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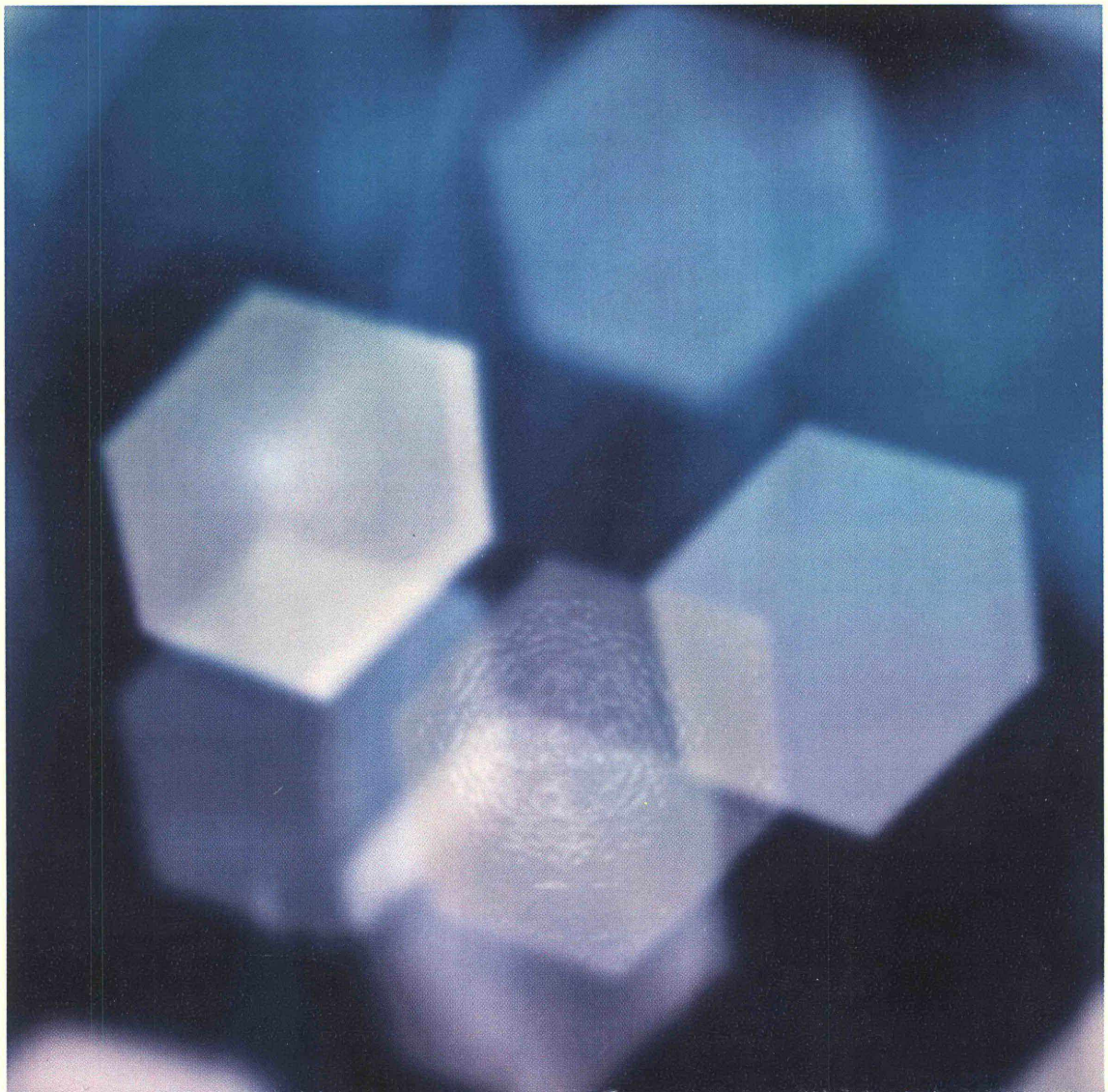
Elinolot 2004:1
Levnadsförhållanden
Living Conditions

The ECHP Study in Finland

Quality Report

Marjo Pyy-Martikainen – Johanna Sisto – Marie Reijo



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Foreword

The Finnish ECHP study was carried out by Statistics Finland between the years 1996 to 2001. This report evaluates the quality of the Finnish ECHP study, describes the main concepts and classifications used and provides information about the design and implementation of the study.

The publication was compiled by Marjo Pyy-Martikainen, Johanna Sisto and Marie Reijo. Tuula Kuula took part in the editorial work.

The authors hope that the users of both the Finnish ECHP study results and the Finnish ECHP micro data will find this report useful.

Helsinki, May 2004

Jussi Simpura
Director
Social Statistics

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1 The ECHP study in Finland: components of quality

This report evaluates the quality of the Finnish subset of the European Community Household Panel (ECHP) survey. The evaluation is based on all six annual waves of the Finnish subset, covering the years 1996 to 2001. Information important to the users of the Finnish subset is also provided. This includes information about the main concepts and classifications used, about the design of the survey, about data collection and fieldwork, and about the procedures used to compensate for nonresponse.

The Statistical Office of the European Communities, Eurostat, has prepared a quality report that evaluates the quality of the data of all ECHP countries (Eurostat 2000e). The Eurostat guidelines for the ECHP survey design and implementation are described in a separate manual (Eurostat 1995) as well as in various documents by Eurostat available from the CIRCA service of the European Commission (see chapter 10 for more information on CIRCA). Only the first two waves are covered in the Eurostat quality report. As Finland joined the survey at wave 3 in 1996, the Finnish subset is not included in the Eurostat report. As for the documentation of the design and implementation of the survey, this report focuses on the features of the Finnish subset and tries to avoid unnecessary overlap with Eurostat documentation. The Finnish ECHP was for the most part designed and implemented along the guidelines by Eurostat. Some national practices of survey design and implementation that caused departures from these guidelines, were however retained. The departures are marked by underlining the relevant fragments of the text in this report.

Eurostat defines the quality of statistics with reference to the following six criteria (Eurostat 2000a):

- Relevance of statistical concepts
- Accuracy of estimates
- Timeliness and punctuality in disseminating results
- Accessibility and clarity of the information
- Comparability of statistics
- Coherence.

In addition to the above criteria, the quality criteria for the Official Statistics of Finland also include documentation (Statistics Finland 2002d).

Relevance refers to the aim to produce information that corresponds with the users' requirements. Accurate estimates picture measured variables correctly and reliably. This means that the estimated value and the true value are close to each other. Sampling error, coverage error, nonresponse error, measurement error and processing error are issues that can possibly hamper accuracy. Error components will be discussed in Chapters 5 and 8. Timeliness and punctuality mean that information is as recent as possible and the results are published on schedule. A large harmonised panel survey conduct-

ed in 15 EU Member States is not an easy task to perform. This is reflected in the relatively large time lag between data collection and data dissemination. However, timeliness is not so crucial if the main value of the ECHP is seen in its analytical use and not in the routine production of summary statistics. Accessibility and clarity (Chapter 10) require that users know what information is available and how it can be obtained. The producer should make availability of information as easy as possible, document the concepts and methods used and avoid publishing statistics without analysing the results. Statistics of good quality are comparable over time and even across countries. Logical uniformity and consistency of different statistics are indications of coherence. Coherent statistics are based on common definitions, classifications and methodological standards. Comparability and coherence of the Finnish ECHP will be discussed in more detail in Chapter 9. Documentation refers to description of activities in the statistical survey process. It extends to the concepts, definitions and methods used, as well as to the statistical production process (Statistics Finland 2002d). The main concepts and classifications used are described in Chapter 3. Chapters 4, 6 and 7 describe the various phases of the statistical production process.

2 Introduction to the ECHP

The European Community Household Panel (ECHP) is a standardised sample survey conducted under the auspices of Eurostat. It forms an important component of a co-ordinated system of household surveys to produce comparable information across the EU Member States. The basic aims of the survey are to provide data on living conditions, well-being and financial situation of private households and persons. The key features of the ECHP are input harmonisation, multidimensionality and panel design.

Input harmonisation

The ECHP was centrally designed and co-ordinated by Eurostat. A high level of comparability of statistics across the Member States was pursued by input harmonisation i.e. by defining and implementing all phases of the production process in a uniform way. This involved

- A common survey structure
- Common procedures for data editing, weighting, imputation
- Common sampling requirements and
- A common "blue-print" questionnaire developed at Eurostat.

National data collection units, most of which were national statistical institutes, were responsible for the data collection. In Finland, the data were collected by Statistics Finland. After the data collection, the data files required by Eurostat were produced and some preliminary checks were conducted by national data collection units. Imputing and weighting of the data was for the most part performed at Eurostat. Eurostat transformed the data into an anonymised, user-friendly longitudinal Users' DataBase (UDB, see Section 4.6).

Multidimensionality

The importance of a multidimensional subject matter results from the fact that many of the social processes are clearly interlinked. The ECHP has been designed to cover, with income and labour as the core topics, diverse aspects of living conditions simultaneously (Eurostat 2000). For the topics covered by the ECHP, see Table 1.

Table 1: Data content of the ECHP (Source: Eurostat 2002a)

Demographic information on households
- number of members and adults
- equivalised size
- sociological typology
- economical typology
- number of members moved in/out, died, born

Household income
- main source of income
- wage and salary earnings
- self-employment earnings
- non-work private income
- capital income
- property/rental income
- private transfers received
- unemployment related benefits
- old-age/survivors' benefits
- family related allowances
- sickness/invalidity benefits
- education-related allowances
- social assistance and housing allowance

Financial situation of household
- ability to make ends meet
- ability to afford normal living
- inability to pay scheduled payments
- ability to save money
- income situation compared to last year
- received non-cash assistance
- general feeling about economic situation

Accommodation of household
- time of move to current address
- kind of accommodation
- number of rooms
- kitchen, heating, bath/shover, terrace, garden
- too small, dark, cold, damp
- environmental problems, crime, vandalism
- tenure status
- rent, outstanding loan or mortgage

Durables
- car or van
- second home
- video, dishwasher, telephone, TV, PC

Children
- children under 12 in the household
- children looked after on a regular basis
- children between 12 and 15

Demographic information on persons
- age, sex, time of birth
- marital and cohabitational status

Employment
- main activity status
- status in employment
- number of hours working per week
- main job full-time/part-time
- current job: occupation, sector, length, satisfaction
- previous job: reason for stopping, occupation, main activity, sector, job status
- calendar of activities

Unemployment and search for work
- number of unemployment periods
- long-term unemployment
- steps taken to find work
- chances of finding a job or accepting an offer

Personal income
- main source of personal income
- wage and salary earnings
- self-employment earnings
- non-work private income
- capital income
- property/rental income
- private transfers received
- unemployment related benefits
- old-age/survivors' benefits
- family related allowances
- sickness/invalidity benefits
- education-related allowances
- social assistance and housing allowance

Health
- health in general
- chronic problem, illness or disability
- hampered by illness, injury, emotional or mental health problem
- nights spent in hospital
- visits to a general practitioner, a specialist, a dentist or an optician
- entitled to free medical treatment
- private medical insurance
- smoking
- height and weight

Training and education
- general and vocational education cources
- highest level of completed education
- age when full time education was stopped

Social relations
- club memberships
- how often meets relatives or friends
- number of hours spent looking after children or other persons

Panel design

The longitudinal or panel design of the ECHP makes it possible to follow up and interview the same set of private households and persons over several consecutive years. In contrast to a cross-sectional survey, a panel survey allows the study of transitions over time as well as the study of the consequences of certain events. In addition to providing longitudinal data, the ECHP is also designed to provide representative cross-sectional pictures over time by constant renewal of the sample through appropriate follow-up rules (see Section 4.3).

In most EU countries, the survey was launched in 1994. The Finnish ECHP started two years later, in 1996. Therefore, its achieved total run-time of six waves over five years is two years shorter than the run-time of most national panels.

3 Main concepts and classifications

3.1 Household and reference person

Some of the data are collected at the household level. Households also form, along with individuals, a unit of analysis. The characteristics of a reference person are commonly used to classify households according to various background variables like socio-economic group or level of education.

Household

A household is defined as consisting of persons who live together in private households and have their meals together or otherwise use their income together. The following persons are also considered to belong to the household:

- Persons living in another locality if they participate in the acquisition of income
- Persons conducting military service
- Persons temporarily abroad or temporarily in an institution.

The following persons do not belong to the household:

- Subtenants (occupying the same dwelling, they form a separate household)
- Domestic staff (occupying the same dwelling, they form a separate household)
- Students living on their own if they live mostly on their own income or on a student loan (children of household members).

Students living in dormitories each form their own household unless they are married or officially cohabiting.

Household type

Household type describes the stage in life and maintenance liabilities of a household. In the UDB, household type is defined and classified in two ways.

The definition of household type by *sociological typography* (variable HD006) takes into account the number and age of persons and their family relationships. It defines all children living with a parent or parents as children irrespective of their age. The categories of household type are:

One adult

- One person, aged 65 or more
- One person, aged 30 to 64
- One person, aged under 30

- Single parent with one or more children, all children aged under 16
- Single parent with one or more children, at least one child aged 16 or more

Couples
- Couple without children, at least one person aged 65 or more
- Couple without children, both aged under 65
- Couple with one child aged under 16
- Couple with two children aged under 16
- Couple with three or more children aged under 16
- Couple with children of whom at least one aged more than 16

Others.

The definition of household type by *economic typography* (variable HD006A) uses as classification criteria the number, gender and age of persons and children's independent income based on labour market status. It defines as children all children under 16 living with their parents and children aged 16 to 24 who are outside the labour force (e.g. students). All children aged 16 to 24 who are in the labour force and live with their parent or parents as well as children aged 25 or more are defined as adults. The categories of household type are:

Households without children or with children with independent incomes
- One person, male aged under 30
- One person, male aged 30 to 64
- One person, male aged 65 or more
- One person, female aged under 30
- One person, female aged 30 to 64
- One person, female aged 65 or more
- Two adults, at least one aged 65 or more
- Two adults, both aged under 65
- Other households without dependent children

Households with dependent children
- Single parent with children
- Two adults with one child
- Two adults with two children
- Two adults with three or more children
- Other households with dependent children.

Reference person

The reference person (UDB variable HG001) is usually the person with the highest net income during the year preceding the interview among household members aged 18 or over. If there are several household members with approximately equal net income, priority is given to persons in employment.

3.2 Income

Two main concepts of monetary income are distinguished in the ECHP: 1) actual current income, and 2) total income and total net income. Total income is the gross measure of income before deducting transfers paid. Total net income is derived from total income by deducting from it taxes and other transfers. However, it is not equal to the disposable income of the UN guidelines (United Nations 1977), which also contains components of imputed rents and income in kind.

Actual current income

Actual current income is based on the current total net monthly household income (UDB variable HI200). On the interview questionnaire, the specific item concerning this income comes after all the sources of the household's actual current income, including the largest one, have been determined.

Total income and total net income

Total income is the income over the whole of the preceding calendar year. Total income covers major income components, most of which are obtained by determining all of them in detail for persons over 16 at the individual level, and some of them for households. To obtain the total income at the household level the income components of individual persons are aggregated and added to the sum of the specific income components that have been collected at the household level (for the adjustment of household income for within household nonresponse, see Chapter 6). Correspondingly, to obtain complete total income at the individual level, the components collected at the household level are divided by the number of eligible persons and the result is assigned to each interviewed eligible person (For further information, see Eurostat 2002d).

The major components of total income are:

Income from work
- Wages and salaries
- Self-employment earnings

Non-work private income
- Rental income
- Property income (excl. rental income)
- Private transfers

Social transfers received
- Unemployment related benefits
- Old age benefits
- Survivors' benefits
- Family-related allowances
- Sickness and invalidity benefits
- Education related allowances
- Any other (personal) benefits
- Housing allowance.
- Social assistance.

Total net income both at the household and at the individual level covers total income after the deduction of transfers paid as follows:

Transfers paid
- State income tax
- Municipal tax
- Other transfers paid.

Most of the detailed income components of the preceding year are collected from administrative sources in Finland, and they are in gross amounts only. Therefore, the major components of total income are obtained in gross amounts in Finland, although the ECHP in principle covers information about income in net amounts. Moreover, when using administrative sources, the duration of an income component during a calendar year is not considered. The income is obtained for the whole calendar year.

Income from work covers wages, salaries and self-employment income. Wages and salaries are the sum of all earnings for work as an employee or an apprentice during the previous year. In addition to normal earnings, extra earnings for example for overtime work and additional work are also covered. Self-employment income includes all entrepreneurial income from agriculture, forestry and other industries. Various subsidies and refunds are added to the income from agriculture. Entrepreneurial income from forestry includes income from forest sales after deduction of paid costs.

Non-work private income covers rental income, other property income and private transfers. Property income includes interest income and dividends. Private transfers include any financial support or maintenance from persons outside the household.

Social transfers include social security benefits and social assistance allowances. Income components have been specified in detail by their function according to the ESSPROS classification (The European System of integrated Social PROtection Statistics).

Transfers paid consist of direct taxes and other transfers paid, which are social security contributions, statutory pension and unemployment insurance contributions and voluntary pension insurance contributions.

In the ECHP UDB total net income (variable HI100) is implemented as the main income concept. Total income can be calculated with the help of the net-gross ratio (variable HI020) as follows: Total income = HI100/HI020.

Equivalised income

Various income concepts are derived from household actual current income and household total income and total net income. Equivalised income takes into account different sizes and compositions of households by modified OECD equivalisation. It weighs the first person aged 14 or over by 1.0, and subsequent ones by 0.5, and each child aged under 14 by 0.3.

Comparability in time and with other sources

The income concepts and their definitions have been implemented across the survey years. The contents of a few of them have changed in terms of detailed components, because data on all items in them have not been collected by interviews in 1998 to 2000. The missing items are imputed by using interview data concerning the other items or other survey years (for more information on imputations performed, see Chapter 6).

Comparing with other national income statistics in Finland, the ECHP concept of household total net income is equal to the household disposable monetary income of the Income Distribution Statistics[1] (IDS) and the Household Budget Survey (HBS), but the classification of its major components and coverage varies to some degree. The household disposable income of the IDS and the HBS also includes imputed rents and income in kind from self-employment[2], which are not included in any of the ECHP's income concepts. Benefits in kind of wage earners are included in the Finnish ECHP. The household total income of the ECHP and the household gross income of the IDS and the HBS also differ in the inclusion of imputed rents and income in kind from self-employment. Among the very few items which are absent from the ECHP income concept, profits from sales is the most significant one.

One further source of data on income, i.e. Statistics on Income and Property, only covers income recipients' (private individuals') income subject to state taxation and thus, compared with the personal income components of the ECHP, its contents are more restricted.

1 The Income Distribution Survey is considered the best national source of income data.

2 Income in kind from self-employment was included to the IDS household disposable income up to 1999.

Regarding the coverage of national income statistics, the ECHP and the IDS cover most of the income items that are not available from administrative sources. The most important ones of these are interest income taxed at source, interest income exempt from tax and income transfers between households. These are not included in the HBS.

3.3 Economic activity

Of the main classifications of economic activity available in the ECHP, the ILO main activity status and self-defined main activity status refer to a person's status at the time of interview. In addition to these, the month-by-month main activity status calendar is obtained retrospectively for the year preceding the interview.

ILO main activity status

The definition of the ILO main activity status is in line with the Labour Force Survey (LFS) framework, in which the working age population is divided into three mutually exclusive and exhaustive groups: persons in employment, unemployed persons and inactive persons. The ECHP uses the LFS definitions of employment and unemployment, which follow closely those adopted by the 13th International Conference of Labour Statisticians (ILO definitions). In the ECHP, persons in employment are further classified according to whether or not they normally work for at least 15 hours per week (Eurostat 1996).

Persons normally working for 15 hours or more are asked for more detailed information on job characteristics. On the other hand, of persons working fewer than 15 hours per week, more information is collected on seeking for work.

The ILO main activity status (UDB variable PE003) classifies persons in the following way:

- Normally working (working 15+ hours a week)
- Currently working (working less than 15 hours a week)
- Unemployed
- Discouraged worker
- Economically inactive.

Apart from paid employment or self-employment, the concept of work includes paid apprenticeship and training under special schemes related to employment. Unpaid work in a family enterprise of a family member is also included. If more than one job is held simultaneously, then the 15-hour limit refers to the total of all such jobs. The term normally refers to disregarding temporary changes in working hours, and to an averaging over time in case of fluctuations.

Employees temporarily absent from work are considered to have a job if there is an arrangement with the employer for more or less regular work. If the person is absent for a long time (six months or more), he/she is said to have a job only if some pay is received during the absence (Eurostat 1995). However, persons on various family leaves (e.g. on child care leave) are considered as normally working if there is an assurance of a return to work.

Persons working in highly seasonal activities such as in tourism are normally not considered as having a job during the off-season period. A self-employed person is said to have a business if an office, store, farm or other place of business is maintained, or machinery and equipment belonging to the person continue to be used.

Persons who are not normally working for 15 hours or more but who have done some work during the reference week (seven days preceding the interview) or are temporarily away from a job or business normally involving less than 15 hours of work per week are considered as currently working.

Persons fulfilling the following four criteria are classified as unemployed : the person 1) is without work, 2) is seeking work, 3) would be able to start work within two weeks, and 4) has taken active steps in the past four weeks to find work or has received a job offer during the past four weeks. Persons without work and who have already found work or who are awaiting the outcome of an application or an interview are classified as unemployed if they would be able to start work within two weeks.

Discouraged workers are persons without work who would be able to start in a job within the next two weeks but who are not seeking work because they believe no suitable work is available.

All persons who are not classified in the classes defined above are defined as economically inactive.

Self-defined main activity status

In this classification, persons are classified as working if they normally work for at least 15 hours per week. This is defined in exactly the same way as the normally working in the ILO main activity status. Persons working are further classified according to their status in employment. For the remaining, the Eurostat recommendation is that the main activity status, including the status of being unemployed, be determined according to self-declaration, on the basis of the most time spent. Accordingly, no definitions of unemployment, for example, are given in the Eurostat recommendations. However, in the Finnish implementation of the ECHP, most other main activity statuses than working are also given definitions. The definitions are similar to those used in the IDS. According to the self-defined main activity status, persons are classified in the following way:

- Working with an employer in paid employment (15+ hours per week)
- Working with an employer in paid apprenticeship (15+ hours per week)

- Working with an employer in training under special schemes related to employment (15+ hours per week)
- Self-employment (15+ hours per week)
- Unpaid work in a family enterprise (15+ hours a week)
- In education or training
- Unemployed
- Retired
- Doing housework, looking after children or other persons
- In community or military service
- Working less than 15 hours per week
- Other economically inactive.

Persons working in paid employment are persons who are recompensed for their work with pay or compensation. Persons in paid apprenticeship are persons who have a contract of apprenticeship, which provides for work and training in the enterprise. Training under special schemes related to employment includes on-the-job training and subsidised work. Entrepreneurs are persons who engage in economic activities for the acquisition of income on their own account and risk. Those working in an unlimited, limited or partnership company are defined as entrepreneurs when they alone or with their family members own at least half of the company. A person is classified as doing unpaid work in a family enterprise if he or she works at least one third of the normal working time in the branch and receives benefits in kind and only small wages from the work. The person does not have ownership directly or through marriage to the enterprise. Such person is for example a child working at his or her parents' enterprise.

Persons not in employment are classified by preferring activity over non-activity. If an unemployed person is studying, the class in education or training should be chosen. In the list active pursuits are given first and less active ones after them.

An unemployed person is without a job, available for work and looking for work through the employment agency or newspaper advertisements or some other way. Persons dismissed temporarily are also regarded as unemployed. All persons whose main source of livelihood is pension income, not only survivors' pension, are considered as being retired. Economically inactive homemakers and others who mainly do household work in their own household are classified as doing housework. Persons receiving home care allowance for a sick child, a disabled or an elderly person are also considered as doing housework. Persons on various family leaves who do not have a job to which they can return (and are therefore not considered as being in employment) are also classified in this category. Persons who cannot be placed anywhere else are classified as other economically inactive. For example, persons living on property income or savings are classified into this group.

Month-by-month main activity status calendar

The month-by-month main activity status calendar contains retrospective information for the year preceding the interview. The respondent is asked to choose the main activity status for each month, given the following instructions: if a person's weekly working hours are 15 or more, one of the first four options is to be chosen (see the list below). If a person has had various activity statuses during a month, employment should be preferred over other statuses. If the status in employment varies during a month, the order of preference is descending order as in the list below. Persons not in employment choose a status on the basis of most time spent. Here again, the Finnish implementation of the ECHP departs from the Eurostat recommendations: other main activity statuses than those related to working are also given definitions. The definitions are in most cases the same as in self-defined main activity status. Persons on maternity leave who receive remuneration from their employer (usually during three months) are classified as being in paid employment. After this period, persons on various family leaves are classified as doing housework. Persons receiving only the daily allowance from the Social Insurance Institution are classified as other economically active during maternity and parental leave and as doing housework thereafter[3]. The classes available in the month-by-month main activity status calendar (UDB variables PC001-PC012) are:

- Paid employment
- Paid apprenticeship or training under special schemes related to employment
- Self-employment
- Unpaid work in family enterprise
- In education or training
- Unemployed
- Retired
- Doing housework, looking after children or other persons
- In community or military service
- Other economically inactive.

3 In practice, persons on various family leaves were often classified as doing housework irrespective of the type of family leave and the type of maternity allowance

4 Design and implementation of the Finnish ECHP

4.1 Target population

The target population consists of members of private households permanently resident in Finland. Persons living permanently abroad, as well as persons without a permanent place of residence and persons living in institutions such as old-age homes or hospitals do not belong to the target population.

4.2 Sample design

The sample and data collection were joined with the Income Distribution Statistics (IDS). The IDS has a two-year rotating panel design. The ECHP sample consisted of the households belonging to the "new" part of the sample, i.e. households participating in the survey for the first time in 1996. The IDS sample is a two-phase stratified network sample. The population information system of the Population Register Centre was used as a frame. The frame population consisted of persons permanently living in Finland aged 15 and above. The sample was drawn in the following way (Statistics Finland 1998): A master sample was selected from the frame ordered according to domicile code. The size of the frame population was 4 086 219, of which a master sample of 31 440 individuals was chosen by systematic selection. Individuals selected in the master sample are called target persons. Then, dwelling units were constructed by adding to the master sample all the persons sharing the same domicile code as the target persons[4]. The master sample was merged with the most recent taxation records (1994) whose information was used to form a preliminary socio-economic group for each household (a household's socio-economic group was approximated by the socio-economic group of the target person). Before the drawing of the final sample, persons living permanently in institutions and other overcoverage were excluded. The final sample was drawn using stratification according to socio-economic groups and aggregate taxable income: farmers, entrepreneurs and high-income wage earners having the largest sampling fractions. Relatively large sampling fractions in these strata were used in order to achieve an acceptable precision of estimation in the relevant subgroups.

4 Households are defined later on in the interview stage In approximately 80 per cent of the cases the structure of the household equals that of a dwelling unit.

Table 2: Sample size and allocation (Source: Statistics Finland 1998)

Stratum		Master sample	Original sample	Excluding overcoverage
Wage and salary earners				
1	<100 001	6 734	1 000	994
2	100 001–135 000	3 854	727	724
3	135 001–206 000	2 947	562	561
4	>206 000	996	375	371
Entrepreneurs				
5	<114 001	788	297	296
6	>114 000	363	177	177
Farmers				
7	< 95 001	905	329	328
8	> 95 000	287	214	213
Pensioners				
9	< 70 001	5 515	622	586
10	> 70 000	2 220	437	425
Other				
11	< 75 001	5 848	620	607
12	> 75 000	590	229	228
No tax record				
13		393	143	141
All		**31 440**	**5 732**	**5 651**

4.3 The longitudinal sample

The sample of the first wave of the panel, i.e. the initial sample, consisted of all persons enumerated in the households selected in the sample, excluding overcoverage. The enumeration was done during the interview. In case a household was not contacted or refused to participate in the survey, persons enumerated in the corresponding dwelling unit were defined as belonging to the initial sample. All persons belonging to the initial sample are called sample persons. Children born to sample mothers during the run-time of the panel became sample persons as well. These sample persons were followed from wave to wave and all members of sample persons' households aged 16 or more were interviewed. In the course of the panel, new households (split-off households) were added to the panel as a result of movement of sample members from their original households. Households no more containing a sample person were dropped from the sample. Thus the sample for the subsequent waves, i.e. the longitudinal sample, consists of all persons in households with at least one sample person.

Sample members were not followed in case:

- A sample member moved permanently abroad (whether inside or outside the EU)
- A sample member moved permanently to an institution.

In addition to the above rules, the follow-up of sample persons and their households depends on the household interview result. In addition to successfully interviewed households, some of the nonresponding households were forwarded to the next wave. In the first wave of the panel, i.e. in 1996, households that could not be contacted but whose address or telephone number was known, as well as households temporarily absent and households temporarily in an institution were forwarded to the next wave. Also, households that gave an interview in the IDS but did not respond to the ECHP were forwarded irrespective of the reason for nonresponse in the ECHP. This is because the data collection of the ECHP and IDS was joined for the first two years of the ECHP and households responding in the IDS were in any case forwarded for the second IDS interview in 1997.

From 1997 onwards, some households that were interpreted as "initial refusals" were also forwarded. Households that could not be interviewed during two consecutive waves were dropped from the sample. Table 3 summarises the household forwarding rules applied in the Finnish subset.

Table 3: Household forwarding rules

Nonresponse code	Description	W1=>W2	W2=>
Refusals			
110	hh refused, no precice reason known	no	no
120	hh refused because of lack of time	no	yes
130	hh refused in principle	no	no
140	hh refused because of illness or disability	no	no
150	hh refused because of subject of survey	no	no
160	did not refuse, but no time agreed	no	yes
170	not permitted by some other person to take part	no	no
180	hh refused because of data collection method	no	yes
Not contacted			
210	no contact, address and/or tel. number known	yes	yes
220	address unknown, not found	no	no
230	hh temporarily absent or on holiday	yes	yes
250	hh temporarily at old age home	yes	yes
260	hh temporarily in hospital	yes	yes
270	hh temporarily in correctional or penal institution	yes	yes
Other non-interview			
320	interview impossible because of language reasons	no	no
350	interview lost because of technical problems	yes	yes
Overcoverage			
510	hh dead	no	no
520	hh living permanently* abroad within the EU	no	no
521	hh living permanently* abroad outside the EU	no	no
530	hh permanently* at old age home	no	no
540	hh permanently* in hospital	no	no
550	hh permanently* institutionalised	no	no
Nonresponse in two consecutive waves		-	no

* permanently refers to a period of at least two years

4.4 Data collection and fieldwork

Questionnaire

The requirement of comparability across EU countries implied the need to use a standardised blue-print questionnaire centrally designed by Eurostat. However, different questions are sometimes required to obtain the same sort of information in different countries, and therefore the questionnaires could not be identical in each Member State (Eurostat 1996).

In the ECHP, three types of questionnaires were used: the household register, the household questionnaire and the personal questionnaire. The household register serves mainly as a means for controlling and tracing evolution of the sample over time. The household questionnaire collects information on changes in the household location; housing conditions, amenities, problems and possession of durables; housing tenure, mortgage and rent amounts paid; financial situation of the household; sources of household income and the approximate total net monthly amount; housing allowance, social assistance and rental, property and other income received by the household as a whole. The personal questionnaire is the most detailed part of the interview. It collects information on each member's (aged 16 or over) economic activity and income, and on a large number of other variables (Eurostat 1996).

The questionnaires used in the Finnish ECHP were quite similar to the standardised questionnaire, although some changes were made. The household register differed the most from the blue-print version. As regards the household and personal questionnaires, in all other years except 1996 and 2000 income information was collected mostly from administrative registers. Thus, most of the income questions were removed from the 1997, 1998, 1999 and 2001 questionnaires. For the purposes of research related to the quality of interview income data, income questions were added to the questionnaire in 1996 and 2000. Although in 1996 and 2000 all the income information was collected by interviews, it was later replaced by register information in order to maintain the comparability of income data over survey waves. As regards departures from the blue-print version of the questionnaire, some fields were also pre-filled with answers from previous interviews. Also, in response to feedback from the interviewers, some improvements were made to the questionnaire routing.

The flow diagrams of the wave 3 (1996) blue-print household questionnaire and of the blue-print personal questionnaire are presented in Appendix 1. The Finnish questionnaires can be found at the following Internet address: http://tilastokeskus.fi/tk/el/echp.html. The blue-print questionnaires can be found at the CIRCA (CIRCA = Communication & Information Resource Centre Administrator) service of the European Commission, see http://forum.europa.eu.int/ (choose Eurostat, ECHP).

Eligibility for the interview

All sample persons and their cohabitants aged 16 or over at the beginning of the survey year living in private households are eligible for the interview. Persons under 16 become eligible for the interview after reaching the age of 16.

Respondent to the household questionnaire

When choosing the respondent to the household questionnaire, priority was given to the head of the household, who holds the main responsibility for the living of the household. The spouse of the head of the household or the oldest member in the household was chosen in the second place. Thirdly, the person who was the most knowledgeable about the household's economy was chosen.

Fieldwork

The fieldwork was conducted by interviewers of Statistics Finland's Interview and Survey Services. Prior to the fieldwork of the initial wave, the interviewers were trained and the survey questionnaire was tested in a pilot survey. The pilot survey was carried out in October to November 1995. Each interviewer attended a briefing session lasting one day. The size of each briefing group was about 20 to 30 interviewers. Before participating in the session each interviewer received the Blaise[5] questionnaire, instructions and other material for the survey to prepare them for the training.

Interviewers also attended training sessions in the following years. Because all the interviewers had been working on the survey earlier, no training session was organised in 2001.

Before the interview of each wave, an advance letter was sent to sample households. In the latest waves sample households received some survey results alongside with the advance letter, and in 2000 a pocket calculator was sent to sample households as well. After sending the letters, interviewers tried to contact households by phone. If contact was made, a time for appointment and interview was agreed.

The fieldwork of the ECHP was carried out between February and May in 1996 and 1997, but was then changed to take place at the end of the year (Table 4).

Table 4: Fieldwork periods

Year	Fieldwork months
1996	2–5
1997	2–5
1998	10–12
1999	10–12
2000	8–12
2001	9–12

5 Blaise is a software system for computer-assisted interviewing, developed by Statistics Netherlands

Table 5 presents the number of interviewers, average interviewer workload and average interview times. In general, the number of interviews per interviewer has decreased during the six waves. In the table, the number of households per interviewer has been calculated using the total number of households in the sample, also including households found to belong to overcoverage.

Interviewers' experiences of fieldwork

After the initial wave, assessments implied that interviewers considered the questionnaire somewhat laborious. For example, the structure of the questionnaire was quite complicated and the routing was difficult to perceive. Questions concerning income components, benefits, education, relationships and dates were considered problematic. Due to the growing command over the questionnaire itself, interviewers' attitudes changed in later waves. In the second wave, interviewers did not consider the questionnaire as difficult as in the first wave. From 1997, most of the variables related to income were collected from registers, and therefore the body of income questions became shorter and less diverse.

As the continuation of the Finnish ECHP with the original sample was under serious consideration during autumn 1999, a question was added to the 1999 questionnaire about households' willingness to participate in the survey for a few additional years. The interviewers found the 2000 fieldwork period fairly demanding, because they also had to try to contact households that had not been willing to continue in the survey and ask them to give an interview. The fieldwork of the final wave in 2001 came off better than fieldwork in any other wave.

Ramadan (2001) analysed the results from a survey on interviewers' attitudes towards fieldwork, conducted at the time of the 1999 fieldwork period. Table 6 shows how interviewers agreed on the following statements:

A It is an advantage that the survey is repeated similarly in every year
B I am becoming acquainted with interviewees, which makes co-operation run smoothly
C Interviewees are becoming familiar with the course of the survey
D Interviewees are clearly tired of the survey
E Interviewees consider the survey important
F I feel it very awkward to approach always the same households

Interviewing method

Interviews were carried out using computer-assisted personal interviewing (CAPI). However, telephone interviews were allowed in case a CAPI interview with some household members would have been impossible, in case of households consisting only of the sample person and in case of households that would have otherwise remained nonrespondent.

If a sample person lived temporarily away (e.g. because of military service or studying) but was still considered to be part of the household, his/her household was interviewed and an interview with the sample person was made by phone or proxy. However, telephone interviews were not attempted in case temporary absence was due to being abroad or in an institution. Instead, a proxy interview was conducted if the sample person's household included members staying in the original household. In case no members were left in the original household, the household was given a nonresponse code.

In case a proxy interview was conducted, a reduced form of the questionnaire was used, where questions involving opinions or subjective evaluation were left out.

Table 7 shows the share of each interviewing method used in the Finnish ECHP.

Table 5: Number of interviewers, average interviewer workload and average interview time

	1996	1997	1998	1999	2000	2001
Number of interviewers	140	134	129	136	124	117
Average interviewer workload						
households per interviewer	41	35	35	33	35	29
household interviews per interviewer	30	31	30	28	25	27
individual interviews per interviewer	58	60	57	52	45	48
Average interview time (minutes)						
household questionnaire	14	15	14	14	15	11
individual questionnaire	21	30	28	17	20	14

Table 6: Interviewers' experiences of fieldwork (Source: Ramadan 2001)

Agreement about statements A to F: percentage distribution	A	B	C	D	E	F
agree completely	14.1	38.2	18.1	16.1	6.0	7.0
agree somewhat	51.3	50.8	48.2	43.7	33.7	29.6
do not know	13.1	4.0	14.6	14.1	34 2	-10.1
disagree somewhat	18.1	6.0	16.1	23.1	23.6	34.7
disagree completely	3.5	1.0	3.0	3.0	2.5	18.6

Table 7: Interviewing methods (%)

	1996	1997	1998	1999	2000	2001
Household interview						
face to face personal interview (CAPI)	93.5	85.5	69.7	63.4	57.8	51.6
telephone interview	6.5	14.5	30.3	36.6	42.1	48.4
Individual interview						
face to face personal interview (CAPI)	82.1	74.4	61.5	56.8	53.2	47.3
telephone interview with the person concerned	9.4	14.7	28.2	33.1	37.0	42.7
proxy interview	8.5	10.8	10.3	10.2	9.8	10.0

4.5 Data editing

The first step of data editing was carried out during interviews. The Blaise questionnaire included data checks that prevented interviewers from entering too small or too large values or answers that were inconsistent with previous answers. These checks were improved each year along with the growing experience from running the panel. In the ECHP, data from each wave are first checked and edited by the national data collection units (NDUs) and then sent to Eurostat for further checks. Eurostat informs the NDUs about the results of its own checks, and when needed, requests the NDUs to review the data. Statistics Finland conducted checking and data cleaning using SAS and checking programs provided by Eurostat. Compulsory data editing was made case by case investigating and correcting the input data in the Blaise questionnaire. Special attention was paid to unusually high and low values in monetary variables.

4.6 From PDB to UDB

Because of an increasing demand for ECHP based statistics, Eurostat has created a user-friendly longitudinal Users' DataBase, referred to as the UDB. The UDB is constructed based on the so-called Production DataBase (PDB), which includes results from the interviews (Eurostat 1996, Eurostat 2003). Another reason for creating the UDB is that the PDB contains information considered confidential on the basis of the EU statistical regulations and its access is therefore confined to Eurostat and the NDUs.

The PDB consists of micro-data files that are sent to Eurostat in a form that is very close to the Community version of the questionnaire. For each wave, there are four cross-sectional files:

- Household register (D-file)
- Personal register (R-file)
- Household questionnaire (H-file)
- Personal questionnaire (P-file).

The UDB consists of six data files for each wave:

- Country file
- Longitudinal link file
- Register file
- Relationship file
- Household file
- Personal file.

The country file contains population figures, such as the number of private households and persons in the country, as well as exchange rates and purchasing power parities for converting national currencies. The longitudinal link file includes data from all the waves and assigns a record to every person ever appearing in the ECHP. The register file covers, in each wave, all persons currently living in households with a completed household interview. The relationship file has been derived from the relationship matrix in the PDB personal register file. Its records have the format "person A has a relationship R with person B". The household file and the personal file contain one record for each household/person with a completed interview.

In addition to the standard variables covered in the original PDB files, the UDB includes a small number of additional variables, such as total household net income, variables that require additional information not included in the original files, and a small selection of derived variables. Variables have been fully reorganised, grouped together and standardised. The names of the variables are the same in each wave. The UDB also includes weights to be applied in the analysis of the data.

5 Nonsampling errors

Coverage errors, measurement errors, processing errors and nonresponse errors are the components of nonsampling errors. Coverage error exists because some units of the target population are not part of the sampling frame and therefore can never be measured (undercoverage) or because the sampling frame includes units that are not part of the target population (overcoverage) (Groves 1989). Measurement error results from the deviations of respondents' answers from their true values. Processing error occurs during the processes that convert reported data to published estimates and consistent machine-readable information. This error type includes data entry, coding, editing and imputation errors. For instance, recording errors and poorly specified editing or imputation models cause processing error (Statistical Policy Office 2001). Nonresponse error is caused by unsuccessful attempts to obtain the desired information from eligible units.

5.1 Coverage errors

Target population

The target population of the Finnish subset consists of members of private households permanently residing in Finland. Persons living permanently abroad, as well as persons without a permanent place of residence and persons living permanently in institutions such as old-age homes or hospitals do not belong to the target population.

Frame population

The population information system of the Population Register Centre was used as the sampling frame. The population information system covers all people who are permanently resident in the country. Data in the population information system are updated continuously on the basis of statutory declarations by private citizens and authorities.

Undercoverage

The time gap between the reference period of the sampling frame and the fieldwork period creates undercoverage. The sample of the Finnish subset was drawn from the population information system in November 1995 whereas the fieldwork was conducted during February to May 1996. Undercoverage consists of immigrants, returnees and persons who moved from institutions back to private households after the drawing of the sample and therefore, were not covered by the sampling frame.

Overcoverage

With regard to overcoverage, the population information system covers all persons permanently resident in Finland while the target population of the Finnish subset only consists of members of private households permanently living in Finland. Persons living abroad or permanently in institutions give rise to overcoverage in the sampling frame that was excluded at the sample drawing stage. Some overcoverage was also detected during the fieldwork of the first wave, arising from the time lag between the reference period of the sampling frame and the fieldwork period. These were households that had ceased to exist because their only member had died or households that had moved permanently abroad or permanently into institutions after the sample drawing stage. There were 81 overcoverage households detected during the fieldwork.

As in any panel survey, the sample was subject to losses due to demographic events such as death or emigration or due to moving into institutions after the first wave. From 1997 to 2001 there were 27, 52, 35, 48 and 63 losses in terms of households, respectively. In addition to the different types of losses described above, these also include households that were dropped from the survey because all their members or sample persons had moved out.

5.2 Measurement errors

Measurement error comes from four primary sources in survey data collection (Statistical Policy Office 2001):

Questionnaire
- Wording of questions is fallacious or ambiguous
- Instructions are inadequate
- Data specification is inadequate or inconsistent with what the survey requires
- Length of the questionnaire and length of the questions are inappropriate
- Order of questions, response categories, open and closed formats, and questionnaire format affect respondents' answers

Data collection method
- Interaction between the interviewer and the respondent
- Instrument
- Programming errors of electronic questionnaires

Interviewer
- Failure to read the question correctly
- Delivery of the question with an intonation that influences the respondent's choice of answer
- Failure to record the respondents' answers correctly.

Respondent
- Misunderstanding the meaning of the question
- Failing to recall the information accurately
- Failing to construct the response correctly
- Respondent rules.

Nordberg et al. (2001) conducted a study of measurement errors in income data of the first wave of the Finnish subset. According to the results, interviews tend to yield lower estimates of various income components compared with data retrieved from administrative registers. In addition, the relative difference between survey and register income data increases with income level. As a response to the results of this study, it was decided to use register data as a source of income information. The first year income information was later replaced by register information in order to maintain the comparability of income information over time. To enable dynamic analyses of measurement error, income information was collected by interviews again in 2000. In the PDB and UDB data sets, however, register income information was used.

Not all income information can be retrieved from registers. For example, the lowest amount of monthly income to make ends meet, a question asked in the household part of the ECHP questionnaire, cannot obviously be retrieved from registers. This question was tested among some other questions by cognitive tests and a group interview of interviewers conducted by Statistics Finland's survey laboratory (SurveyLaboratorio 2000). According to Eurostat's instructions for asking this question, interviewers should not offer a definition of "making ends meet", but the respondent is required to answer in terms of his or her interpretation (Eurostat 1995). The results of survey laboratory tests showed that there was large variation between respondents' interpretations of the question. Some respondents only gave the amount of their monthly expenditure on food, others also took housing costs into account. Some persons included medical expenses, others not. For one family the amount exceeded their total monthly net income, for another the amount was below the monthly rent for accommodation. The inadequate instructions and ambiguous wording of the question seem to have led to large errors due to the survey instrument and, therefore, limited usefulness of this variable.

5.3 Nonresponse errors

Nonresponse reduces sample size, results in increased variance of estimates and has a possibility to bias estimates if the respondents differ from nonrespondents by characteristics related to the variables of interest. Because the ECHP aims at interviewing both households and all their eligible members, nonresponse can occur on two levels. Inability to contact the household,

the household's refusal to co-operate, language problems and technical losses result in household level nonresponse. Person level nonresponse involves failures to interview one or more eligible persons of an interviewed household. It is useful to distinguish between the following types of nonresponse present in the ECHP (Peracchi 2002):

- The failure to obtain any information at all from a designated unit results in unit nonresponse
- The failure to measure only some variables of interest from an otherwise co-operating unit causes item nonresponse
- The failure to interview eligible households or persons that were present in the previous wave creates attrition
- The failure to obtain data from a sample unit at any wave before its addition to the initial sample gives rise to new entry.

The two general approaches to compensate for nonresponse are weighting and imputation. Imputation procedures and weighting algorithms used in the Finnish subset are described in Chapters 6 and 7.

Unit nonresponse

It has turned out that in the Finnish ECHP nonresponse biases estimates most in the initial wave (Rendtel 2003, Pyy-Martikainen and Rendtel 2003, Sisto 2003). Therefore initial wave nonresponse at the household level is analysed here in somewhat more detail. Tables 8 to 16 include both weighted and unweighted response rates. Weighted rates (weighted by reciprocals of inclusion probabilities) describe nonresponse in the population whereas unweighted response rates indicate the success of fieldwork.

Table 8 shows response rates by stratum. Unweighted response rates by stratum varied between 67.9 and 84.5 per cent, entrepreneurs with lower income having the lowest response rate and farmers with higher income having the highest rate. Pensioners with lower income and farmers with higher income had the lowest and highest weighted response rates, 69.1 and 85.1 per cent, respectively.

Table 8: Response rate by stratum

Stratum		Response rate (%) unweighted	weighted
Wage and salary earners			
1	<100 001	75.0	75.0
2	100 001–135 000	72.1	71.4
3	135 001–206 000	74.3	74.5
4	>206 000	73.1	73.4
Entrepreneurs			
5	<114 001	67.9	70.7
6	>114 000	70.1	70.3
Farmers			
7	<95 001	80.2	80 7
8	>95 000	84.5	85.1
Pensioners			
9	<70 001	70.0	69.1
10	>70 000	71.8	71.2
Other			
11	<75 001	70.4	69.3
12	>75 000	74.6	73.9
No tax record			
13		73.8	71.9

Table 9: Response rate by region

Region	Response rate (%) unweighted	weighted
FI11 Uusimaa	67.9	66.6
FI12 Southern Finland	74.0	72.0
FI121 Varsinais-Suomi	71.1	68.6
FI122 Satakunta	73.1	74.6
FI123 Häme	81.6	80.5
FI124 Pirkanmaa	76.3	75.2
FI125 Päijät-Häme	65.4	59.1
FI126 Kymenlaakso	75.9	74.1
FI127 South Karelia	78.8	75.5
FI13 Eastern Finland	80.2	78 7
FI131 Etelä-Savo	82.2	78.9
FI132 Pohjois-Savo	81 6	81.3
FI133 North Karelia	77.8	75.6
FI134 Kainuu	77.8	77.6
FI14 Mid-Finland	74.1	73.9
FI141 Central Finland	75.7	74.2
FI142 South Ostrobothnia	77.6	76.7
FI143 Coastal Vaasa	65.2	67.2
FI144 Central Ostrobothnia	79.0	81 6
FI15 Northern Finland	73.9	74.2
FI151 North Ostrobothnia	72.4	71.2
FI152 Lapland	76.4	79.1

Response rates by region are presented in Table 9. In general, initial wave response rates by region were lowest in Uusimaa and highest in Eastern Finland. This result is similar to other surveys conducted by Statistics Finland. Unweighted response rates varied between 67.9 and 82.2 per cent in Uusimaa and Etelä-Savo. Uusimaa had the lowest weighted response rate as well, 66.6 per cent, but weighted response rates achieved their highest value, 81.6 per cent, in Central Ostrobothnia.

Response rate was clearly lowest in one-person households, but considering response rates in larger households there were no big differences (Table 10).

Table 11 presents response rates by family type. Households formed by a father and children had the highest response rate and households formed by a cohabiting couple with only non-common children had the lowest response rate. However, these groups were also the two smallest, comprised of only 89 and 66 households, respectively.

Table 10: Response rate by household size

Household size	Response rate (%) unweighted	weighted
1	70.1	67.5
2	74.8	74.2
3	72.8	75.5
4	74.2	75.4
5+	73.9	76.5

Table 11: Response rate by family type

Family type	Response rate (%) unweighted	weighted
married couple without children	73.4	73.7
married couple with children	75.4	76.2
mother and children	71.3	71.8
father and children	80.9	85.0
cohabiting couple with common children	73.8	75.7
cohabiting couple with only non-common children	68.2	67.6
cohabiting couple without children	72.1	71.6
other	69.2	67.8

Response rate was highest among households whose reference person's disposable income was between FIM 50,000 and 99,999 per year (Table 12). Households whose reference person had high disposable income were least willing to participate.

Households whose reference person was a student during 1996 had the highest response rate, although only 120 households were included in this group (Table 13). This result is perhaps somewhat surprising. It is of course possible that student households really participated in the survey more often than other households, but there are also other possible explanations. If we consider the composition of nonrespondent households, we have to rely on our knowledge about register information – and according to registers, many students are still living permanently with their parents. Households whose reference person was unemployed had nearly 10 percentage units lower response rate than households whose reference person was employed.

Response rate was lowest when the reference person's educational level was very low or very high (Table 14). Households where the reference person's educational level was lower university or upper secondary were most keen to participate in the survey.

Table 15 shows response rates by the reference person's age. In general, response rate is highest in households whose reference person is under 35 and lowest in households whose reference person is middle-aged.
Response rates by the reference person's marital status are presented in Table 16. Households whose reference person was married or widowed participated in the survey more often than other households did.

Table 12: Response rate by the reference person's disposable income (FIM)

Reference person's disposable income	Response rate (%) unweighted	weighted
< 50 000	76 9	72.9
50 000– 74 999	81.0	76.6
75 000– 99 999	80.6	78.7
100 000–124 999	69.5	66.4
125 000–149 999	67.3	63.7
150 000–199 999	56.2	48.8
> 199 999	42.7	39.6

Table 13: Response rate by the reference person's main activity in 1996

Reference person's main activity	Response rate (%) unweighted	weighted
employed	74.2	74.3
unemployed	66.9	64.5
student	86.7	84 3
retired	71.4	69.0
other	63.7	62.3

Table 14: Response rate by the reference person's educational level

Reference person's educational level	Response rate (%) unweighted	weighted
Higher education		
postgraduate or equivalent education	70.8	68.4
graduate level of higher education	74.9	76.7
undergraduate level of higher education	77.0	77.2
lowest level of higher education	76.0	75.7
Upper secondary education		
upper level of upper secondary education	77.2	77.1
lower level of upper secondary education	73.4	72.0
Basic education	70.2	68.3

Table 15: Response rate by the reference person's age

Reference person's age	Response rate (%) unweighted	weighted
<25	79.3	80.8
25–34	78.8	77.4
35–44	72.7	70.8
45–54	70.3	69.3
55–64	72.3	68.8
65–74	72.6	69.9
>74	70.9	69.9

Table 16: Response rate by the reference person's marital status

Reference person's marital status	Response rate (%) unweighted	weighted
married	74.4	74.1
divorced/separated	67.9	65.9
widowed	74.6	73.7
unmarried	72.0	70.8

Eurostat (1996a) and Verma (1995) presented several formulas for response rate calculation and considered indicators of response for both households and persons. The indicator chosen here to describe the performance of each wave and evolution of the panel at the household level is the wave response rate. Household wave response rate measures the proportion of successfully interviewed households among those that were passed on to the current wave W from the previous wave W-1 or newly created or added during W. Households found ineligible or non-existent are excluded.

Table 17 presents the amount of old and new households in waves 1996 to 2001, as well as the magnitude of overcoverage and net sample. The number of interviewed households and the number of households in some basic nonresponse categories are also given. Technical loss refers to a situation where an interview has been made but the data are lost.

Due to overcoverage, refusals and other drop-out cases, the size of net sample and the number of households passed on from the previous wave decrease during the years. The number of interviewed households and the number of non-contacts decline as well. Overcoverage and the number of new split-off households also vary, but no obvious trend can be seen. Refusals decrease first from 1996 to 1999, but their number is in 2000 over three times as high as in 1999. This steep rise can be partly explained by the fact that in 1999 households were asked if they were willing to take part in the survey in future. Many refused, and used that as an excuse for turning down the survey request in 2000. The number of cases lost because of technical loss is much higher in waves 1998, 1999 and 2000 than in other waves.

Table 18 presents the unweighted household wave response rates, wave refusal rates and wave non-contact rates, which have been calculated based on Table 17. Wave response rate is lowest in waves 1996 and 2000, and highest in 2001. Wave refusal rate decreases first during 1996 to 1999, but is in 2000 over three times as high as in 1999. Wave non-contact rate is highest in the initial wave and lowest in 2000 and 2001.

Compared with response rates on household level, response rates on the individual level are much higher (Table 19). Response rates for eligible persons in respondent households are at least 97 per cent in all waves.

Table 17: Outcome of households

	1996	1997	1998	1999	2000	2001
Old households	—	4 441	4 254	4 213	4 159	3 238
New households	5 732	244	320	295	169	144
Overcoverage	81	26	40	32	48	63
Net sample	5 651	4 659	4 534	4 476	4 280	3 319
Interviewed	4 139	4 104	3 920	3 822	3 104	3 115
Nonresponse	1 512	555	614	654	1 176	204
non-contact	199	135	103	95	81	64
refusal	1 288	402	353	315	969	134
language	13	3	2	1	1	0
technical loss	12	15	156	243	125	6

Table 18: Wave response rates, refusal rates and non-contact rates

	1996	1997	1998	1999	2000	2001
Wave response rate (%)	73.2	88.1	86.5	85.4	72.5	93.9
Wave refusal rate (%)	22.8	8.6	7.8	7.0	22.6	4.0
Wave non-contact rate (%)	3.5	2.9	2.3	2.1	1.9	1.9

Table 19: Outcome of persons in respondent households

	1996		1997		1998		1999		2000		2001	
	N	%	N	%	N	%	N	%	N	%	N	%
Eligible persons in respondent households	8 425	100.0	8 305	100.0	7 596	100.0	7 331	100.0	5 788	100.0	5 750	100.0
Interviewed	8 173	97.0	8 067	97.1	7 381	97.2	7 109	97.0	5 614	97.0	5 637	98.0
Nonresponse	252	3.0	238	2.9	215	2.8	222	3.0	174	3.0	113	2.0
non-contact	46	0.5	48	0.6	30	0.4	17	0.2	21	0.4	7	0.1
inability to respond	16	0.2	19	0.2	10	0.1	7	0.1	3	0.1	5	0.1
refusal	190	2.3	171	2.1	175	2.3	198	2.7	150	2.6	101	1.8

Item nonresponse

In overall, many variables had none or only a few missing answers. Questions concerning health, financial situation, rent, amount of income from different sources, payments and problems with accommodation, however, contained more missing answers. The topics of these questions are often considered to be quite sensitive, and recalling answers to some of these topics was probably difficult for some of the respondents, as well.

Attrition

Nonresponse in the ECHP is caused not only by initial wave nonresponse but also by attrition.

Attrition can be defined in numerous ways. The unit of measurement can be households or persons. Attrition can be measured with respect to the original sample members from the first wave. Or, attrition can be measured from wave to wave (Winkels & Withers, 2000). As households are not stable units over time we prefer to use persons as measurement units. In the following, attrition is defined as nonresponse at some wave after the first, given response at the first wave.

Table 20 depicts the evolution of the initial sample during the six waves of the panel. After excluding overcoverage, there remained 15 236 initial sample persons in the first wave of the panel. Both unweighted and design-weighted percentages are presented in Table 20. Looking at the unweighted figures, 23.6 per cent of the initial sample persons were under 16 at the start of the panel. In all, 53.6 per cent of the initial sample persons were successfully interviewed. The rest of the initial sample persons, 22.8 per cent, were nonresponding due to either household level nonresponse (21.1%) or person-level nonresponse (1.7%). As the panel ages, the share of initial sample persons under 16 diminishes. Some of the initial sample persons exit from the survey population because of death or moving abroad or moving into an institution. By 2001, 2.1 per cent had exited from the survey population. The share of nonrespondents cumulated to 48.4 per cent of the initial sample persons by 2001. Nonresponse includes both permanent and temporary nonresponse. Temporary nonresponse occurs when a sample person returns to the panel after missing one wave.

Table 21 shows the patterns of response and nonresponse among the initial sample persons aged 16 at least at the first wave of the panel. This would usually be the set of persons used for longitudinal person-level analyses. The response patterns are classified into eight groups: total respondents, who are interviewed at each wave of the panel; attrition nonrespondents (five groups), who drop out of the panel permanently at some wave after the first; total nonrespondents for whom no interview is obtained at any wave, and finally, other nonattrition nonrespondents who return to the panel after missing one wave. As recommended by Kalton and Brick (2000), persons who exit from the survey population are treated here as respondents. Persons lost are regarded as nonrespondents. Total respondents are the largest group consisting 35.8 per cent (unweighted) of the initial sample persons aged over 16. Due to relatively large nonresponse at wave 1, total nonrespondents are the second most frequent group with 27.0 per cent. The most frequent attrition pattern was attrition at wave 5, given participation in earlier waves. The fieldwork of wave 5 was particularly difficult due to previous uncertainty about the continuation of the panel, which shows clearly in all nonresponse calculations. Other nonattrition nonrespondents is the most demanding group for a longitudinal data analyst. Nine per cent of the initial sample persons aged 16 at least belonged to this group.

Table 22 concentrates on the 8 173 persons interviewed in the first wave. These are the persons that remain available for person-level longitudinal analyses after removing nonrespondents at wave 1. Table 22 shows how the first wave respondents divide into respondents, nonrespondents and those exiting from the survey population during subsequent waves. Persons lost are here counted as nonrespondents. As earlier, nonresponse is not necessarily an absorbing state as some of the nonrespondents may re-enter the panel after missing one wave. The largest reduction in the number of interviewed persons, 17.8 percentage points, occurred between 1999 and 2000. About 54 per cent of the first year respondents were interviewed in the last year of

the panel. The attrition rate during 1996 to 2001 was 41.8 per cent (40.2% if design-weighted). By the end of the panel, 3.7 per cent had exited from the survey population.

Table 20: The evolution of the initial sample

	1996		1997		1998		1999		2000		2001	
	unw. %	w. %	unw. %	w. %	unw. %	w. %	unw. %	w. %	unw. %	w. %	unw. %	w. %
Interviewed	53.6	56.1	51.9	53.2	46.3	47.3	44.0	44.3	34.0	34.8	33.7	34 1
Under 16	23.6	20.7	21.2	19.5	19.3	17.9	18.1	16.9	16.4	15.5	15.0	14.4
Exit from survey population	0.0	0.0	0.5	0.7	1.1	1.7	1.5	2.2	1.8	2.8	2.1	3.3
Person-level nonresponse	1.7	1.3	1.4	1.1	1.2	1.0	1.1	0.9	0.8	0.7	0.4	0.3
Household-level nonresponse	21.1	21.9	24.1	25.0	30.8	31.3	34.2	35.0	45.7	45.5	48.0	47.4
Lost	0.0	0.0	0.9	0.5	1.4	0.8	1.1	0.7	1.2	0.8	0.7	0.6

Table 21: The patterns of response and nonresponse among the initial sample persons aged 16 or over in 1996

Response patterns	unweighted %	weighted %
Total respondents	35.8	37.9
Attrition at wave 6	1.7	1.6
Attrition at wave 5	11.8	10.9
Attrition at wave 4	4.0	4.1
Attrition at wave 3	5.8	5.7
Attrition at wave 2	4.9	5.2
Total nonrespondents	27.0	26.5
Other nonattrition nonresponse patterns	9.0	8.3

Table 22: The evolution of persons interviewed in the first wave

	1996		1997		1998		1999		2000		2001	
	unw. %	w. %	unw. %	w. %	unw. %	w. %	unw. %	w. %	unw. %	w. %	unw. %	w. %
Interviewed	100.0	100.0	90.3	89.7	79.0	78.8	73.9	72.8	56.1	56.3	54.4	54.3
Exit from survey population	0.0	0.0	0.8	1.2	1.9	2.9	2.6	3.7	3.2	4.7	3.7	5.5
Nonresponse	0.0	0.0	8.9	9.1	19.1	18.3	23.5	23.5	40.7	39.0	41.8	40.2

New entry

New entry of households and persons due to household formation, marriage and previously ineligible persons becoming eligible is yet another source of sample dynamics in the ECHP (Peracchi 2002). New households enter the panel because of the split off of existing households. Also households whose refusal in previous wave was not final and households whose interview was lost due to technical problems are included in new entry of households in Table 23.

Table 24 presents new entry of individuals in the six waves of the Finnish ECHP. Besides previously ineligible persons becoming eligible, new entry of individuals includes persons who have moved into sample persons' households and persons with nonmonotone attrition pattern.

Table 23: New entry of households

	1 and 2	2 and 3	3 and 4	4 and 5	5 and 6	1 and 6
Households interviewed in both waves	3 792	3 572	3 484	2 856	2 916	2 355
New entry of households	314	348	338	248	199	760

Table 24: New entry of individuals

	1 and 2	2 and 3	3 and 4	4 and 5	5 and 6	1 and 6
Persons interviewed in both waves	7 379	6 850	6 491	5 136	5 218	4 462
New entry of individuals	689	531	618	478	419	1 175

Approaches to minimise nonresponse

Statistics Finland employed several approaches to minimise nonresponse. Interviewers were trained, advance letters were sent and telephone or proxy interviews were allowed in special cases to avoid nonresponse. In the initial wave, personal letters were sent to persuade the difficult households to answer, and interviewers received supervisors' help for difficult cases. In 2000, households received a pocket calculator as a gift alongside with the advance letter, and some survey results were also sent during the latest waves. If an appointment was made but the household was not at home, interviewers left a business card and made another visit to the household without prior notice. Additional visits were allowed if necessary and with only minor additional costs.

From 1998 to 2000, problems with the Blaise questionnaire led to a significant loss of interviews, i.e. technical loss (see Table 17). In response to the problem, changes were made to the Blaise questionnaire. The changes reduced the amount of technical loss considerably and in 2001 only six household interviews were lost due to this reason.

6 Imputation of missing values

Imputation consists of filling-in values of study variables that are missing. Usually imputation is used to compensate for item nonresponse. Imputation in the ECHP mainly concerns the components of total net household income. As most income data in the Finnish subset were drawn from registers, there was little need to impute income data.

Some preliminary imputations concerning income components collected by interviews were conducted at Statistics Finland. Forestry expenditure, interest income taxed at source, interest income exempt from tax, and pension income from abroad were not collected by interviews in 1998 to 2000. In case a component was not interviewed, the missing value was substituted by the previous year's value. Although especially interest income tends to have a relatively high percentage of refusals and 'don't know' answers, imputation was not performed in case the corresponding question was included in the questionnaire.

Imputation procedures by Eurostat are described in a separate document (Eurostat 2000c). Eurostat's imputation procedure is briefly sketched below. Some missing components were imputed using other information collected during the interview. An example is the missing annual or monthly income when the other is available. In some cases the previous year's value was used as a substitute for the missing value. If neither other information from the interview nor the previous year's value could be used, the value was imputed using the Imputation and Variance Estimation Software (IVEware) developed by the Survey Methodology Program of the Survey Research Center of University of Michigan. The IVEware performs imputations using a sequential regression imputation described in Raghunathan, Lepkowski, Van Hoewyk and Solenberger (2001).

In the Finnish subset, imputations were conducted only on income components based entirely on interview data. Concerning total net household income, the only income component where imputations were conducted was private transfers received.

The values of current total monthly net household income and current wage and salary earnings (both gross and net) were also imputed if missing. Current total monthly household income is asked by three questions. First the respondent is asked whether he or she knows what is his or her household's total net income per month (variable H0W0840 in PDB). If the answer is yes, then the amount is asked (H0W0850). If the answer is no or missing, then the respondent is asked to provide a range into which the income falls (H0W0860). Table 25 shows the share of missing values in these three questions during 1996 to 2001.

Table 25: The share (%) of missing values in questions related to current total monthly household income

Year	H0W0840	if H0W0840 =yes H0W0850	if H0W0840 =no, missing, H0W0860
1996	0.63	0.47	8.71
1997	0.58	0.84	7.24
1998	0.38	0.78	5.45
1999	0.21	0.80	3.73
2000	0.16	0.41	3.35
2001	0.22	0.53	2.36

For analysis of income and poverty, it is important to know the total income of a household. As most income components are collected from the individuals living in the household, a missing questionnaire from one or more individuals yields incomplete household income. (Eurostat 2002d). In the Finnish subset the share of interviewed households with within-household nonresponse varied between 3.2 and 4.9 per cent during 1996 to 2001. Because in the Finnish subset most income information was collected from administrative registers, it was possible to retrieve income information for the nonrespondents of an otherwise co-operating household as well. The total net personal income of nonrespondents (variable HI140 in UDB) was then added to the total household income of interviewed persons in order to obtain total net household income (HI100).

7 Weighting

The ECHP UDB includes weights for both households and persons. For most ECHP countries, the national data collection units provided the weights for the first wave. For the subsequent waves, the common weighting procedure prepared by Eurostat was usually applied. This weighting procedure was also applied in the Finnish subset.

7.1 Weighting for the initial wave

Design weights

The design weight of a household is calculated as the inverse of inclusion probability of that household. In the Finnish subset, inclusion probability π_k of household k is calculated as

$$\pi_k = \frac{m_k \cdot n_1}{M} \cdot \frac{n_{2,h}}{n_{1,h}},$$

where m_k is the number of members aged 15 or more in dwelling unit k,
n_1 is the number of dwelling units in the master sample,
M is the number of people aged 15 or more in the target population,
$n_{2,h}$ is the number of dwelling units in stratum h in the sample,
$n_{1,h}$ is the number of dwelling units in stratum h in the master sample.

Calibrated weights

Calibrated weights are calculated for interviewed households. The idea of calibration is to modify weights so that the desired marginal distributions of the respondent sample become equal to the corresponding marginal distributions of the population. Provisional weight a_k of household k used as the input in calibration is

$$a_k = \frac{1}{\pi_k \cdot \left(s_{r,h}/n_{2,h}\right)},$$

where $s_{r,h}$ is the number of respondent households in stratum h in the sample.

Weights for the first wave of the Finnish subset were calibrated using the CALMAR software (Sautory 1993). Although the unit for which the calibration is executed is the household, variables concerning both household and individual level are taken into account during the calibration. The sample

of interviewed households was to have the same structure as the population of households for the following variables:

- Population distribution by sex and five-year age category
- Distribution of dwelling units according to size
- Distribution of dwelling units according to provinces
- Income liable to state taxation.

After calibration the expansion weights were scaled such that their sum over the respondent sample of households equalled the actual number of respondent households. This means that the average household weight is 1.

In the first wave, the household and personal weights are equal i.e. each household member gets the weight of the household where he/she belongs to.

7.2 Weighting for the subsequent waves

The common algorithm to construct the weights in the ECHP includes basic nonresponse correction, calibration and scaling (Eurostat 2000b, Eurostat 2002b, Eurostat 2002c).

The weighting algorithm

In general, starting weights for each individual have to be available. For the initial wave, the starting weight is the design weight and for the subsequent waves the final base weight from the previous wave. For sample persons the final base weight is > 0, and for non-sample persons it equals 0. The first step is to calculate probabilities of re-enumeration and response:

- P1 = probability for an individual being resident in the current wave if the person was resident in the previous wave
- P2 = probability for an individual for having been resident in the last wave if the person is resident in the current wave
- P3 = probability for an individual being interviewed if the person is eligible in the current wave.

In order to calculate these probabilities, logistic regression is first employed to select variables explaining the response mechanism. Explanatory variables are selected from the following list:

- Region
- Household status (whether a new split-off household)
- Number of arrivals to or departures from the household
- Main source of income
- Number of economically active persons in the household
- Household size
- Tenure status
- Sex
- Age
- Equivalised income.

When the explanatory variables have been selected, the probabilities P1, P2 and P3 are calculated with the SAS procedure CATMOD that models categorical data and fits linear models to functions of response frequencies.

Before calibration, the provisional weights used as the input have to be calculated for persons and households. Provisional weight a_i for sample person i is

$$a_i = w_i^{start} \cdot \frac{P1_i}{P2_i},$$

where w_i^{start} is the starting weight of sample person i,
$P1_i$ is the P1 probability of sample person i,
$P2_i$ is the P2 probability of sample person i.

For the non-sample persons provisional weight a_i equals 0.

For each household, provisional weight a_k is the average of the provisional weights of all sample persons in that household:

$$a_k = \frac{\sum_{i=1}^{nsp_k} a_i}{nsp_k},$$

where nsp_k is the number of sample persons in household k.

Provisional household weights a_k were calibrated using the CALMAR software in order to reflect the distribution of the population. Variables taken into account during the calibration are:

- Household size (two classes: one person households and households with at least two persons)
- Region
- Cross-classification of age and sex.

The final household weights (UDB variable HG004) were calculated by scaling the calibrated household weights such that their sum over the interviewed sample equals the actual number of completed household interviews.

The base weights of sample persons (UDB variable RG003) were calculated by assigning the calibrated household weight to each sample person in the household and scaling the weights such that their sum over sample persons in interviewed households equals the actual number of sample persons in interviewed households. The base weight of non-sample persons is 0.

All residents (both sample and non-sample persons) of an interviewed household receive the same cross-sectional weight (UDB variable RG002), computed as the average of base weights of the household members. These weights permit the inclusion of non-sample persons in cross-sectional analysis.

In order to calculate calibrated weights of interviewed sample persons the calibrated household weight was assigned to each interviewed sample person and was divided by the probability of being interviewed, when eligible (P3). The base weights of interviewed sample persons (UDB variable PG003) were calculated by scaling the calibrated weights of interviewed sample persons such that their sum over the interviewed sample persons equals the actual number of interviewed sample persons. The base weight of interviewed non-sample persons is 0.

All interviewed persons (both sample and non-sample persons) receive the same cross-sectional weight (UDB variable PG002), calculated as the average of base weights of all interviewed household members.

Weights to be used in cross-sectional estimation are final household weights (HG004) and final cross-sectional weights of persons (RG002 and PG002). Base weights (RG003 and PG003) are supposed to be used in longitudinal analysis, and the UDB includes no specially constructed longitudinal weights. As mentioned above, the household and person weights given in the data files have been scaled to average 1.0 per unit within each member state. If results are aggregated over countries in proportion to country size, the scaled weights can be multiplied by an inflation factor in proportion to the ratio of the total population size to the corresponding number of cases enumerated in the relevant sample. The same inflation factor can be applied to the supplied weights when population aggregates are calculated. For more information on how to use the ECHP UDB weights for analysis, see Eurostat (2003).

8 Sampling errors

The estimates for a population parameter vary from sample to sample. The sampling or standard error of a survey estimate is a measure of the variation among the estimates from all possible samples (Statistical Policy Office 2001). This standard error is in practice unknown and has to be estimated from the available sample.

Standard errors for means or proportions were calculated for the following household level variables: total net household income (UDB variable HI100), current total monthly net household income (HI200), ability to make ends meet (HF002), the lowest monthly income to make ends meet (HF014), shortage of space in accommodation (HA014), and experience of housing costs as a financial burden (HA036). Household level estimates were calculated in domains defined by household type. Person level estimates included the proportion of persons with a permanent employment contract (PE024), the proportion of persons satisfied with work or main activity (PK001), and the proportion of persons with poor self-perceived health (PH001). Person level estimates were calculated in domains defined by age and sex.

Standard errors were calculated by Taylor series linearisation method by Sudaan statistical software. Sudaan can take into account many of the complexities of the sampling design, such as stratification, clustering and unequal weighting. When analysis is conducted at person level, the clustering of individuals into households has to be taken into consideration. Sudaan estimates variance from the variation between household-clusters independently in each strata. The overall variance estimate is then produced by summing stratum-specific variance estimates. The formulas for variance estimators are described in the Sudaan technical manual (Shah et al. 1996). However, Sudaan is not able to take into account the fact that the final sample is drawn in two phases. Also, the effect of calibration of the survey weights cannot be taken into consideration. Neglecting this leads to conservative standard error estimates, i.e. estimates that are larger than what they would have been had the variance estimator of the calibration estimator been used.

Tables 26 to 31 contain the household level estimates and tables 32 to 34 the person-level estimates of means or proportions and their standard errors as well as sample sizes and design effects. The relative standard error or coefficient of variation is defined as the ratio of standard error to the estimate. The design effect (deff) is defined as the ratio of the properly estimated variance of the estimate to the variance estimate based on a simple random sample of the same size:

$$deff = \frac{\hat{V}_d(\hat{\theta})}{\hat{V}_{srs}(\hat{\theta})}$$

Table 26: Total net household income (HI100), ECHP 2000

	Sample size	Mean (FIM)	Standard error	Standard error (%)	Deff
Single person	867	71 781	1 411	2.0	1.5
Single parent	185	131 850	5 572	4.2	0.9
Couple without children	954	158 308	3 108	2.0	1.1
Couple with children	1 027	216 625	3 026	1.4	0.8
Other households	51	169 522	17 703	10.4	3.0

Table 27: Current total monthly net income (HI200), ECHP 2000

	Sample size	Mean (FIM)	Standard error	Standard error (%)	Deff
Single person	870	5 703	117	2.0	1.5
Single parent	185	9 634	404	4.2	1.1
Couple without children	954	11 825	231	2.0	1.0
Couple with children	1 027	16 015	304	1.9	0.9
Other households	51	11 820	1 093	9.3	2.0

Table 28: Proportion of households with difficulties in making ends meet (HF002=(1, 2)), ECHP 2000

	Sample size	Proportion (%)	Standard error	Deff
Single person	868	17.1	1.6	2.2
Single parent	185	25.5	4.2	1.4
Couple without children	954	7.1	1.1	1.3
Couple with children	1 023	12.6	1.3	1.4
Other households	51	16.2	10.4	6.0

Table 29: Lowest monthly income to make ends meet (HF014), ECHP 2000

	Sample size	Mean (FIM)	Standard error	Standard error (%)	Deff
Single person	836	4 344	72	1.7	1.7
Single parent	178	7 298	278	3.8	1.4
Couple without children	912	7 292	126	1.7	1.1
Couple with children	995	10 490	157	1.5	1.4
Other households	47	7 209	612	8.5	2.3

Table 30: Proportion of households experiencing shortage of space in the accommodation (HA014=1), ECHP 2000

	Sample size	Proportion (%)	Standard error	Deff
Single person	870	13.0	1.4	2.2
Single parent	185	18.1	3.4	1.2
Couple without children	954	9.6	1.2	1.2
Couple with children	1 027	21.3	1.6	1.4
Other households	51	14.2	10.6	6.8

Table 31: Proportion of households experiencing housing costs as a heavy financial burden (HA036=1), ECHP 2000

	Sample size	Proportion (%)	Standard error	Deff
Single person	845	11.4	1.3	2.1
Single parent	184	23.5	4.1	1.4
Couple without children	936	5.8	0.9	1.1
Couple with children	1 020	10.9	1.2	1.4
Other households	51	7.2	3.9	1.7

Table 32: Proportion of persons with a permanent employment contract (PE024=1), ECHP 2000

		Sample size	Proportion (%)	Standard error	Deff
Females	under 25	144	48.6	6.7	1.5
	25–44	687	81.2	1.8	1.5
	45–64	566	91.2	1.4	1.3
Males	under 25	195	54.8	5.7	1.8
	25–44	696	87.9	1.7	2.1
	45–64	495	91.6	1.7	1.8

Table 33: Proportion of persons satisfied with work or main activity (PK001=(5, 6)), ECHP 2000

		Sample size	Proportion (%)	Standard error	Deff
Females	under 25	465	62.9	3.3	1.4
	25–44	929	58.4	2.1	1.7
	45–64	957	58.3	2.1	1.8
	65+	344	76.9	3.0	2.5
Males	under 25	360	58.9	3.7	1.4
	25–44	856	55.6	2.1	1.6
	45–64	831	54.0	2.4	1.9
	65+	310	65.9	3.4	1.8

Table 34: Proportion of persons with poor self-perceived health (PH001=(4, 5)), ECHP 2000

		Sample size	Proportion (%)	Standard error	Deff
Females	under 25	465	1.1	0.5	0 8
	25–44	929	1.5	0.5	1.5
	45–64	957	8.5	1.2	1.8
	65+	348	18.5	2.6	2.6
Males	under 25	360	0.0	0.0	.
	25–44	857	2.0	0.7	1.9
	45–64	835	9.1	1.6	2.4
	65+	312	20.9	3.0	1.9

The design effect can be used to evaluate the effectiveness of the current sample design relative to simple random sampling. A sampling design is equally efficient as simple random sampling if deff is equal to one, more efficient if deff is less than one and less efficient if deff is greater than one (Lehtonen & Pahkinen 1996). The deff 1 option of Sudaan was used to calculate design effects.

Looking at the relative standard errors we see that the estimates in money are the most precise ones. Excluding the very small domain of other households, the relative standard errors of these estimates are four per cent at most. This is not surprising as the sample of the Finnish subset was designed to get precise estimates of income. The least precise estimates are the estimates of the proportion of females and males with poor self-perceived health.

The design effects of the estimates are affected by stratification, clustering and unequal weighting of the sample. Stratification according to socio-economic group tends to increase the precision of estimates correlated with the stratification criterion. The clustering of individuals into households in turn tends to reduce the efficiency of estimates of characteristics that are positively correlated among household members. The variation in weights also reduces the efficiency of estimates. The design effects of estimates are mostly greater than one, indicating that the design is less efficient than simple random sampling. Again, the sample design seems to perform rather well for the estimates measured in money.

9 Comparability and coherence

9.1 Comparability over time

Comparability over time is achieved by keeping the interval between successive waves close to twelve months and by keeping to a minimum the changes to the ECHP questionnaire from one wave to another (Eurostat 2000e).

There were little changes in the questionnaire in the course of the panel. The routing of the questionnaire was amended in response to feedback from interviewers. Pre-filling of some fields was introduced along the run of the panel, in order to make the progress of the interview more fluent.

As mentioned before, the data collection of the ECHP was joined with the IDS in 1996 and 1997. In the third wave, the fieldwork period was changed to take place at the end of the year (for the timing of the fieldwork periods, see Table 4). As a result of this, respondents were forced to face longer recall periods and to remember information over a longer period of time, and one might expect more "don't know" responses and less accurate answers. Because the reference period of some survey items was the year prior to the interview, respondents whose interview was carried out at the end of the year had difficulties in recalling, for instance, what their main activity was almost two years ago.

In the interview, persons were first asked whether their main activity status had changed during the year prior to the interview. If changes had happened, persons were asked to indicate their main activity status in each month separately. The number of persons with missing answers to the questions concerning the main activity calendar was negligible between 1996 and 2001. Table 35 presents the weighted distribution of the number of changes in the main activity status. In 1998, when the interviews were carried out at the end of the year for the first time, the percentage of persons whose main activity status had not changed increased a little, and the percentage of persons whose main activity status had changed once decreased somewhat as well.

Table 35: The distribution of the number of changes in main activity status

Year	Number of changes in activity status (weighted %)							
	0	1	2	3	4	5	6	7+
1996	79.45	11.04	7.24	1.77	0.37	0.04	0.08	0.00
1997	79.61	10.39	7.95	1.33	0.52	0.16	0.04	0.00
1998	81.99	8.23	7.95	1.19	0.55	0.03	0.06	0.00
1999	82.15	8.15	7.44	1.51	0.46	0.21	0.07	0.01
2000	82.89	8.10	7.30	1.09	0.49	0.08	0.05	0.00
2001	83.17	7.50	7.53	1.37	0.39	0.04	0.00	0.01

One might expect that the respondents who had for instance short one-month unemployment or employment periods would forget to report these periods when the recalling period becomes longer. However, there seems to be no clear evidence that the number of short one-month periods had decreased between the years 1997 and 1998 (Table 36). It is possible that the result would be different if we had compared interview data and register data at the individual level instead of calculating percentages based on interview data.

Table 36: The distribution of one-month periods of main activity status

Year	Number of one month periods (weighted %)				
	0	1	2	3	4+
1996	97.47	2.14	0.27	0.12	0.00
1997	97.26	2.25	0.40	0.09	0.02
1998	97.61	1.96	0.29	0.08	0.06
1999	97.10	2.12	0.59	0.17	0.02
2000	98.05	1.48	0.37	0.07	0.04
2001	97.93	1.66	0.30	0.10	0.01

9.2 *Coherence of statistics in the same domain*

Consistency of different statistics in the same domain is an indication of coherence. Coherent statistics are based on common definitions, classifications and methodological standards. This chapter assesses the coherency of Finnish ECHP income and labour market statistics.

The coherency of income statistics is assessed by comparing estimates of poverty and income distribution with those of the Income Distribution Statistics (IDS). The IDS is considered the best national source of income data. As the Finnish ECHP is linked to the IDS in many ways (see Chapters 3 and 4), estimates from these surveys should be relatively close to each other. However, there are some differences in the income concepts, which may diminish the coherency of statistics. The ECHP uses the household net income, whereas the IDS uses the household disposable income. The most significant difference between the income concepts is related to the exclusion of imputed rents and profits from sales. For more information on the differences between the income concepts, see Section 3.2.

Table 37 shows low income rates calculated from the Finnish ECHP and IDS with breakdowns by age and gender. Low income rate is defined as the share of persons with equivalised (by OECD modified equivalence scale) income below 60 per cent of the national median equivalised income. The years refer to the reference period of income data. In the ECHP, income data for 1995 were collected at the 1996 survey wave.

The low income rate from the Finnish ECHP is slightly higher than that from the IDS. This is because disposable income in the IDS includes imputed rent for owner-occupied accommodation, a component not included in

the ECHP. Imputed rent is an important income component among the elderly. Accordingly, the differences between low income rates are largest for persons aged 65 and over. The differences are especially pronounced among women. Both surveys give a similar picture about the trend over time in low income rate.

The Gini coefficient is a measure of the inequality of income distribution. Table 38 shows Gini coefficients in percentages calculated from the Finnish ECHP and the IDS. Both surveys produce a trend of rising inequality over time. However, the IDS gives a more rapid rise. This is due to capital gains that are included in the IDS income concept but not in the ECHP. With capital gains included in the ECHP, the Gini coefficient would be almost identical with that of the IDS.

Table 37: Low income rate with breakdowns by age and gender. 60% equivalised median income, OECD modified.

Age and gender	1995		1996		1997		1998		1999		2000	
	ECHP	IDS	ECHP	IDS	ECHP	IDS	ECHP	IDS	ECHP	IDS	ECHP	IDS
Total	8.1	7.3	8.3	8.3	9.4	8.2	10.7	9.7	10.9	9.8	11.4	10.7
0–15	4.6	4.7	5.1	5.6	4.9	5.8	7.3	8.0	5.7	8.2	5.8	10.7
16–24	21.0	18.9	17.2	22.0	18.9	21.6	23.0	20.8	21.2	21.8	23.1	23.3
25–49	5.1	6.1	7.0	7.2	7.1	7.6	7.8	8.4	8.1	8.2	7.3	8.8
50–64	6.9	5.7	6.2	6.0	7.6	5.5	7.7	7.4	8.7	7.7	8.5	7.2
65 +	12.3	7.2	12.1	6.9	15.9	6.3	16.5	9.7	19.3	9.3	23.4	10.5
Men	7.6	7.7	8.0	8.5	8.1	8.5	9.0	9.7	9.0	9.6	9.1	10.7
0–15	4.5	4.5	4.2	5.2	3.6	5.9	7.0	7.9	4.7	8.3	5.2	11.6
16–24	20.3	17.5	16.6	20.8	16.8	19.0	18.1	17.5	18.3	19.4	18.9	21.9
25–49	5.4	7.4	8.4	8.2	7.7	9.1	7.8	9.4	7.9	8.5	8.1	9.3
50–64	9.2	7.9	6.4	7.9	9.0	5.9	8.2	8.3	9.6	8.5	7.2	8.0
65 +	6.0	4.3	7.3	3.6	7.1	4.2	8.6	7.4	8.8	6.8	12.4	6.6
Women	8.5	7.0	8.6	8.1	10.6	8.0	12.2	9.8	12.7	10.1	13.6	10.8
0–15	4.8	4.9	5.9	6.1	6.2	5.6	7.6	8.0	6.7	8.2	6.5	9.8
16–24	21.7	20.3	17.9	23.2	21.0	24.4	27.8	24.2	24.3	24.2	27.7	24.8
25–49	4.8	4.8	5.5	6.2	6.6	6.1	7.7	7.3	8.3	7.8	6.6	8.4
50–64	4.7	3.5	6.0	4.1	6.1	5.1	7.3	6.5	7.7	6.9	9.9	6.3
65 +	16.1	8.9	15.0	8.9	21.5	7.6	21.4	11.2	26.1	10.9	30.5	13.0

Table 38: Gini coefficients.

Modified OECD, person weights						
	1995	1996	1997	1998	1999	2000
ECHP	22.2	22.2	22.4	23.9	23.6	24.4
IDS	21.7	22.1	23.5	24.6	25.9	26.5

The coherency of labour market statistics is assessed by comparing the estimates of unemployment rate with those of the Labour Force Survey (LFS). The same definitions of employment and unemployment, based on the recommendations by the ILO, are used in the ECHP and LFS. LFS quarterly estimates of unemployment rates were used for the comparison. The quarter closest to the ECHP fieldwork period was chosen each year. The quarters used were: 1996 second; 1997 first; 1998 to 2001 fourth quarter.

The Finnish ECHP depicts rather nicely the downward sloping trend of unemployment rate over time (Table 39). However, for males the Finnish ECHP gives too steep a trend. This may be due to the fact that attrition in the Finnish ECHP appeared to be somewhat selective with respect to employment status around the time of the interview. Unemployed males were more likely to drop out from the survey than others.

Table 39: Unemployment rates of females and males aged 16–64.

	1996		1997		1998		1999		2000		2001	
	F	M	F	M	F	M	F	M	F	M	F	M
ECHP	15.1	14.9	12.7	13.9	9.5	9.0	10.2	6.2	9.4	6.6	7.2	5.7
LFS	16.1	15.3	13.7	13.9	11.0	9.5	9.8	9.0	9.4	8.0	8.8	8.2

10 Accessibility

Dissemination is a vital step in the information chain. It is not sufficient to have good statistics stored somewhere inside the statistical office (Eurostat 2000d). The results published from the data as well as the micro data itself should be easily accessible. In addition, information on concepts and methods should be available.

The ECHP UDB micro data can be purchased at the DataShops of Eurostat. The DataShop can also be addressed for publications by Eurostat or for customised tables based on the ECHP UDB data. In Finland, the DataShop is located at the premises of Statistics Finland. For more information about the DataShop at Statistics Finland, see http://tilastokeskus.fi/tk/kk/datashop/echp.html.

The ECHP survey methodology and implementation is described in a separate manual (Eurostat 1996). Growing experience with the running of the panel has brought a need to modify some of the existing methods. The modifications are described in documents by Eurostat, available from the CIRCA (CIRCA = Communication & Information Resource Centre Administrator) service of the European Commission, see http://forum.europa.eu.int/ (choose Eurostat, ECHP).

Besides this manual, information about the concepts and methods of the Finnish subset can be found at the following Internet address: http://tilastokeskus.fi/tk/el/echp.html.

Below is a list of Finnish publications and articles based on the ECHP UDB data.

Finnish publications based on ECHP data

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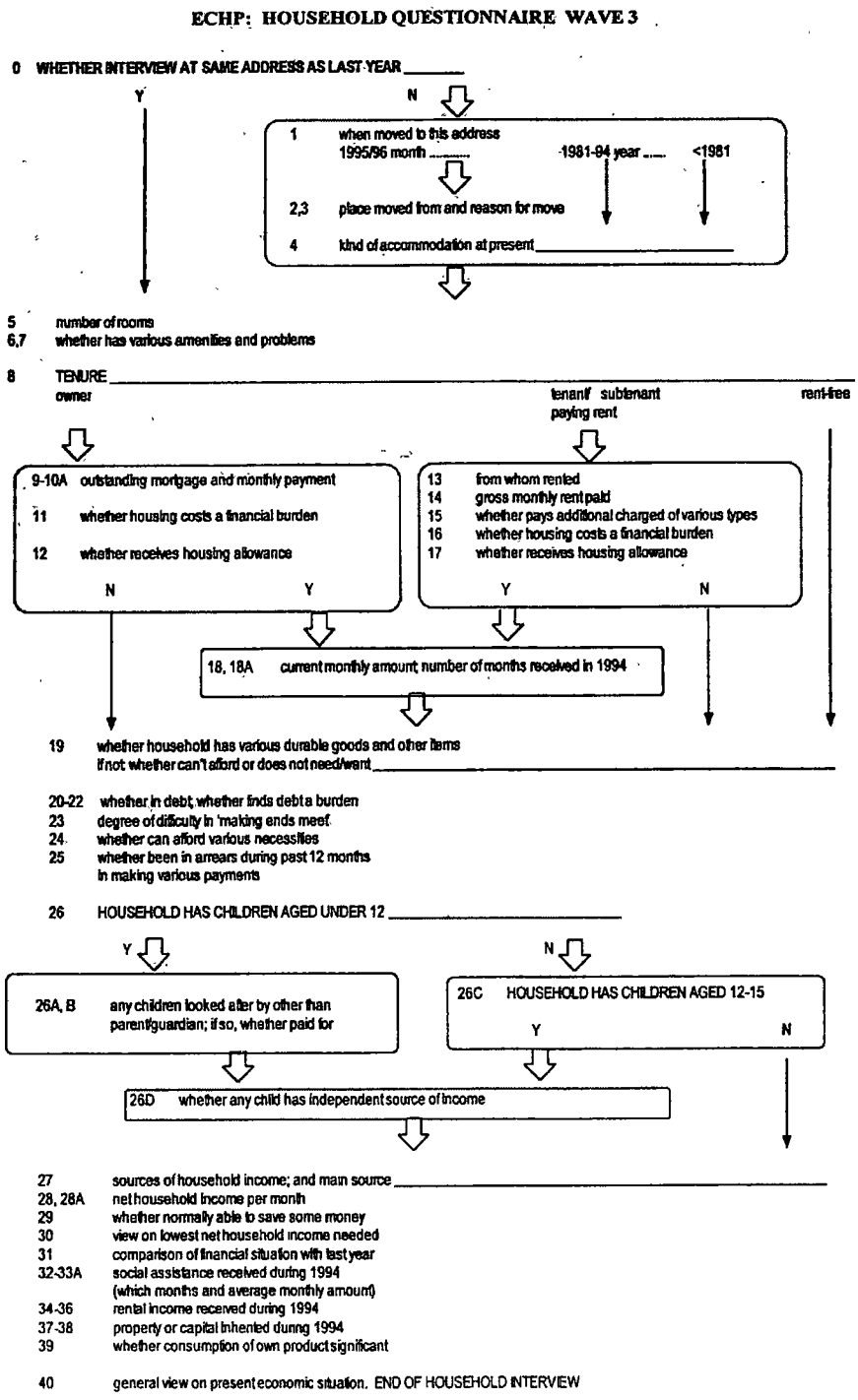
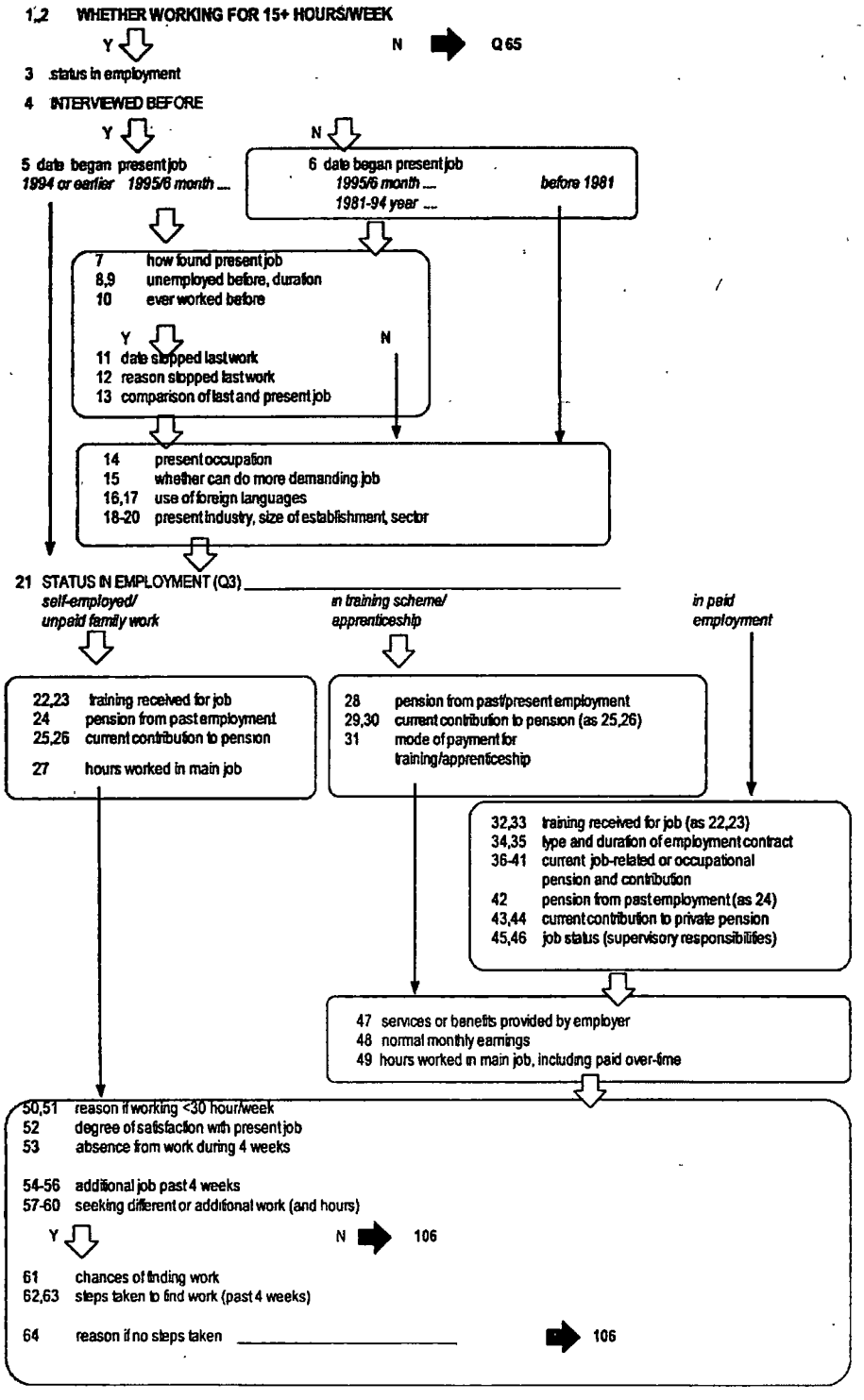
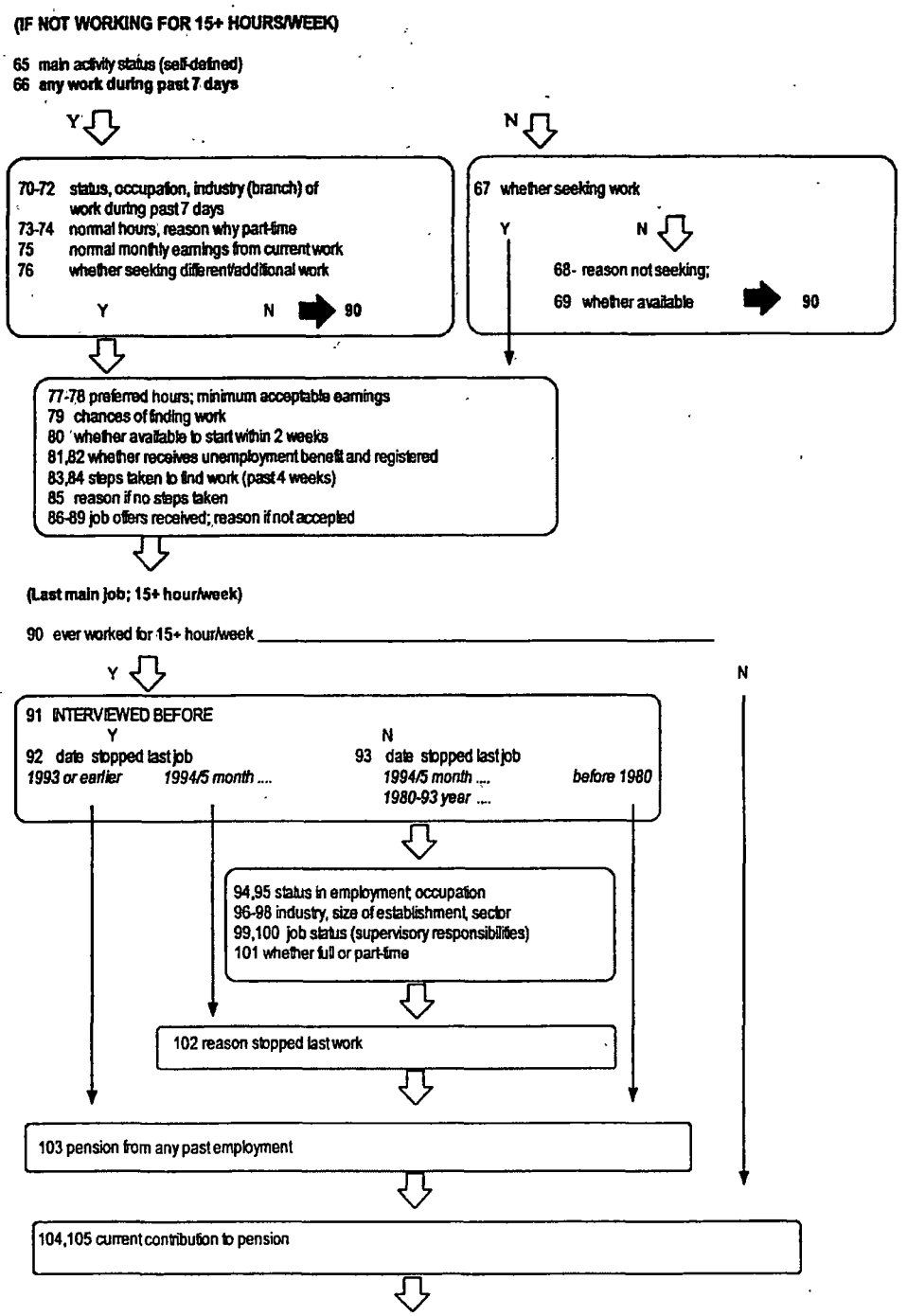
Appendix 1: Flow diagram of the interview in wave 3 (wave 1 in Finland) Source: Eurostat (1995)



ECHP: PERSONAL QUESTIONNAIRE WAVE 3




(IF NOT WORKING FOR 15+ HOURS/WEEK)
65 main activity status (self-defined)
66 any work during past 7 days
Y
N
70-72 status, occupation, industry (branch) of work during past 7 days
73-74 normal hours, reason why part-time
75 normal monthly earnings from current work
76 whether seeking different/additional work
Y
N
90
67 whether seeking work
Y
N
68- reason not seeking;
69 whether available
90
77-78 preferred hours; minimum acceptable earnings
79 chances of finding work
80 whether available to start within 2 weeks
81,82 whether receives unemployment benefit and registered
83,84 steps taken to find work (past 4 weeks)
85 reason if no steps taken
86-89 job offers received; reason if not accepted
(Last main job; 15+ hour/week)
90 ever worked for 15+ hour/week
Y
N
91 INTERVIEWED BEFORE
Y
N
92 date stopped last job
1993 or earlier
1994/5 month ....
93 date stopped last job
1994/5 month ....
1980-93 year ....
before 1980
94,95 status in employment; occupation
96-98 industry, size of establishment, sector
99,100 job status (supervisory responsibilities)
101 whether full or part-time
102 reason stopped last work
103 pension from any past employment
104,105 current contribution to pension

ALL RESPONDENTS

106 presence of others during interview
107-112 hours spent on care of children and other persons
113 whether this care inhibits from doing paid work
114-117 social relations (memberships, interactions etc.)
118-120 general or higher education during 1994-95; dates; type
121-128 vocational education or training during 1994-95
duration, dates, type; whether organised by employer;
whether full-time and attendance; objectives; usefulness
129 language or adult education course during 1994-95

130,131 monthly activity status during 1994;
whether done any paid work

Y → 132-138 income from work during 1994
normal earnings per month; number of months worked;
over-time work and other extra payments received

N →

139-143 income from self-employment
144-147 income from casual or secondary work during 1994

148 non-work income and benefits personally received

149-151 personal transfers received
152-154 income from capital and other financial assets
155-156 tax refunds received during 1994.

157-160 general health; disability; illness during past 2 weeks
161-163 hospitalisation, other medical consultation past 12 months
164-167 state and private medical insurance
168-170 age, sex citizenship

171 INTERVIEWED BEFORE

Y →
172 changes in marital status
173-174 current marital status

N →
175,176 year since living in current region; last region of residence
178,179 year since living in current country; last country of residence
177,180 country of birth

181,182 current marital status

183,184 age at and unemployment before first job
185-187 unemployment experience past 5 years

188-190 completed level of education
191-193 vocational courses ever undertaken
194 satisfaction with education and training completed

195 general satisfaction with present situation
(main activity, financial and housing situation, leisure)

196 duration and date of interview

END OF PERSONAL INTERVIEW

The European Community Household Panel (ECHP) is a standardised sample survey conducted in 15 EU Member States between 1994 and 2001. The ECHP is centrally designed and co-ordinated by the Statistical Office of the European Communities, Eurostat, and it covers a wide range of topics concerning living conditions. The Finnish ECHP started in 1996 and it is carried out by Statistics Finland.

The ECHP Study in Finland. Quality Report evaluates the quality of the Finnish subset of the ECHP. The evaluation is based on all six annual waves of the Finnish subset. Information important to the users of the Finnish data is also provided. This includes information about the main concepts and classifications used, about the design and implementation of the survey and about the procedures used to compensate for nonresponse.

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