1.3	17	6.9	0.2	0.1	12
1404	other	42.7	21.4	65.3	153	47.2	27.5	87.0	184
1500	Age group of the household head								
1502	aged less than 25	4.4	16.5	5.2	118	5.8	13.5	5.3	91
1503	aged 25-44	37.6	14.2	38.1	102	37.2	8.7	21.8	59
1504	aged 45-64	32.5	7.1	16.5	50	31.0	8.0	16.6	54
1505	aged over 64	25.5	22.0	40.1	157	26.0	32.3	56.3	217
1700	Sex of the household head								
1701	male	77.8	11.5	63.9	82	76.5	11.7	59.9	78
1702	female	22.2	22.9	36.3	163	23.5	25.4	40.1	170
1900	Economic activity of the household head								
1901	agriculture	2.1	20.1	3.0	144	1.2	19.5	1.5	131
1902	manufacturing industry	25.9	8.8	16.3	63	23.8	2.3	3.7	15
1903	construction	7.2	14.7	7.6	105	5.4	3.7	1.3	25
1904	government services	5.2	7.7	2.9	55	4.9	2.3	0.8	16
1905	other services	28.7	8.8	18.0	63	26.9	4.6	8.3	31
1999	none	31.0	23.6	52.3	168	37.9	33.2	84.4	223

income data.

5. Conclusions

In general, the results of quantitative poverty research for France, Germany, Italy, the Netherlands and the United Kingdom using the income data of the LIS data base point to the same direction as the corresponding results of ISSAS (1990) using expenditure data from FBSs. The aggregate (relative) poverty rates and the corresponding rankings of the countries examined in this study are different but not dramatically different using income and expenditure data. Using "relativist" national poverty lines, the aggregate poverty rates of France and Italy are higher than those of the Netherlands and Germany and the relevant rates for the United Kingdom are between them. Further, using both income and expenditure data children appear to be over-represented among the poor (although this may be a consequence of the particular equivalence scales used in this study). With respect to the identification of poverty groups and poverty decomposition, the results vary from country to country, with the results for the United Kingdom being very similar using either expenditure or income data and the corresponding results for the Netherlands being very different. Most of the relative poverty rates and percentage contributions to the aggregate poverty rate are in the direction predicted by the life-cycle hypothesis; that is, the estimated relative poverty rates and contributions to aggregate poverty are lower using income data for the groups headed by persons actively participating in the labour market. Although the situation varies from country to country, in general, the following groups of households appear to be at a higher risk of being classified as poor than the rest of the population: large households (particularly households with many children), mono-parental households, one-member households headed by old persons and household headed by unemployed persons or persons with low educational qualifications. Further, using the LIS data, households headed by persons employed in agriculture frequently appear to have a very high probability of being classified as poor. However, this may be due to the fact that a large part of the income of these households is income in kind, which is not recorded in the relevant income surveys.

As noted in the introduction, this study does not try to provide an answer to the question "should poverty be measured in terms of income or expenditure?". The answer to this question can be given only on theoretical a priori grounds. In the opinion of the author, expenditure should be preferred for the reasons mentioned in section 2. However, the LIS data are a very rich source of information for distribution-related studies and although no EEC-wide poverty research can be carried out at the moment using them (since only six EEC countries are covered), several lessons can be learned from the LIS experience for future poverty research in the EEC. The most important lesson is that access to primary (expenditure and income) data would expand enormously the possibilities for quantitative poverty research in the EEC. Tests of sensitivity of the poverty estimates to the use of different sets of equivalence scales and poverty lines, estimation of decomposable distribution-sensitive poverty indices and identification of small homogeneous poverty groups with very high risk of

being poor are just a few important areas of research with potentially significant implications for policy action that could be carried out, if Eurostat had access to primary data. Further, it would be very interesting to have information on both the income and the expenditure of the households included in the samples of the surveys. At the moment, the LIS data base contains only one such sample, but this is for a country outside the EEC (Poland). In most FBSs carried out in EEC member-states, apart from information on expenditures, information incomes is also collected. It would be very useful for researchers in this area in the future to have access to both expenditure and income micro-data. Moreover, although the sources of the LIS data may not be as homogeneous as those used in ISSAS (1990) and some of the original LIS samples may not represent the entire population of their countries very satisfactorily, the evidence of Table 1 demonstrates very clearly the usefulness of using weighting schemes to reweight the samples of the (expenditure or income) surveys, in order to make them as representative as possible of the entire sampled population (as LIS does). Finally, the experience of LIS demonstrates the need for detailed documentation of the data used; something that, at the moment, is missing in the data used for poverty research by Eurostat.

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APPENDIX 1. THE EFFECTS OF SAMPLE WEIGHTING ON THE ESTIMATES OF AGGREGATE POVERTY USING THE LIS DATA

Country (Reference year)	Unweighted sample					Weighted sample				
	Sample size	40%-poverty line		50%-poverty line		Sample size	40%-poverty line		50%-poverty line	
		Poverty line	Poverty rate	Poverty line	Poverty rate		Poverty line	Poverty rate	Poverty line	Poverty rate
France (1979)	11044	15092	10.22	18864	20.14	18429	12741	6.79	15926	14.16
Germany (1984)	5159	7375	4.26	9219	10.25	24813	7638	4.25	9547	10.31
Italy (1986)	8022	3893	8.93	4866	16.82	20376	3768	8.12	4710	15.79
Luxembourg (1985)	2049	164785	2.54	205948	7.27	2064	163376	2.95	204209	8.33
Netherlands (1983)	4833	6343	6.02	7928	9.10	5797	6496	6.41	8120	10.03

APPENDIX 2. THE EFFECT OF SAMPLE WEIGHTING ON THE IDENTIFICATION OF POVERTY GROUPS: LIS DATA, FRANCE (1979)

		Weighted sample				Unweighted sample			
Code	Socio-economic group	Popul. share (1)	Poverty rate (2)	Contrib. to aggr. poverty (3)	Relative poverty rate (4)	Popul. share (5)	Poverty rate (6)	Contrib. to aggr. poverty (7)	Relative poverty rate (8)
1200	Type of household								
1201	one person, less than 65	10.9	13.0	10.0	92	10.3	15.3	7.8	76
1202	one person, 65 or more	12.2	17.6	15.2	124	8.7	26.6	11.4	132
1203	couple, no children	27.3	8.2	15.7	58	27.2	16.6	22.3	82
1204	couple + 1 child	11.2	9.5	7.5	67	11.2	15.4	8.5	76
1205	couple + 2 children	12.0	13.9	11.9	98	12.9	17.2	11.0	85
1206	couple + 3 children	4.5	15.2	4.8	107	5.0	24.3	6.0	121
1207	couple + 4 childr. or more	2.3	34.1	5.6	241	2.2	50.2	5.5	249
1208	mono-parental household	2.0	23.8	3.3	168	1.7	26.5	2.2	131
1299	other	17.6	21.0	26.1	148	20.9	24.2	25.1	120

APPENDIX 3. PROPORTION OF PERSONS BELOW 40% AND 50% OF THE MEAN OF THE DISTRIBUTIONS OF INCOME PER EQUIV. HOUSEHOLD AND INCOME PER EQUIV. ADULT

	Distribution of income per equivalent household		Distribution of income per equivalent adult	
	40%-pov. line	50%-pov. line	40%-pov. line	50%-pov. line
France (1979)	8.3	16.5	7.0	13.5
Germany (1984)	4.3	11.0	3.5	8.7
Italy (1986)	9.9	18.2	8.6	16.0
Netherlands (1983)	7.2	12.2	6.4	9.6
United kingdom (1979)	4.3	12.8	4.1	12.1

APPENDIX 4. A PROFILE OF POVERTY IN LUXEMBOURG USING THE LIS DATA

As noted in section 2, Luxembourg is the only country not included in ISSAS (1990). However, (income) data for Luxembourg exist in the LIS data base. They come from a wave of the Luxembourg Household Panel Study. In this Appendix, poverty estimates using this data set are reported using the methodology of ISSAS (1990) described in section 2 (in terms of distributions used, poverty lines, equivalence scales, population grouping, etc). Table A.4.1 reports some aggregate (relative) poverty estimates. Using the 40%-poverty line, 3.0% of all the households are classified as poor whereas the 50%-poverty lines yields an estimate of the poverty rate of 8.3%. These rates are very low in comparison with the corresponding LIS-based poverty rates of any other country reported in Table 2. 3.0% of the total number of persons living in Luxembourg were living in the households classified as poor according to the 40%-line and 9.0% in those below the 50%-line. The corresponding percentages are even lower (2.2% and 6.9%) if the poverty line is derived using the distribution of income per equivalent adult instead of the distribution of income per equivalent household. According to the results of Table A.4.1 in Luxembourg, as in most of the other countries examined earlier, the proportion of children and elderly living in poor households is higher than their proportion in the entire population.

Table A.4.2 reports the results of poverty identification and decomposition. An important difference of this table in comparison with Tables 4-8 is that, apart from estimates of the poverty rate, estimates of the decomposable index of Foster et al (1984) are also reported along with the corresponding percentage contributions to aggregate poverty and relative poverty rates.[1] A well-known disadvantage of the poverty rate (head count ratio) is that it gives equal weights to persons or households which are located just below the poverty line and to persons and households which are close to absolute destitution. Following the seminal article of Sen (1976b), several attempts have been made to construct distribution-sensitive poverty indices. Some of these indices satisfy the property of "additive decomposability"; that is, when the population is grouped into mutually exclusive and exhaustive groups they can be written as additively separable functions of the group poverty indices. As a result, the contribution of each group to the aggregate poverty can be measured. The most well-known of the "additively decomposable" poverty indices is that of Foster et al (1984), estimates of which for Luxembourg are reported in Table A.4.2.

It is interesting to note that the results of poverty identification and decomposition are rather different using the poverty rate and the Foster et al index. Using the poverty rate, the groups "couple + 3 children", "couple + 4 children or more" and "6 members or more" are classified as high risk groups, whereas the groups "farmer/agricultural worker", "unemployed/other" and "mono-parental household" are classified as risk groups. Some of these groups are classified as risk or high risk groups using the Foster et al index as well ("farmer/agricultural worker", "unemployed/other" and "6

1. In fact, Foster et al (1984) present a family of poverty indices. The estimates reported in Table A.4.2 have been derived after setting the value of the poverty aversion parameter equal to 2. In this case the index corresponds to a well-known inequality index, the squared coefficient of variation.

TABLE A.4.1. POVERTY RATES IN LUXEMBOURG (1985)

	40%-poverty line	50%-poverty line
Proportion of households below the poverty line	3.0	8.3
Proportion of persons below the poverty line	3.0 (2.2)	9.0 (6.9)
Proportion of children below the poverty line	3.9 (2.3)	12.6 (9.0)
Proportion of elderly below the poverty line	3.7 (3.3)	11.7 (10.0)

The figures in parentheses are the proportions of persons, children and elderly below 40% and 50% of the mean of the distribution of income per equivalent adult (not per equivalent household).

members or more"), but the recorded value of the index for some others is less than the national value ("couple + 3 children", "couple + 4 children or more" and "mono-parental household"), while the value of the index in a number of groups is either between 50% and 100% higher than the national value ["other" (economic situation of the household members), "female" and "none/primary"] or over 100% higher than the national average ("one person, less than 65", "one person" and "aged less than 25").

Further, it is interesting to notice that due to the fact that, presumably, the equivalent income of many households of some groups is just below the poverty line, the contribution of these groups to aggregate poverty is considerably higher using the poverty rate than the Foster et al index. This is the case of the groups "manual worker" (28.6% against 5.2%), "only head economically active" (33.9% against 12.2%) and all the groups of households with children when the population is grouped according to the type of household. Exactly the opposite is the situation of the groups "one person, less than 65" (9.2% against 38.8%), and "aged less than 25" (5.6% against 18.9%). Obviously, these results have very significant implications for the design of appropriate poverty alleviation policies.[1]

1. Note also that although the poverty rate of the group of households headed by persons who completed higher education is substantially lower than the national average, surprisingly, the Foster et al index of the group is higher than that for the entire population. This may be due to the fact that the group might contain households headed by university graduates who have not started working yet or are employed but receive very low salaries (stagiaires working for Eurostat?).

TABLE A.4.2. MEASUREMENT AND DECOMPOSITION OF POVERTY IN LUXEMBOURG (1985)

Code	Socio-economic group	Popul. share (1)	Poverty rate (H) (2)	Contrib. to aggr. poverty according to H (3)	Relative poverty rate according to H (4)	Foster et al index (F) (5)	Contrib. to aggr. poverty according to F (6)	Relative poverty rate according to F (7)
1100	Socio-economic category of the household head [1]							
1101	manual worker (ind./serv.)	33.1	7.2	28.6	86	0.00132	5.2	16
1102	non-manual worker	21.7	0.7	1.9	9	0.00038	1.0	5
1103	self-employed (ind./serv.)	5.9	9.0	6.4	108	0.00606	4.3	72
1104	farmer/agricultural worker	2.8	14.4	4.8	173	0.03678	12.3	440
1105	unemployed							
1199	other	36.5	13.3	58.3	160	0.01766	77.2	211
1200	Type of household							
1201	one person, less than 65	11.6	6.7	9.2	80	0.02807	38.8	336
1202	one person, 65 or more	10.9	11.3	14.7	135	0.00931	12.1	112
1203	couple, no children	28.3	7.0	23.8	84	0.00645	21.8	77
1204	couple + 1 child	12.2	6.7	9.8	80	0.00486	7.1	58
1205	couple + 2 children	11.5	11.5	15.9	138	0.00494	6.8	59
1206	couple + 3 children	3.4	17.4	7.2	209	0.00468	1.9	56
1207	couple + 4 childr. or more	0.9	20.1	2.3	241	0.00207	0.2	25
1208	mono-parental household	1.7	15.2	3.0	182	0.00776	1.5	93
1299	other	19.6	6.0	14.2	72	0.00408	9.6	49
1300	Household size							
1301	1 member	22.4	8.9	24.0	107	0.01897	51.0	227

(continued)

1. Group 1105 is included in group 1199.

Code	Socio-economic group	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1302	2 members	29.2	7.0	24.5	84	0.00657	23.0	79
1303	3 members	20.1	6.1	14.7	73	0.00367	8.8	44
1304	4 members	18.2	9.7	21.1	116	0.00366	8.0	44
1305	5 members	6.5	11.0	8.6	132	0.00314	2.4	38
1306	6 members or more	3.6	16.8	7.2	201	0.01591	6.8	191
1400	Economic situation of the household members							
1401	only head econ. active	27.7	10.2	33.9	122	0.00368	12.2	44
1402	head and spouse econ. act.	16.6	1.3	2.6	16	0.00013	0.3	2
1403	head spouse and others ac.	12.8	2.6	4.0	31	0.00665	10.2	80
1404	other	43.0	11.5	59.6	139	0.01502	77.4	180
1500	Age group of the household head							
1502	aged less than 25	4.3	11.0	5.6	132	0.03688	18.9	442
1503	aged 25-44	38.6	6.9	32.0	83	0.00543	25.1	65
1504	aged 45-64	35.9	7.3	31.5	88	0.00902	38.7	108
1505	aged over 64	21.2	12.1	30.9	145	0.00678	17.2	81
1700	Sex of the household head							
1701	male	77.7	7.9	74.1	95	0.00690	64.2	83
1702	female	22.3	9.7	25.9	116	0.01339	35.8	160
1800	Educational attainment of the household head [2]							
1801	none							
1802	primary	48.0	12.4	71.5	149	0.01260	72.5	151
1803	secondary	43.9	4.8	25.5	58	0.00347	18.2	42
1804	higher	8.1	3.1	3.0	37	0.00955	9.3	114

2. Group 1801 is included in group 1802.