Methods Approaches Developments

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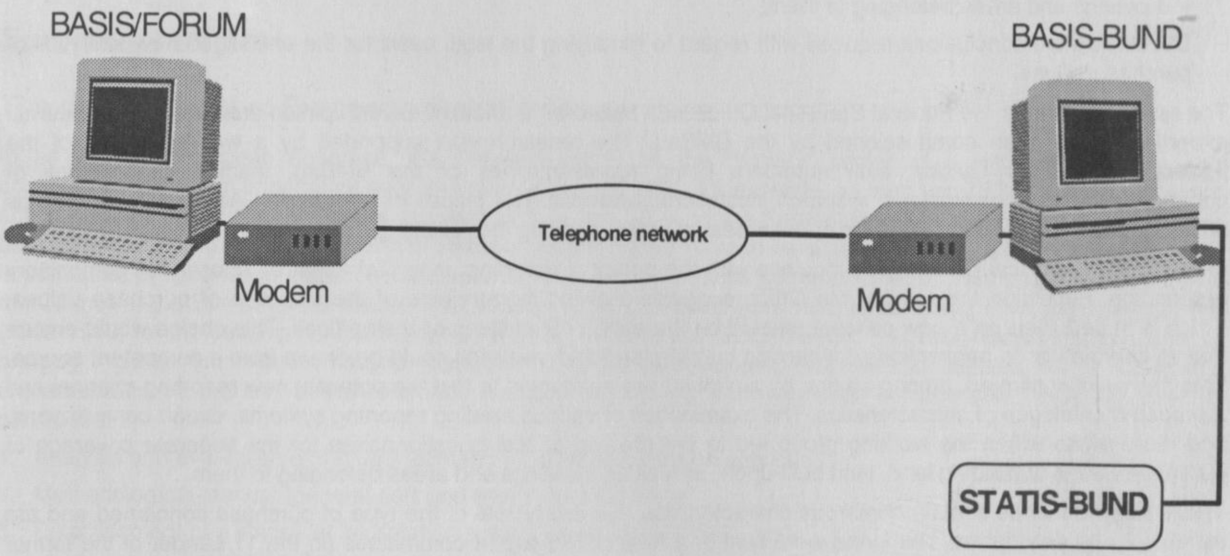
The catchword

BASIS-BUND

BASIS-BUND is a new supply service for ordering and retrieving data from the Statistical Information System of the Federation (STATIS-BUND). In addition to the existing ways of obtaining data on magnetic tape or diskette, customers interested in processing selected data from the STATIS-BUND database on their own PCs now have the opportunity to be supplied with data by file transfer via the public telephone network through an ordering procedure. BASIS-BUND does not mean online access to STATIS-BUND. The user rather transfers an order file to the BASIS-BUND PC, asking for specific data to be provided. These data are generally provided within a few hours, but not later than the following day.

The equipment needed for using BASIS-BUND is a PC (MS-DOS from version 3.0) and a modem with a suitable telephone connection. After registration, the user will be provided with the utility programs required (BASIS, FORUM).



In addition to the pure ordering of data, BASIS-BUND also allows to obtain information on the STATIS-BUND data stock in two ways: First, the up-to-date list of data stored and a large part of the segment documentation are available on the BASIS-BUND PC for hierarchical search. Second, by way of dialoguing with BASIS-BUND, information may be obtained on the up-to-dateness of the time series stored in a specific segment.

Users who are not connected online to STATIS-BUND thus have the opportunity through BASIS-BUND to receive small amounts of up-to-date information tailored to their individual demand without having to employ expensive technology. The menu-controlled user surface allows to use BASIS-BUND without special knowledge about the system.

Methodology of federal statistics – Further development

Research project on the further development of the statistics of purchase values of building land

Based on the price statistics law, the official statistics of purchase values have covered sales of land not built-on of over 100 m² since 1962. The units obliged to provide information for these statistics are the local tax offices. Data evaluation focuses on the number of purchases, the area sold, and the turnover achieved. The data are broken down by building land types, building area types, and community size classes.

At the national level, the demand for information on transactions concerning land is more comprehensive. It includes the sale of land built-upon, of dwellings and, more generally, the representation of pricing factors. This is why various bodies separately collect data on transactions concerning land; these data are processed to form purchase price information which is available in addition to the above statistics. Bodies compiling data of that kind are, for instance, the expert committees determining the market values of land, the German Association of Cities and Towns, and the Association of German Brokers. Data sources not belonging to the sphere of official statistics, however, do not satisfy the demand for comprehensive information because:

- All types of evaluation are based on partial surveys which, moreover, are largely voluntary and not representative. No all-German aggregates are calculated either.
- Different characteristics are covered that are not standardized. Thus nationwide comparability is not ensured.

Since it was believed that the statistics of purchase values of building land should be completely reorganized, the Federal Statistical Office was commissioned by the Federal Ministry for Regional Planning, Building and Urban Development (BMBau) to carry out a research project on the further development of the statistics of purchase values of building land. This project was carried through from November 1991 to February 1994. The task focused on the following objectives:

- Checking all potential reporting units able to provide the survey characteristics required, i.e. completely and rather soon after the purchase contract was concluded;
- Compiling a rather comprehensive and, at the same time, feasible catalogue of characteristics for the collection of purchase values of
  - building land (land not built-on)
  - land built-upon
  - dwellings and areas belonging to them;
- Developing the conclusions required with regard to modifying the legal basis for the envisaged new statistics of purchase values.

The research done at the Federal Statistical Office was based on a relevant expert opinion prepared by an external expert who had been commissioned by the BMBau. The research was supported by a working group of the Federation and the Länder, their members being representatives of the BMBau, leading associations of communities, expert committees, research institutions, and statistical offices of the Länder. All of them worked as advisors determining important steps of the research and evaluating the results.

The Federal Statistical Office made inquiries with the potential reporting units that might be chosen for compulsory responding. Based on the results, the Office suggests that the respondents of the statistics of purchase values, which is to be based on a new concept, should be the expert committees or their offices. This choice would ensure that all information on transactions concerning building land and dwellings could be drawn from a competent source. This has been confirmed, among others, by a pilot survey conducted to test the potential new reporting channel and a prepared catalogue of characteristics. The examination of various existing reporting systems, expert consultations, and discussions within the working group led to the drafting of test questionnaires for the separate coverage of purchase values of building land, land built-upon, as well as dwellings and areas belonging to them.

These questionnaires contain numerous characteristics that are typical of the type of purchase concerned and are suitable for its description. The forms were sent to a total of 193 expert committees (in the 11 Länder of the former territory of the Federal Republic) considered as potential respondents obliged to provide information. 102 of these expert committees participated in the pilot survey, returning some 1,700 completed questionnaires to the Federal Statistical Office for evaluation. In addition, information on numerous purchases were provided in the form of purchase price collections compiled in an automated manner. These were sent on various data carriers or as printed lists. Evaluating the pilot survey focused on checking the correct responding behaviour for the individual survey characteristics.

The above evaluations, as well as discussions in the working group and further detailed checking with selected expert committees served to select from among the characteristics of the pilot survey those which might be used for a future new statistics of purchase values. This selection process was based on the assumption that a high rate of completion and consistent responding for specific characteristics would allow the conclusion that nationwide reporting for these characteristics would be possible. For the final decision about including a specific characteristic, additional information was taken into account which basically referred to how costly and time-consuming it would be to collect the relevant data. This meant that – to ensure an all-German uniform catalogue of characteristics to be covered by the future survey – not all characteristics showing a high completion rate could automatically be included in the new reporting concept. It turned out that feasible characteristics are general information on the purchase and

- data on the legal status of the vendor and the purchaser,
- data describing the location and utilization of the land and the type of construction,
- area and price data,
- data on the type of building, the residential location, the year of construction, and the number of storeys.

The research showed, among other things, that the expert committees are competent respondents able to provide information on a catalogue of characteristics permitting proper evaluations. The detailed results of the research project are contained in a report which has been submitted to the BMBau, i.e. the authority which had commissioned the research. That report includes methodological explanations and definitions of the individual survey characteristics, as well as information on modifications that will have to be made in existing legal bases if a new statistics of purchase values is to be introduced.

Evaluating additional information on the research project also showed, however, that the statistics of purchase values cannot be changed directly because of a number of unanswered questions. These refer, among others, to

- differences in capacity and staff of the expert committees,
- finding technical solutions for the processing of automated purchase price collections at the statistical offices of the Länder,
- the amount of data which will be the multiple of that produced for the present statistics of purchase values because of the larger number of purchase types to be covered and the extended catalogue of characteristics,
- the costs – not yet quantified – which will have to be borne by the statistical offices of the Länder and the Federal Statistical Office, on the one hand, and the expert committees obliged to provide information, on the other,
- the legal basis – not yet provided – of a possible new statistics of purchase values,
- an examination – not yet performed – of the opportunities of conducting the survey in the new Länder.

The decision as to the future procedure concerning the field of the statistics of purchase values of building land has now to be taken by the BMBau, which had commissioned the research project.

European matters

The development of European statistics on services

In all western European countries, the services sector as the "tertiary" sector of a national economy has continuously gained in importance over the recent years. In 1991, for example, as much as 70 % of all economically active persons worked in this sector in Great Britain, and 58 % in the Federal Republic of Germany. Against this background, the data supplied by official statistics on this sector have to be considered insufficient. There is a lack, in particular, of continuous statistical data suitable to illustrate structural changes at least. This situation has caused the Council of the European Communities to adopt the Decision of 18 June 1992 establishing a two-year programme (1992-1993) for the development of European statistics on services (92/326/EEC). This two-year programme aims at bringing together the different national statistical concepts by developing proposals for suitable survey units and characteristics. At the end of the reference period, the following work has been considerably advanced or even concluded:

1. Analysis and evaluation of the user demand for statistical data on services
2. Methodological manual (general part and sector-specific parts)
3. Establishment of a statistical information system on services (ESIS), and
4. Conduct of pilot surveys on "Modern business services" (ICOBS), selling practices in retail trade, the importance and scope of the "Economie sociale", hotels, travel agencies and tour operators, and audiovision (film industry, radio and television).

As a result of all these activities, which the Federal Statistical Office contributed to considerably, the demand for statistical data on services shall be met in the framework of a planned "Council Regulation concerning structural business statistics". In the draft version of this framework regulation, which will include all sectors of the economy, the individual sectors will be listed in the annexes in the form of what are named "modules". Currently under discussion are

- a common module for the compilation of cross-sectoral annual statistics covering the major characteristics for structural reporting and for national accounting, and
- one module each for production industries and for distributive trades (wholesale and retail trade, commission trade).

The European Commission intends to have the above-mentioned framework regulation adopted by the Council in 1995 and to have further modules for the remaining service areas (hotel and restaurant industry, transport, modern business services, etc.) added successively in the coming years.

The outlined procedure poses a great challenge to German official statistics, since work is initiated which is suited to fill current gaps in the supply of services data by the year 2000. As a first step, a register for the services sector, including government agencies and non-profit organizations, will be established in the years ahead based on the implementation of the Regulation of 22 July 1993 on Community coordination in drawing up business registers for statistical purposes. This register is a prerequisite for the implementation of the above-mentioned module 1 (cross-sectoral annual statistics).

This module provides for annual surveys of enterprises which produce market services. For non-market services, however, a longer transition period will be required due to largely unsolved methodological questions. Besides, the major proportion of the data needed in this field may be derived from secondary statistics, in particular financial statistics, so that primary surveys will have to be conducted to a limited extent only.

European Employment Cost Index

The Statistical Office of the European Communities (Eurostat) is planning to introduce a uniform and integrated statistical system to monitor the European labour market in the second half of the 90s. A module of this system is the European Employment Cost Index which, as a Laspeyres' index, will serve to reflect the short-term development of employment cost for a volume of labour whose scope and structure are kept constant. Hence, it will have to be regarded as a labour price index.

Data collection will be based on a procedure developed in the United States for the Employment Cost Index (see Sheifer, V. J.: Employment Cost Index: a measure of change in the 'price of labor', Monthly Labor Review, July 1975) which, compared with European wage statistics, is characterised by some special features such as voluntary response, the use of interviewers for the first enquiry and the concept of an occupational group. Voluntary response necessitates the use of interviewers, whose main task is to win the support of enterprises for this sample survey, and is closely linked with the complex nature of the survey requiring an intensive cooperation of enterprises.

Occupational groups are the smallest components of this index. They comprise employees engaged in a selected occupational activity of an enterprise which is covered by the sample survey. Their number raised on the basis of the information acquired during the first enquiry constitutes the quantitative basis of the index. Compared with enquiries of individuals, the concept of occupational groups has the advantage that less "cases" have to be monitored to obtain meaningful results and the turnover within an occupational group does not have an adverse effect on data collection.

The index is a measure of the employment cost per hour worked – a value to be derived from numerous items in the processing of data. The employer's payments covered largely correspond to the compensation of employees as defined in national accounts. Various employer's payments such as vacation pay and additional vacation and Christmas bonuses refer to a year as a whole. Since, however, the index delivers data four times a year, the value of the employment cost per hour worked, which is reflected by the index, is calculated from fictitious annual totals of expenses and working hours.

In the course of the initial data collection carried out by interviewers, information is gathered for occupational groups about the negotiated or company-specific weekly hours of work, average excess hours and non-working hours paid during sickness, vacation or for other reasons during the year as a basis for calculating the annual total of hours worked. These data are to be collected rather as quantities representing a "normal year" than as exact values for the reference year. To this end, special influences in the reference year are to be eliminated from the data enquired (e.g. an unusual extent of excess work or short-time working, unusually long periods of absence due to sickness, etc.). The data thus obtained will be used for index calculations for the following reference months as well, unless the underlying provisions change (e.g. agreement on the weekly hours of work or vacation entitlement).

The average gross hourly earnings of an occupational group, which are to be enquired for each reference month also for salaried employees and wage earners receiving regular monthly wages, are the main cost element in determining the fictitious value of annual earnings. The value of annual earnings (excl. extra payments), which constitutes the largest portion of employment cost, is obtained by multiplying the gross hourly earnings by the hours worked and the non-working hours paid for, which are collected in the first enquiry. To the extent possible, relatives allowing forward estimation rather than absolute values should be enquired to estimate future expenses. For extra payments, for instance, rating provisions (such as: the Christmas bonus amounts to 40 % of the monthly earnings, the extra vacation bonus to 50 % of the vacation pay) and for insurances, the rates of contribution should be indicated unless they are legally stipulated like the rates of contribution to pension and unemployment insurances. As agreements regarding extra payments and the rates of contribution to social insurance usually do not change at quarterly intervals, forward estimation of the fictitious annual employment cost is sometimes possible exclusively on the basis of the current average gross hourly earnings. Some of the employer's payments, which are not always made, such as profit-sharing expenses or the employer's pension commitments can usually not be estimated in a sufficiently precise manner. Therefore, the most recent values available thereof are considered in the fictitious annual earnings.

To clarify a number of questions with respect to methodological aspects of data collection and index computation, a pilot survey was conducted in Germany and five other EU member states for the reference month of October 1993. From Germany's point of view, the experiences of the pilot survey have shown that a final assessment of the project cannot yet be made. It remains to be seen whether the results of the index will justify the efforts required. Follow-up surveys covering the enterprises of the pilot survey for January and April 1994 will yield essential information on this issue.

Statistics worldwide

New central tasks of the cooperation with the countries of Central and Eastern Europe and the succession states of the former Soviet Union

While in 1992, seminars with international participation were conducted on subjects such as the transformation of agricultural statistics, the labour market and employment and the preparations for an EU advanced training project for statisticians from the succession states of the former Soviet Union completed, 1993 and the first half of 1994 saw the implementation of numerous bilateral projects of technical cooperation and first courses of the aforementioned EU project. The aim of the latter has been to broaden the knowledge about those statistical methods which are specifically applied under the conditions of a free-market economy.

Following a workshop to prepare the EU advanced training measures for the statistical services of the succession states of the former Soviet Union, the Berlin Advanced Training Centre of the Federal Statistical Office organised a six-week course on "price statistics in free-market systems". Follow-up courses were conducted in Minsk and Almaty. Participants in the courses were statisticians who were expected after completion of the courses to work as so-called multipliers, i.e. lecturers passing on the knowledge acquired to statisticians in their home countries. Meanwhile, a second multiplier course was completed on "finance statistics", followed by two follow-up courses in Moscow and Ashkhabad (Turkmenistan). In 1994, multiplier courses were also conducted on "national accounts" incl. two follow-up courses in Chisinau (Moldova) and Tashkent (Uzbekistan) and on "agricultural statistics" and "business statistics" in Berlin. At the beginning of 1995, the last multiplier course on "labour market statistics" took place in Berlin.

In May 1993, the President of the Federal Statistical Office paid a visit to the Russian Federation State Committee on Statistics (Goskomstat). At the close of his visit, an agreement was signed by the Federal Statistical Office and Goskomstat on further cooperation until 1995. The agreement provides for 50 individual measures to be carried out by 1995. The topics dealt with during first hospitations and expert missions were national accounting, fiscal and monetary policies and, in this context, the role of statistics in a social market economy. In May 1994, the Chairman of Goskomstat and the President of the Federal Statistical Office met again – that time in Germany.

In October 1993, the Federal Ministry for Economic Co-operation provided funds to carry out measures for Slovenian and Croatian statisticians until the end of that year, whose implementation had originally been scheduled for the summer season. As a first step, a number of advanced German language courses were organised with the help of the *Goethe-Institut*. The purpose of those courses was to impart knowledge of statistical terms in line with the level of language knowledge achieved. The courses were followed by hospitations at the Federal Statistical Office, the Bavarian Land Office for Statistics and Data Processing and the Land Office for Data Processing and Statistics of North Rhine-Westphalia. Furthermore, seminars were held in Ljubljana and Zagreb. At the end of 1993, the President of the Federal Statistical Office conducted talks which centred upon the assessment of the measures carried out in the years 1992 and 1993 and the future bilateral cooperation with the Statistical Office of the Republic of Slovenia.

Another central task was the cooperation with Poland, Belarus and the Baltic states. Measures were also taken for the benefit of the other states of Central and Eastern Europe. In 1993, the Federal Statistical Office, together with the Statistical Offices of the Länder and other partners engaged in sciences and the economy, carried out a total of 85 individual measures for 25 statistical offices in Central and Eastern Europe and in the succession states of the former Soviet Union.

Apart from the agreement on cooperation with Goskomstat, the Federal Statistical Office concluded an agreement of this kind with the Statistical Committee of the Commonwealth of Independent States (May 1994). Based on the treaty between the Federal Republic of Germany and the Ukraine of 10 July 1993, the Federal Statistical Office signed an agreement on close cooperation with the Ministry of Statistics of the Ukraine in 1994. Similar agreements with the statistical services of the Republics of Kazakhstan and Belarus are presently under preparation.

Time use survey – methodological approach and implementation

Introduction

In 1991/92, the Federal Statistical Office, cooperating with the statistical offices of the Länder and receiving financial support from the Federal Ministry for Family Affairs and Senior Citizens, conducted its first time use survey throughout the Federal Republic of Germany. The survey was based on Article 7, Para. 2 of the Federal Statistics Law which, for the purpose of clarifying scientific and methodological issues, provides for voluntary surveys covering up to 10,000 respondents which do not require a separate legal basis. The main methodological and subject-related aims of the survey were the following:

- to develop and test an appropriate method for recording the different forms of time use
- to develop a satellite system on household production connected with national accounts
- to provide information about the structures of time use by various groups of the population and types of households in particular for discussions on women and family policies.

One of the focal points of the project was to provide data on household production for developing a satellite system connected with national accounts. This satellite system, on the one hand, allows a presentation of household production corresponding to that of national accounting while, due to its independent nature, ensuring on the other, that the results of the traditional national product computation used for short- and medium-term economic analyses will not be impaired. The function of this satellite system is to depict in terms of volume (time units) and, based on an appropriate valuation procedure, in monetary units the economic processes underlying the unpaid production of goods and services by households, through neighbourly help or voluntary and community work[1)].

The economic aspects of depicting unpaid services will certainly be comprehensible to a critical reader while the purposes of analysing time use structures and the results to be expected thereof will not be understandable immediately. To put it in other terms: Is it really necessary to include in statistics such "trivialities" as the fact that a human being sleeps on average seven hours, spends one hour on eating, and works for eight hours a day? However, the main purpose of time use surveys is not to obtain global information of this kind. On the contrary, the diversity of daily routines resulting from manifold conditions of life in our society rather opens manifold aims of research. In this context, the average use of time by all persons plays a secondary role only. It is rather the differing allocation of (not only material but also) time resources (that are so important for human welfare) to specific groups requiring attendance which is of considerable scientific and political interest. There have been many queries on these issues from politicians engaged in women and family policies. Not least for this reason, the Federal Ministry for Family Affairs and Senior Citizens decided to give its support to the above survey. The following examples of issues enquired clearly reflect the need for data regarding the second subject-related priority of the project:

- Compatibility of familial and professional activities: What is the total number of daily working hours resulting from it?
- People in need of care living in a household: To what extent is nursing required?
- Intrahousehold division of work: Who is in charge of what?
- Child care: How much time is spent on attending children?
- Youth and elderly people: What time use structures are characteristic of these groups?
- Different phases of the life and family life cycles: What are the characteristic time use structures and situations of maximum and minimum burden?

Further examinations are planned to focus on leisure time activities, the use of media, and mobility. Rather than providing data, however, the prior aim of the survey was to develop and test a data collection method and measuring instruments which would be appropriate to satisfy the above demand for data. The tasks to be fulfilled in this context were to study the ways and limits of data collection and to develop a survey design allowing regular enquiries.

The aim of the present paper is to describe the survey procedure. The results obtained in studying the use of time by the population will be presented in further publications.

1 Data collection method

1.1 Survey design

The survey design for time use surveys which is based on international experience[2)] largely corresponds to the recommendations for the collection of time use data issued by the International Association for Time Use Research[3)]. The methodological approach of the 1965/66 international time use project which, as a result of numerous surveys and methodological studies, was further developed and enhanced in the following years, served also as a basis for the concept of the German survey[4)]. An intensively prepared pilot study tested the approach

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1) See Schäfer, D./Schwarz, N.: "Wert der Haushaltsproduktion 1992" in Wirtschaft und Statistik 8/1994, p. 597 ff.
2) See Ehling, M./Schäfer, D.: "Internationale Erfahrungen mit Zeitbudgeterhebungen im Rahmen der amtlichen Statistik" in Wirtschaft und Statistik 7/1988, p. 451 ff. and Szalai, A.: "The Use of Time", The Hague, Paris 1972.
3) See Harvey, A. S.: "Guidelines for Time Use Collection" in Social Indicators Research Journal, 2-3/1993.
4) See Ehling, M.: "Konzeption für eine Zeitbudgeterhebung der Bundesstatistik - Methodik: Stichprobenplan, Interview und Tagebuchaufzeichnung", p. 154 ff. and Schäfer, D.: "Konzeption für eine Zeitbudgeterhebung der Bundesstatistik – Erhebungs- und Auswertungsprogramm: Aktivitätsklassifikation und Erhebungsinhalte", p. 169 ff. in v. Schweitzer, R./Ehling, M./Schäfer, D. et al: "Zeitbudgeterhebungen", Volume 13 of the series "Forum der Bundesstatistik" issued by the Federal Statistical Office, Stuttgart 1990.

(design and comprehensibility of survey documents, period of recording information, and technical and organisational processes) and the sampling procedure[5].

In the pilot study, the main elements of the data collection method, namely the initial and final interviews and diaries to be kept by the respondents, proved to be adequate and consequently were used during the main survey as well. The initial interview (see Chart 1) served to collect such basic information as socio-demographic characteristics of household members, availability of selected consumer durables, the housing situation and chances of using a garden. In addition, the household members were instructed on how to keep the diary.

Chart 1: Survey variables of the initial interview

Basic socio-demographic data for all household members
- number of household members
- number of children no longer living in the household
- status in the household
- year and month of birth
- sex
- marital status
- year of marriage
- consensual union

Attending a kindergarten, other child care facility, school or institution of higher education

Educational attainment
- level of general education attained
- level of vocational training attained

Labour force participation
- main paid job
- status in employment
- branch of economic activity of the enterprise
- form of work
- full-time or part-time work
- normal working hours (per day and week)
- commuting times
- second paid job
- status in employment
- normal working hours (per day and week)

Subsistence and income of household members
- predominant type of subsistence
- net income

Availability of selected consumer durables

Housing situation and residential surroundings
- tenant, owner
- size (square metres)
- equipment of the home
- number of living-rooms and bedrooms
- garden

As for the demographic variables, the concept of the questionnaire largely followed the microcensus since the results of the latter served as a raising basis. Interviewers and interviewees in general did not face problems regarding the questions. However, a conceptionally critical point was the fact that, following the microcensus, the participation in economic life was inquired for a definite reference week which did not correspond to the week in which the respondents entered the information in their diaries. This meant that it could not necessarily be concluded from the socio-demographic characteristic "person employed" that all persons characterised by this feature had to be on work during the days for which information was collected and therefore had to record the typical time use structures of an employed person during a working day (this referred, for instance, to employed persons who were on holiday or were sick or who, due to irregular work, did not work on the days concerned).

During his second visit the interviewer collected and checked the diaries completed in the meantime. In the final interview, information was collected about the following issues: people in need of care, exchange of help between households, voluntary and community work of household members, services and child care facilities offered (see Chart 2).

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5) See Ehling, M.: "Ergebnisse aus dem Pretest der Zeitbudgeterhebung" and Blanke, K.: "Methodische Folgerungen für die Haupterhebung aus Sicht der Frauen- und Familienpolitik" in Ehling, M./v. Schweitzer, R. et al: "Zeitbudgeterhebung der amtlichen Statistik", Volume 17 of the series "Ausgewählte Arbeitsunterlagen zur Bundesstatistik", Wiesbaden 1991, p. 124 ff.

Chart 2: Survey variables of the final interview

People in need of care – number of people in need of care and type of care required – sickness of household members during the period of recording – assistance in difficult situations
Exchange of help between households – help with household work – taking care of and attending adults and children – help with do-it-yourself activities
Voluntary and community work – time required
Services and facilities offered (shopping facilities, family doctor, health and advice centre, day care centres for senior citizens, schools) – use or, if applicable, reasons for non-use
Child care (kindergarten, crèche, day care centre for school children, child-minder, foster mother, play-group for crawling-age children, play-group) – use or, if applicable, reasons for non-use – degree of satisfaction with child care facilities
Community/town
Type of building in which the household is situated

Answering these questions turned out to be more difficult for the respondents than originally expected. Providing information about the exchange of help with other households in the form of one answer to one question was difficult because of the complex nature of that question. The aim of the question was to record the exchange of help in terms of a network established by and between households (informal network)[6]. In how far the data collected are valid has therefore still to be verified. In addition, it became obvious that particularly in answering this question the subjective perception of help received from or provided for others seems to play a role and may deviate from the scope of help actually provided. Thus persons reported on help they gave to others while not mentioning the help received from others. A critical assessment is also required with regard to the question about the use of service facilities which was intended to determine the impact of the infrastructure of residential surroundings on time use. Depending on the relevant phase of a life cycle, the information provided by both households and individuals about the demand for and use of the services offered differed widely. Here, considerably summarised categories included with the aim of avoiding an overloading of the questionnaire in some cases led to response difficulties.

During the period between the initial and final interviews, all persons of the responding households who were at least 12 years old were requested to record their use of time in diaries. The age threshold was specified at that level for several reasons. It can be assumed, on the one hand, that this is the usual age from which young people start to contribute to carrying out household work in many families. On the other hand, particularly young people develop special activity patterns for spending their leisure time which should be considered when intending to provide results for the population as a whole. Besides, this lower threshold of 12 years of age had proved to be adequate during the pretest. Young people did not have any difficulty in keeping diaries. The same age threshold was equally successful in time use surveys conducted in the Netherlands and the ex-Soviet Union. In Finland, children start at the age of 10 to keep the above diaries with good results[7]. An upper threshold was not specified. The pretest showed that elderly people as well are in a position to keep these diaries without larger problems. However, it took them a longer time than young people to make the notes requested and the non-response rate among people older than 75 years was higher though[8].

The activities were recorded in open diaries, i.e. each participant described his daily routine in his own words as precisely as possible. The lower time threshold specified for the individual activities was five minutes. The main activity and a secondary activity could be recorded separately. The beginning and end of activities were to be marked on a time axis with a five-minute scale (see Chart 3).

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6) For analysing network help in the context of the German time use survey, see Blanke, K./Schäfer, D.: "What for Whom? - Experiences from the Diaries of the Pretest and of the 1991/92 Time Budget Survey in Germany" in ISTAT: "Time Use Methodology: Towards Census", Roma 1993, p. 345.

7) See Niemi, I.: "The 1979 Time Use Study Method", Helsinki 1983.

8) See also Niemi, I./Rajaniemie, K.: "Measurement of Time Use of the Aged", Helsinki 1987/88.

Chart 3: Diary excerpt

Primary activity carried out for:
own household (e. g. household work, leisure time, paid job) = 1
another household = 2
own and another household = 3
social services/voluntary and community work = 4

Place of activity:
at home incl. the estate belonging to the house) = 1
not at home = 2

Please mark with ☒ the persons with whom you spent your time (Several entries possible)

Time of day from – to	Primary activity	Secondary activity	for whom (carried out)	where (carried out)	Children	Other household members	Relatives, neighbours, friends	Colleagues, school-friends	Other persons	I was alone
15.00 – 15.05	*Helping the*		1	1	x					
15.05 – 15.10	*children to tidy*		1	1	x					
15.10 – 15.15	*up their room*		1	1	x					
15.15 – 15.20		*Talking with him about*	2	2			x			
15.20 – 15.25	*Driving father to the*	*the planning of and invi-*	2	2			x			
15.25 – 15.30	*physiotherapy centre*	*tations for his forthcoming*	2	2			x			
15.30 – 15.35		*70th birthday*	2	2			x			
15.35 – 15.40	*Walking to the supermarket*		1	2						x
15.40 – 15.45			1	2						x
15.45 – 15.50			1	2						x
15.50 – 15.55	*Buying food*		1	2						x
15.55 – 16.00			1	2						x
16.00 – 16.05			1	2						x
16.05 – 16.10	*Going to the post office and the bank*		1	2						x
16.10 – 16.15	*Post office: posting a parcel*		1	2						x
16.15 – 16.20	*Bank: transfers*		1	2						x
16.20 – 16.25	*Walking to the car*		1	2						x
16.25 – 16.30	*Collecting father with the car*	*Chatting with father*	2	2			x			

However, the diaries did not only serve to record the time spent on each activity. In addition, the questions "for whom?" (for one's own household, for another household, social services/voluntary and community work), "where" (at home or away from home) and "with whom" (children, other members of the household, relatives, friends, neighbours, colleagues, school-friends, other persons or alone) were to be answered. Subsequent to the diary notes, a time-use assessment was requested. In detail, the questions referred to whether the days depicted in the diary were normal or extraordinary, whether there were things on which a given respondent would like to spend more time and whether he would be in a position to classify himself under one of the specified types of time users.

The most appropriate period of keeping a diary is seven days to obtain a picture of the time use on all days of the week which is as precise as possible. The pretest, however, showed that even a four-day recording period was not well accepted. To avoid an overburdening of households and to minimise systematic distortions during the period of keeping the diary in the main survey, the information was recorded on two specified, successive days. In order to ensure, however, that a whole week could be depicted, all days of the week were proportionately selected as days on which the diary was to be kept. At the international level as well, diaries are usually kept on two or sometimes only one day for the majority of time use studies. Longer periods are only recommended for studies following specific aims[9].

The type and frequency of activities carried out by households do not only depend on the individual days of a week. The seasons of a year and the climatic conditions have a considerable effect on those activities, too[10]. Since in many studies, data are collected on one specific day or over a limited period of time only, a distortion of the results

9) See 3).
10) See Suzuki, Y.: "Wheather and Time Use", paper delivered at the Meeting of the International Association of Time Use Research (IATUR-Meeting), Bielefeld 1994.

attributable to the survey date may occur. To avoid seasonal distortions in the presentation of time use and to obtain information for the whole year, the survey was conducted during four different periods of the year. Field work was started in October 1991, the other survey months were January, April and July 1992.

1.2 Coding of activities

The activities described by respondents in their own words in the diaries were coded on the basis of a list comprising more than 200 different activities. The respondents did not know the list of activities though. This was intended, on the one hand, to prevent respondents from constructing a daily routine by means of that list. On the other hand, international experience had shown that free entries provided a more detailed breakdown of activities and the transformation of information could be better controlled in the case of later coding[11]. The degree of differentiation was based on the following criteria:

1. aims of the survey, i.e. the presentation of unpaid work and the description of time use structures from the angle of family policy and individual issues thereof,
2. a five-minute interval specified as the minimum duration for recording an individual activity.

Due to the priorities set for the survey, such fields of activity as household work and do-it-yourself, nursing and care were recorded in a detailed breakdown, while other activities such as sports and individual operations performed as part of the job were not. The time scaling of the diary conforming to which only such activities were to be recorded which lasted at least five minutes defined the lower threshold for activities to be regarded as "independent" irrespective of whether these activities could have been further broken down[12]. And by the way, the respondents themselves, based not least on their subjective perception, finally decide to what extent activities are regarded as independent and will consequently be recorded by them.

The list of activities comprises 10 activity fields (see Chart 4).

Chart 4: Activity fields

0	Household work
1	Do-it-yourself
2	Paid job/job seeking
3	Voluntary and community work
4	Qualification/education
5	Personal sphere/physiological regeneration
6	Contacts/conversations/social life
7	Use of media/leisure-time activities
8	Taking care of and attending people
9	Non-allocable times

Each of these activity fields is subdivided into several major activity groups under which the individual activities are listed. In addition, each field contains a separate block to code travel times in a breakdown by different means of transport, and so-called "non-allocable activities" at least allowing an allocation to activity fields in the case of less precise information (see Chart 5).

The hierarchical structure of the coding specification was based on the experience gained in the pretest[13] that the degree of precision applied by individuals differs in describing identical groups of activities. To cope with this situation, a hierarchical structure provided the solution for adequately coding both more and less detailed information and hence minimising the loss of information.

A three-digit code was chosen to allow evaluations at different levels of aggregation. Identical "activity profiles" in different fields were given equal final numbers; compare, for instance, the field of Times of getting ready (.70), Non-allocable activities (.99) and Travel times (.81 – .87).

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11) See 9), p. 13 and Schäfer, D.: "Konzeption für eine Zeitbudgeterhebung der Bundesstatistik" in v. Schweitzer, R./Ehling, M./Schäfer, D.: "Zeitbudgeterhebungen", Volume 13 of the series "Forum der Bundesstatistik" issued by the Federal Statistical Office, Stuttgart 1990, p. 170.

12) Thus, for instance, preparing a meal which was coded as one activity could be recorded in greater detail. However, this was not considered to be useful. See also Szalai, A.: "The Concept of Time Budget Research" in Harvey, A. et al.: "Time Budget Research", Frankfurt on the Main/New York 1984, p. 25 ff.

13) See 2).

Chart 5: Hierarchy of allocation; activity field of household work (examples)

0..	Household work
01.	Supply of meals
011	Preparing meals
012	Laying and clearing the table
013	Cleaning the dishes
014	Food preservation/conservation
015	Putting food away
019	Not exactly allocable activities of field 01
02.	Laundry care
021	Maintaining and cleaning of leather, textiles and clothes
022	Production and repair of leather, textiles and clothes
029	Not exactly allocable activities of field 02
.	
.	
.	
070	Times of getting ready
08.	Travel times
099	Other non-allocable activities of field 0

The list of activities was used for coding both main and secondary activities. It was left to the respondents to decide which of the activities performed by them at the same time were regarded as main and which as secondary activities. Their decisions were accepted even though they did not always appear to be logical to persons not involved. The question whether in individual cases these activities were actually alternating activities was not investigated[14]. The diary entries were not modified.

2 Structure and composition of the sample

The sample of the time use survey was to cover a total of 6,400 households, 4,900 of which in the former territory of the Federal Republic and 1,500 in the new Länder and Berlin-East. Each part of the survey conducted at quarterly intervals was to cover 1,600 households.

One of the aims of the pilot study was to provide an answer to the question whether a quota or a random sample would reflect the population in a better way. However, the results obtained did not allow a clear preference of one of the two sampling procedures[15]. The theoretical advantages of random sampling, on the one hand, had to be compared with the organisational and technical advantages of quota sampling, on the other. As in the context of the survey planned, the division of work, time use and temporal strains on larger households, particularly households with children, were of special interest, quota sampling was largely preferred because it allows an overproportionate consideration of certain types of households in the sample. The decision in favour of quota sampling was mainly based on the argument that it would facilitate the intended overproportionate consideration of these types of households.

Due to the different data bases for quota specifications, using the same quota sampling variables for the new and the old Länder was not possible. The variables used for the former territory of the Federal Republic included the size of the community, status of the reference person in employment and type of household. For the new Länder, the following variables were specified: size of the community, status of the reference person in employment and size of household. The total size of the sample was proportionately split up between the individual Länder. At the Länder level, the splitting between the individual community size classes was proportional to the number of households. As regards the variables "type of household" or "size of household" and "status in employment", the number of families with small children considered in the sample was overproportionate while the number of single-person households was underproportionate.

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14) Thus, it is for instance in part questionable whether activities such as laying the table and making sandwiches are really performed simultaneously or shortly one after the other.

15) See Gießing, S.: "Ergebnisse des Pretests aus stichprobenmethodischer Sicht" in Ehling, M./v. Schweitzer, R. et al.: "Zeitbudgeterhebung der amtlichen Statistik", Volume 17 of the series "Ausgewählte Arbeitsunterlagen zur Bundesstatistik", Wiesbaden 1991, p. 101 ff.

A total of 7,200 households participated in the time use survey, i.e. 800 more than had originally been planned. The larger sample size can mainly be put down to the fact that, due to the rate of non-response observed in the pretest, the quota specified was 10 % higher than the number actually required. The specified gross sample size comprised 7,040 households. As a result of the unexpectedly good response to the survey and the very small number of survey break-ups, the actual size of the sample was 7,219 households. A total of 6,903 households were covered in the time use analysis. Those households where individuals did not at all keep their diaries or where not all household members entered information in their diaries on the same days of the week, were not considered.

3 Survey organisation

The time use survey was conducted by the statistical offices of the Länder together with the Federal Statistical Office. However, the division of work agreed on for this purpose differed from that usually applied in official statistics. Coordinating its work with the statistical offices of the Länder, the Federal Statistical Office typically carries out the statistical preparation works. The Länder offices produce statistical results for the individual Länder which will then be put together for the whole Federation and published for various purposes by the Federal Statistical Office. In accordance with the procedure applied in the production of other statistics, the data collection in the context of the time use study was in the hands of the statistical offices of the Länder (except for Brandenburg). For Brandenburg, the field work was organised by the Federal Statistical Office. The further processing of the data was centralised at the Federal Statistical Office (except for North Rhine-Westphalia and Bavaria). This approach proved to be very useful as unforeseen questions and problems turned up only in the course of processing work, in particular during diary coding. In this way, they could be treated and solved uniformly without spending much time on coordination.

Another task in the fulfilment of which the statistical offices of the Länder were supported by the Federal Statistical Office was to win households for participation in the survey. Furthermore, the offices of the Länder were in charge of selecting and training the interviewers who were to assist the households during the survey period. The group of interviewers for this survey mainly comprised staff members who, at the level of the statistical offices of the Länder, were involved in the work concerning the microcensus and sample survey of income and expenditure. As data collection was performed in four sample surveys, the survey size was very small for some individual collection dates, which led to difficulties in the formation of interviewer districts. Some interviewers had to cover large distances to conduct their interviews. Upon the completion of data collection, the statistical offices of the Länder verified the distribution and return of survey documents and performed initial completeness and plausibility checks.

4 Evaluation strategies

The aim of time use surveys is to analyse how people spend the 24 hours of a day. Initially, the strategies of evaluation and analysis, which offer information for many political and scientific areas, seem to be manifold[16]. However, the experience gained with regard to processing the information obtained has shown that analysing time use is a complex task and the depiction of time use structures is limited. Depicting something means to abstract from and reduce reality. Though certainly applying to all statistics, this is the more true for recording the time use in diaries: different individuals perceive periods of time differently and their ability to describe activities differs as well[17]. As a logical consequence, the data collected will necessarily comprise inaccuracies as long as human beings are involved in the data collection. However, this knowledge is important for an interpretation of the data. On the other hand, the question will always remain unsettled whether it is really possible to record the main influencing factors or whether their variables together with the time use structures of individuals possibly create reasons (for certain activities) which can be neither recorded nor reflected in the statistical context. In this respect, depicting time use by means of tables and charts can be compared with a map: nobody would expect to see reality on it[18]. Nevertheless, nobody would like to do without maps as they are undoubtedly an important instrument for orientation purposes. The data obtained from the official time use survey should be understood in a similar way. Therefore, the extent to which the collection procedure applied is suitable to provide the information required should be clarified for each concrete aim of research.

For the purpose of first time use analyses and presentations, data regarding the main activities were processed and the results finally presented. The latter provide a general idea of time use structures. Summing up individual activities per day and group of persons may serve as a basis for examining further questions concerning the conditions of time use, which can be answered only if additional information is provided.

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16) See Ehling, M./Kott, K.: "Analysefelder von Zeitbudgetdaten" in Ehling, M./v. Schweitzer, R.: "Zeitbudgeterhebung der amtlichen Statistik", Beiträge zur Arbeitstagung, Volume 17 of the series "Ausgewählte Arbeitsunterlagen zur Bundesstatistik", Wiesbaden 1991, p. 201 ff.

17) See Barth, A.: "Im Reißwolf der Geschwindigkeit" in Der Spiegel 1989, 43rd year, p. 200 ff. and Blanke, K.: "Methodische Schlußfolgerungen für die Haupterhebung aus der Sicht der Frauen- und Familienpolitik" sowie Matthias, G.: "Technisch-organisatorischer Ablauf des Pretests der Zeitbudgeterhebung in Bayern" in Ehling, M./v. Schweitzer, R. et al.: "Zeitbudgeterhebungen".

18) See Szalai, A.: "The Concept of Time Budget Research" in Harvey, A. et al.: "Time Budget Research", Frankfurt on the Main/New York 1984, p. 126.

Owing to the fact that time use was recorded in the diaries in a very detailed way covering answers to such questions as where, for whom and with whom activities were carried out, further-reaching analyses can be approached. Thus, for instance, the information "for whom a given activity was carried out" (whose purpose might not immediately be understandable) was aimed at covering the exchange of help between households and also voluntary and community work (key word: informal and formal network help[19)]). The answers to questions about secondary activities supplied very important information as well. They, for instance, allow to specify more precisely the time spent on child care. In many studies of the past, the average child-care period specified on the basis of an evaluation of the main activities only was just over two hours per day. In many cases, this turned out to be an obvious underestimation, which called for new concepts[20)].

Evaluating the answers to the question "with whom a given activity was carried out" together with the individual activities performed allows a description of social reference systems (family, occupation, friends, etc.) of the everyday life of people. In this respect, for instance, having a meal with children differs from having a meal with colleagues. New aspects are added to the analysis of time use patterns[21)] by strictly following this idea, i.e. analysing activities in relation to the persons involved in them:

- How much time do people spend together with their families and on household work (familial time)?
- What proportion of time is covered by a paid job, school attendance, studies or voluntary and community work (public time)?
- How much time is left for personal contacts and regeneration (personal time)?

The life of any individual is characterised by changes in the proportions of the above three dimensions, clearly reflecting the impact of past familial or occupational decisions on the time use structures at a later point in time. In this context, a hypothesis assumes that, at the level of personal time allocation, it is important for many people to bring the three dimensions of time into a well-balanced proportion. Drastic changes in existing time patterns are felt as a suboptimum time allocation. This, for instance, explains why it is difficult for many people to cope with such phenomena as giving up one's job when a child is born (relating to women), retirement, unemployment or the loss of one's family. In those cases, the use of time as a whole needs a new orientation and restructuring. Moreover, a reduction in the area of public time (e.g. due to unemployment or familial activities) often entails a loss of prestige in social life. The situation in our social system is still characterised by the fact that those people are held in high esteem (in material and immaterial terms) who spend a large part of their time in the form of public time, while familial time, though gaining ground in the discussion, is by many people much less appreciated than public time.

5 Prospects

The aim of describing the above methodology and evaluation strategies was to depict the detailed information collected and the potential of manifold analyses facilitated by it. Data relating to the average time use of households and persons enlarge the range of information provided in official statistics. In addition, they contribute to the fulfilment of a topical task, i.e. to analyse the situation of individual groups of the population from the angle of time. Based on comparisons of the daily time use of groups of people in a breakdown by socio-demographic variables, various allocations and lacks of time may be specified, everyday situations in which persons are overburdened or not fully occupied be shown and, if required, appropriate measures be derived[22)].

First results were issued in a booklet entitled "Wo bleibt die Zeit" ("Where does time go?") and in a paper on the subject of household production in *Wirtschaft und Statistik*[23)]. They will be followed by further evaluations to be published there as well. In addition, tables are now available in separate volumes and a detailed project report on the time use of the population has been planned. The experience gained with the German survey will furthermore be incorporated into the concept of a European time use survey currently being prepared by the Statistical Office of the European Communities (Eurostat). In addition, the integration of time use surveys into the continuous programme of official statistics in all member states of the European Union is part of long-term planning.

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19) See also 6).

20) See Haugg, K.: "Zeitbudgetforschung aus haushaltswissenschaftlicher Sicht" in Tietze, W./Roßbach, W.-J.: "Mediennutzung und Zeitbudget", Wiesbaden 1991, p. 21.

21) The concept of structuring time in this way is based on a time structure approach of von Schweitzer which, on the basis of the aims of activities, defines three dimensions of time, i.e. public, familial and personal time. See v. Schweitzer, R.: "Zeitstrukturmuster von Bevölkerungen" in Zeitschrift für Bevölkerungswissenschaften, 3/4 1990, p. 447 ff.

22) See v. Schweitzer, R.: "Einführung in die Themenstellung" in Ehling, M./v. Schweitzer, R./Schäfer, D.: "Zeitbudgeterhebung", Volume 13 of the series "Forum der Bundesstatistik", Wiesbaden 1990, p. 9.

23) See also 1).

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