Federal Republic of Germany

Methods . . . Approaches . . . Developments

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The catchword

Cut-off methods

Cut-off methods have for a long time already been part of the instruments used for statistical surveys. Using a cut-off method means that a subset of sampling units is separated from the parent population through a cut-off limit. The remaining units are then covered as part of a complete or partial enumeration. The cut-off limit as such usually consists of a pre-set value of a – mostly quantitative – variable (e.g. employees, turnover). The cut-off method does not comply with the principle of random selection since not all units of the population have a chance of being selected. This in turn affects the informational value of the results.

There are various reasons for employing cut-off methods, and the following major arguments may be quoted:

- When applying a cut-off limit, only those units of the population are taken into account which are of particular importance for the overall result (principle of concentration). As a rule, a cut-off variable is chosen that correlates as closely as possible with the major tabulation characteristics. Thus it is ensured that the subset of units contains that part of the population where the variables observed are particularly pronounced. As related to the total values of variables in a population, the relevant shares collected in a sample from such a subset will in general be higher than if an analogous sample of the same size is drawn from the population. The concentration principle of cut-off methods thus shows a positive cost-benefit relation for a statistical survey, especially if the population is likely to consist of many elements with low values and only few with high values for specific variables.
- As far as official statistics are concerned, reducing the burden imposed on the respondents through the obligation to provide information is another reason why cut-off methods are being used. Since they permit as a rule to obtain in the sample pre-set minimum shares of the tabulation characteristics from a markedly smaller sampling fraction as compared with procedures without a cut-off limit, fewer small-scale units are required to provide information. The costs of such services also play a far more important role for small-scale enterprises than for large ones. Reference should further be made here to the normally more comprehensive and up-to-date accounting systems of larger enterprises which may also ensure a better quality of the data.
- Moreover, cut-off methods often have the advantage that also less up-to-date sampling frames may be used because fewer fluctuations/changes occur with larger sampling units. However, this raises the problem of covering former small-scale units which have moved up into the range of the survey.

The above reasons for employing cut-off methods contrast with an essential disadvantage. It is not possible to make reliable inferences for the population from the recorded data by means of probability calculus because the units below the cut-off limit are excluded from the survey. One solution to provide data on the small-scale units may consist in deriving estimates from other data sources if there are any such sources. If the statistics are primarily to show developments (rates of change), the information gathered from the group of large units may be transferred – if necessary also in modified form – to the small-scale survey units cut off, provided that material considerations justify this approximation approach.

For official federal statistics usually a different approach is chosen when applying cut-off limits. Because of the above-mentioned serious drawback, official statistics present the results only for the group of survey units above the limit. The customary raising procedures and error calculations based on the theory of probabilities can thus be used for the reduced population.

However, neither the traditional cut-off methods nor the modified approach are used for federal statistics to analyse specific structures of individual economic sectors in relation to the size of enterprises and establishments.

Major examples of the application of cut-off limits in official statistics are in particular the surveys in the sphere of production industries. The number of employees is used here on principle as the cut-off variable for inquiries at enterprises or establishments. At present, the cut-off limit is 20 employees, i.e. there will be no inquiry at enterprises/establishments with fewer employees. Establishments with less than 20 employees are covered, of course, as part of enterprises with 20 employees and more. All this holds true in particular for the monthly reports, the quick reports on production and the quarterly production surveys in mining and manufacturing, but also for the annual surveys of the cost structure and of investments in this sector. The relevant statistics record, among others, data on turnover, total wages and salaries or quantities of output, respectively, as well as on costs and investments, viz. variables that usually correlate positively with the number of employees. For some economic sectors, however, that is for sectors with mainly small-scale units, the cut-off limit for the above monthly and quarterly surveys is lowered to 10 employees. In addition to the use of cut-off

methods, the industrial units in mining and manufacturing which are below the prescribed limits are required to provide information on employees and turnover within the scope of the annual survey of small-scale establishments. Handicraft enterprises in the manufacturing industry which have less than 20 employees are covered in sample form concerning employees and turnover within the scope of the quarterly reports on handicrafts.

Further development of the collection, processing and presentation of data

Changes in the microcensus – Scientific Advisory Council presents concept for the further development of the microcensus

Since 1957, 1 % of the population of the Federal Republic of Germany have been questioned once a year about their living and working conditions and their housing situation. Apart from these inquiries conducted with an obligation to provide information, the Federal Statistical Office and the statistical offices of the Laender conducted pilot surveys with voluntary response relating to the microcensus in the years 1985, 1986 and 1987. The microcensus pilot surveys had been initiated by the legislator to examine whether future microcensus surveys may wholly or in part dispense with the obligation to provide information. A Scientific Advisory Council attended to the testing of alternative methods, providing pertinent advice.

The Scientific Advisory Council on Microcensus and Population Census has presented the results of its work in a project report of over 400 pages entitled "Changes in the microcensus". In July 1989, the report was remitted to the Federal Minister of the Interior.

On the first 160 pages of its report, the Council deals with the general legal, sociological and methodological aspects of its task. Particular attention is given to the fundamental statistical and sociological problem of the conditions under which voluntary surveys give rise to non-response and the consequences it can have for the quality of a survey. In conjunction with explanations on the significance of the microcensus as an "instrument for the basic supply of information" for statistical and sociological data production, the first chapter describes the background of the survey methods suggested and tested in the microcensus pilot surveys (types of personal, written and telephone interviews; mixing of methods). The rates of participation achieved in the voluntary surveys and the comparison of the results of the voluntary microcensus with those of the microcensus with compulsory response as well as with other external reference statistics lead to the conclusion that "more reliable results are obtained if there is an obligation to provide information. When determining grossed-up absolute figures or overall percentages, in part quite considerable deviations (of 10 % or often even much more) were observed between the main and the pilot survey, also for large groups of the population. In the case of voluntary surveys, 'underprivileged' persons (e.g. divorced or widowed elderly women, long-term unemployed, persons with low income) and specific population groups (e.g. consensual unions, households consisting of three or more generations) are in general underrepresented, so that the relevant results are affected by major errors. Due to the volume of non-response cases and the instability of their structure and since the mechanisms determining them are not known exactly, the ensuing distortions cannot be adjusted even by means of the latest statistical correction techniques".

On the basis of its analyses, taking into account its further considerations on the development of the microcensus and weighing the differing interests, the Scientific Advisory Council has recommended that the obligation to provide information should be retained for the core questions of the microcensus. Voluntary response should, however, be envisaged for questions where lower quality standards seem acceptable. The Council proposes voluntary response in these fields also because of its desire to ensure as much openness and flexibility as possible for those parts of the survey programme which extend beyond the central functions of the microcensus, so as to make allowance for the ever increasing and changing need for information.

Starting from this objective, the Scientific Advisory Council specified its material recommendations in 15 individual programmes and allocated to them the envisaged survey topics according to sampling fraction, periodicity and compulsory or voluntary response. The obligation to provide information is to be retained for the core questions of the microcensus (basic programme, labour market, occupation and main economic activity, educational achievement, further education and training). For the majority of the supplementary programmes, surveys with voluntary response are suggested because the intended uses of the results permit of such a practice. Questions on the housing situation are to be covered by an independent survey with compulsory response.

Though the microcensus according to the Council's concept is expected to provide more information, the overall burden imposed on the respondents will not increase. This is ensured by the fact that according to the Council's concept some of the current microcensus questions will be covered at larger intervals and/or only within the scope of subsamples.

As far as methodological aspects are concerned, the Scientific Advisory Council suggests to change over from the former reference week approach to continuous (at least quarterly) surveys. The sample design should be set up in such a way that the results can better be regionalized. The sampling fraction should be 1 %. The efforts already started in view of a standardization of the survey instruments and of the accompanying documents should be continued. The personal interview should, as before, be the principal survey instrument. The Council furthermore recommends that additional methodological studies should be carried out on the possibilities of using alternative procedures or of combining different methods.

The report entitled "Mikrozensus im Wandel" (Changes in the microcensus) was published as Volume 11 of the Federal Statistical Office's publication series "Forum der Bundesstatistik" in October 1989. On 6 and 7 November 1989, the "3rd Wiesbaden Talks" were held with the key subject "Life and work 2000 – Challenges to the microcensus", at which the Federal Statistical Office presented the future microcensus concept for further public discussion (see also the following article).

Events

Wiesbaden Talks on the microcensus

The Federal Statistical Office held its "3rd Wiesbaden Talks" on the subject "Life and work 2000 – Challenges to the microcensus" on 6 and 7 November 1989. With Hofrat Magister Erich Bader, President of the Austrian Central Statistical Office acting as moderator, representatives of science and practice, administration and the economy discussed requirements and methods with a view to the future of this important source of information.

The contributions on information needs showed the extent to which politics and administration, science and research and also market and opinion research depend on the high quality and reliability of the microcensus results as the basis of their work.

A look across the borders showed on the one hand the requirements in respect of the further development of the microcensus as to its contents and methodology from the point of view of the European Communities and on the other hand the experience acquired in other countries. Austria, for instance, has already further developed the microcensus in several of these fields.

In a report on its analyses and recommendations entitled "Changes in the microcensus", the Scientific Advisory Council on Microcensus and Population Census made it clear that it is absolutely essential to maintain also in the future the high methodological quality of the microcensus results.

As a conclusion it was generally agreed that legislative activities should on the one hand be oriented towards further developing the information supplied by the microcensus in conformity with demand, and on the other towards setting the course for a flexible adaptation of the microcensus to the changing requirements to be met by a modern set of instruments for data collection and processing.

A volume containing the texts of all papers and the discussions will be issued as part of the publication series "Forum der Bundesstatistik" of the Federal Statistical Office.

Scientific symposium on historical statistics

Statistics are used not only for analysing problems of the present and the future but also for resolving questions of a historical nature. At a time of rapid change it is often helpful to look back into the past in order to be able to see the present time as the result of a historical process, to become aware of the underlying causes and developments of present phenomena, to learn from solutions of the past and relate them to problems of the present time, or just to discover and appreciate the achievements of the past.

On 28 and 29 November 1989, the Federal Statistical Office, together with the Arbeitsbereich Wirtschafts- und Sozialgeschichte of the Zentralinstitut für Sozialwissenschaftliche Forschung of the Freie Universität Berlin, thus held a scientific symposium on "Historical statistics in the Federal Republic of Germany".

The programme consisted of three main parts. The first part emphasized the need for historical statistical data and their importance for the present time. On the basis of the development of statistical data collection, the history of official statistics was described, briefly outlining the significance historical statistical data have for various economic sectors.

The second part of the symposium was a stocktaking of the research conducted so far. By way of example, several projects of historical statistics were discussed with the range extending from medieval price statistics to election statistics in the 19th and 20th centuries.

A panel discussion constituted the third part of the programme. Representatives from universities, official statistics, public administration and the media discussed the perspectives of the future development of historical statistics with a view to research tasks and objectives of historical statistics as well as the relevant institutional framework conditions.

For further information please contact Dr. Ehling, Working Party on Methodological Research for Federal Statistics, Federal Statistical Office (tel.: 06 11/75 29 03). The papers and the panel discussion will be published as Volume 14 of the publication series "Forum der Bundesstatistik" edited by the Federal Statistical Office.

Reactions from abroad

Seminar on "The European System of Statistical Information after 1992"

The Single European Act, which entered into force on 1 July 1987, expresses the political will of the Member States of the European Communities to create a uniform economic area by the end of 1992. As a result of the accomplishment of the economic and political integration of Europe, the European economies are in the process of increasingly growing together. Important developments have been put in motion also for official statistics.

From 6 to 8 April 1989, a seminar on "The European System of Statistical Information after 1992" was held in Brussels. On the occasion of the Conference of the Directors-General of the National Statistical Institutes convened in Sorrento from 18 to 20 May 1988, the Statistical Office of the European Communities (SOEC) had suggested and subsequently organized the seminar together with the official agencies of the EC Commission in Brussels.

It was the objective of the seminar to set the course for a future-oriented information system geared to the political and social information needs on both a Community and a national level, and to strengthen the relations between the political level of the European integration, the spheres of socio-economic and ecological action and research in the Member States, and official statistics with a view to establishing such an information system.

The about 200 participants included representatives of national government agencies, official statistics, the economy, the financial sector and universities from the EC Member States, other European countries, the United States and Canada as well as representatives of the EC Commission and international organizations within the sphere of the UN.

At a plenary session, Mr. Egon Hölder, the President of the Federal Statistical Office, delivered a speech on "The distribution of roles in the European statistical system: The political integration of statistics". As the gist of his considerations on the basic framework conditions and the organization and content of the future European statistical system, he claimed that also in the EC official statistics could perform their information task only as an independent, neutral institution committed to scientific work. With this in mind, their basic principles, standards, methods and procedures including the division of labour between the SOEC and the national statistical offices should be determined in a generally binding form to guarantee the consistency and comparability of their results. (The text of this speech can be obtained from the Federal Statistical Office, Subdivision I A.)

The major results of the four technical study groups of the seminar may be summarized as follows:

- **Environmental statistics:**
  In this field, work has to be started above all on the development of common nomenclatures which can be integrated into the existing classifications, on the utilization of remote sensing techniques for purposes of environmental statistics and on a comprehensive stocktaking of data sources in the Member States, suitable to be used for environmental statistics.
- **Economic statistics:**
  Although considerable progress has been made with regard to the harmonization work in this field, there still are gaps to be filled especially in order to supplement economic statistics in the enterprise sector.
- **Statistical information on the social dimension of the Common Market:**
  At the present time, these statistical results are still less comparable than economic statistics due to the fact that national definitions and methods often differ considerably. The required harmonization of the national concepts must however also in the future enable the monitoring of the developments on a national and regional level and at the same time reveal the interactions between economic, demographic and social developments.
- **Banking and currency statistics:**
  In the medium term, a harmonized overall system shall be developed in cooperation with the central banks of all Member States.

International experience with time budget surveys within the scope of official statistics

Preliminary remarks

The objective of time budget surveys is the statistical coverage of the use of time by the population in a breakdown by the types of activities performed, if possible during a full 24-hour day. Contrary to most other industrialized countries, there is in the Federal Republic of Germany neither in market and social research nor in official statistics a marked tradition of research concerning the realization of general time budget studies. Except for surveys carried out in Baden-Württemberg[1]), no comprehensive time budget survey has so far been conducted by official statistics in the Federal Republic of Germany. In many industrialized countries, however, general time budget surveys are part of the programme of official statistics, also because of the manifold and differing uses of the results. To some extent, such surveys are also conducted within the scope of private market and social research and as part of university research. Also in the Federal Republic, official statistics have repeatedly been approached in recent years to provide information which can be supplied only by a representative time budget survey. The fields of application of general time budget surveys range from the examination of activities in their overall connection (e.g. on the development of employment, household production and leisure time in view of new developments concerning working hours) to the study of individual major groups of activities (e.g. leisure time, housework, attendance of children), all the way to the analysis of specific individual activities (e.g. further education). In many cases, the main emphasis is placed also on certain groups of households or persons. Some of those applications of time budget surveys are, for instance, the examination of the woman's role in the society (sex-specific division of labour), of the life-style in old age, of the burdens placed on single parents or the study of the use of time by households that are affected by unemployment. Comprehensive and differentiated time budget data are also needed[2]) for presenting the economic performance of households and families in an overall economic connection.

In view of the requirements outlined above, first methodological considerations were made at the Federal Statistical Office concerning the possibilities of a nationally representative time budget survey. Experience made with general time budget surveys in other countries has also been included in these considerations since only comparatively few surveys have so far been conducted in the Federal Republic of Germany.

The present contribution gives an overview of the results of international research. After showing the bases of time budget research and giving a historical review, it will present selected time budget surveys of foreign countries and outline projects which place emphasis on international comparison. This will be followed by a summary of the current state of international research under individual methodological aspects. A brief concluding remark will sum up important results of this paper.

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1) See Kössler, R.: "Arbeitszeitbudgets ausgewählter privater Haushalte in Baden-Württemberg. Ergebnisse einer Zusatzerhebung zur Einkommens- und Verbrauchsstichprobe 1983", Stuttgart 1984; Kössler, R.: "Arbeitszeitbudgets ausgewählter privater Haushalte" in Baden-Württemberg in Wort und Zahl, No. 5/1984, p. 114 ff.

2) See Schäfer, D.: "Haushaltsproduktion in gesamtwirtschaftlicher Betrachtung" in Wirtschaft und Statistik, No. 5/1988, p. 309 ff.

1 Bases of time budget research

Contrary to other statistical surveys where the time factor is considered only a time reference point of the survey, time budget surveys are characterized by the fact that time itself is included as a survey characteristic; the items measured by this characteristic are, among others, the beginning, the end, the duration, the sequence and the frequency of activities performed by a person within a certain period[3]). It is attempted to cover as many activities as possible that were performed by the responding person, and with a differing degree of detail, depending on the survey approach. In the case of activities performed simultaneously – such as looking after children while cooking, or listening to the radio while eating – some surveys cover only the main activity (primary activity), while others ascertain also further activities as secondary or parallel activities. The time unit chosen is often the 24-hour day. However, time budgets may also cover one week, one month or longer periods. The longer the survey period chosen, the less differentiated are, as a rule, the activities included.

Schedule 1: Extract from the diary of the time budget survey conducted by the Central Statistical Office of Finland (1979)

Hour	WHAT WERE YOU MAINLY DOING? Describe as precisely as possible what you did at different times of the day. Only one activity is to be entered in each row. Time spent on trips and the means of travel are to be entered separately. 1st day of entry _____ __/__ |__|__|__|__| date	FOR OFFICIAL USE Primary activity	Location	Secondary activity	Time spent together	WHAT ELSE WERE YOU DOING AT THE SAME TIME?	TIME SPENT TOGETHER a. with family members 1.	2.	3.	4.	5.	6.	7.	b. with others Relatives	Coworker/school mates	Acquaintances
0.00–0.30																	
0.30–1.00																	
1.00–1.30																	
1.30–2.00																	
2.00–2.30																	
2.30–3.00																	
3.00–3.30																	
3.30–4.00																	
4.00–4.30																	
4.30–5.00																	
5.00–5.10																	
5.10–5.20																	
5.20–5.30																	
5.30–5.40																	
5.40–5.50																	
5.50–6.00																	
6.00–6.10																	
6.10–6.20																	
6.20–6.30																	

Source: Niemi, I.: "The 1979 Time Use Study Method", Central Statistical Office of Finland, Helsinki 1983, p. 25.

Depending on the survey objective, there are collected as other characteristics also data on the location of performance, the presence of other persons or on the performance of secondary or tertiary activities in addition to the primary or main activity.

3) See e.g. Szalai, A.: "The Concept of Time Budget Research" in Harvey, A.S. et al.: "Time Budget Research. An ISSC Workbook in Comparative Analysis", Frankfurt a.M./New York, 1984, p. 17 ff.; Robinson, J.P.: "How Americans Use Time. A Social Psychological Analysis of Every Day Behavior", New York/London, 1977, p. 6; Haugg, K./v. Schweitzer, R.: "Zeitbudgets von Familien – eine Literaturstudie mit haushaltstheoretischen Anmerkungen" in Zeitschrift für Bevölkerungswissenschaft, No. 2/1987, p. 217; Blass, W.: "Zeitbudget-Forschung. Eine kritische Einführung in Grundlagen und Methoden", Frankfurt a.M./New York, 1980, p. 15 ff.

The survey of time use is complemented by the coverage of characteristics which influence the time use patterns of households or persons or which represent the social and spatial connection of activities; this is, for instance, information on housing conditions, employment, friends, relations to relatives and general socio-demographic characteristics. Various types of time budget surveys may be distinguished with respect to their objectives. Most of the time budget surveys conducted today by statistical offices follow a general approach, i.e. it is attempted to provide an overview of the frequency and duration of all activities of everyday life. With many general time budget surveys it is, however, also attempted to study more comprehensively subject fields of primary interest, maintaining at the same time the standard of a multifunctional survey which can be evaluated under differing aspects. A distinction has to be made between these general time budget surveys and special time budget surveys aiming exclusively at specific problems. Today, special time budget surveys are often conducted, for instance, in the field of media analyses and for covering leisure-time activities. They mostly have a smaller sample size and are based in part on collection techniques differing from those of general time budget surveys.

Schedule 2: Extract from the questionnaire of the activity-oriented time budget survey conducted by the Statistical Office of the Land of Baden-Württemberg (1983)

Date: _____

1 = Head of household
2 = Spouse
3 = Child
4 = Other person

please enter here →

		1st person	2nd person	3rd person	4th person	5th person
		Monday				
Economic activity						
Travelling time						
Shopping						
Food preparation	Immediate consumption					
	Storage					
Dish washing						
Laundry care						
Cleaning, tidying up						
Maintenance						
Gardening, rotational cleaning in tenement house						
Vehicle servicing						
Attendance	Children					
	Sick persons					
	Pets					
Others						

Entries in full minutes

Source: Kössler, R.: "Arbeitszeitbudgets ausgewählter privater Haushalte in Baden-Württemberg", see footnote 1, p. 67.

For covering the use of time, most of the general time budget surveys conducted so far internationally have made use of the diary method, i.e. the activities performed are recorded with their time sequence and duration. In the case of the written, self-administered diary, the records are taken by the respondents themselves. Another version of the diary method is the interview on the previous day where an interviewer records in chronological order the activities performed by the respondent.

For the majority of special or smaller time budget surveys, however – such as the ones conducted in the Federal Republic of Germany in recent years – the activity-oriented time budget survey is used. When this method is applied, the respondents are asked questions on the overall duration of pre-determined activities. Schedule 1 gives an example of a questionnaire applied with the diary method, while Schedule 2 shows a sample questionnaire used with the activity-oriented method.

2 Historical development

The origins of time budget surveys date back to the 19th century. Time budget surveys have developed from the family budget surveys which at the time were conducted in England and France for analysing the workers' social situation.

Since the late 19th century, time budget research work has increasingly been done also in the United States and in the Soviet Union. In the 1920s, time budget studies were widespread in the Soviet Union. The methods that since that time have been applied for the surveys permit comparisons to be made with current time budget studies. During the Stalin era, time budget research in the Soviet Union was brought to a complete standstill, just as all other kinds of social research. In the period following, socialist countries made increased efforts to revive it, and the results of time budget studies have gained a certain importance for central planning.

In the United States, a number of important time budget studies were carried out in the 1930s, though only few of them have become more widely known[4]). Above all, the comprehensive research work done within the sphere of home economics has been recognized only to a relatively small degree. In the United States, time budget research work has been steadily continued in various research sectors, although it did not reach the importance that it has been given for instance in the Soviet Union.

In many West-European countries, the interest in time budget data has considerably increased since the mid-1960s. Of particular importance for the methodological development of time budget research was the "Multinational Comparative Time-Budget Research Project"[5]). This project was supported financially by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in order to promote the international cooperation of time budget researchers and the international comparison of the data. Because of the great importance this project had for the further development of time budget research, some of its main features will be briefly outlined in the following. The objectives of this international time budget study were, on the one hand, to cover and compare the day patterns of the populations of different nations and, on the other hand, to further develop and improve the collection techniques of time budget surveys. The survey was conducted in 1965/66 in twelve nations, i.e. the Federal Republic of Germany, Bulgaria, Hungary, the Soviet Union, Yugoslavia, Czechoslovakia, France, Belgium, Peru, the United States, Poland and the German Democratic Republic.

The survey locations included in the sample were towns of 30 000 to 280 000 inhabitants of whose active population at least 25 % were employed in the local industry and not more than 25 % in agriculture. The respondents were selected at random. The sample size in the individual countries was to be not less than 2 000 respondents. After the survey itself had been finished, a total of some 30 000 individual day patterns were available for the analysis. The survey covered only men and women aged 18 to 65 years. The readiness to respond was generally lower than in the case of "normal" interviews. The cases of non-response led to biases in the sample. Economically active women, persons with long working hours and travelling times and younger persons were underrepresented.

After exhaustive pre-tests had been made, a combination of interview and diary recording was chosen as the collection technique. The interviewer saw each respondent twice. At the first visit, an interview was made concerning the course of the day preceding the survey date, further survey items were inquired, and instructions for completing the diary were given. After the diary had been completed for one day, the interviewer checked the notes at the second visit, supplementing and completing the information by asking

4) Such as the study by Sorokin, P.A./Berger, C.Q.: "Time-Budgets of Human Behavior", Cambridge, Mass. 1939.

5) See Szalai, A. (ed.): "The Use of Time. Daily Activities of Urban and Suburban Populations in Twelve Countries", Mouton 1972. This collection both describes the methodological approach of the study and presents the material results.

additional questions. The activities were to be entered in the diary in an open way, i.e. there were no pre-set activity classifications or time intervals. Apart from the duration and the primary and secondary activities, there were also covered the location and the interacting relations existing during the performance of the activities as well as 39 background variables. The survey period was in each case one day, and an attempt was to be made to represent evenly all seven days of the week. No surveys were conducted during "exceptional" seasons such as the winter or the holiday season.

Subsequent to Szalai's international time budget project, increased efforts were made in tackling the institutionalization of time budget surveys within the scope of official statistics. Due to the great interest in time budget data shown by politics, economy and science, time budget surveys have by now become part of the programme of official statistics in nearly all industrialized countries.

3 General time budget surveys abroad

3.1 Overview of surveys in industrialized countries

Schedule 3 gives an overview of current general time budget surveys in various industrialized countries. In so far as the relevant information is available, there are also shown methodological characteristics, such as the delimitation of the parent population by the respondents' age, the sample size, the collection technique, the duration of covered time expressed in days and the length of the list of activities. Only rather extensive and representative surveys conducted mainly within the scope of official statistics of 15 selected countries have been included in the schedule. In many of these countries, complementary time budget surveys with smaller sample sizes are conducted, partly by other institutions. Some industrialized countries conducting time budget surveys could not be included in Schedule 3, because no information is available yet on their methodological features. This refers, for instance, to Australia, Italy and Sweden, where at present the first time budget survey is being conducted as part of official statistics. In addition, Gershuny and Jones mention surveys in Belgium, the German Democratic Republic, Yugoslavia, Bulgaria, the Republic of Korea and Israel[6]).

Most of the surveys included in Schedule 3 were carried out between the late 1970s and the mid-1980s. In Finland, children from the age of 10, in the Netherlands and in the Soviet Union from the age of 12 are covered, while in Czechoslovakia, France, Great Britain and Northern Ireland, Japan, Hungary and Switzerland juveniles from the age of 14 or 15 are included. The sample size ranges from more than 200 000 respondents in Japan to 1 300 respondents in Great Britain and Northern Ireland. In ten surveys, the time data of 10 000 persons and more were collected. The collection method applied most frequently is a self-administered diary of the time use covering one or two days. Only in Great Britain and Northern Ireland, a diary is completed for one week, however with a very small sample size (1 300). The number of the activities specified ranges from 18 in Japan to 190 in Great Britain and Northern Ireland and 200 in France.

In order to give an idea of the methodological approach of general time budget surveys, two surveys will be taken as examples and presented in greater detail. There were selected a survey with a complex survey design, i.e. two interviews and a self-administered diary (France), and an example for the second important version of the diary method, i.e. the interview on the previous day (Austria).

3.2 France

General, comprehensive and representative time budget surveys are conducted at about 10-years' intervals (so far in 1966, 1974/75, 1985/86) by the Institut National de la Statistique et des Etudes Economiques (INSEE). They are supplemented by special time budget surveys which have smaller sample sizes and aim at a detailed ascertainment of the time use and its determinants for certain activities (e.g. transport, personal relationships, leisure time). The following explanations relate to the general time budget surveys, in particular to the 1985/86 survey[7]).

The general time budget surveys conducted by INSEE are based on a combination of interview and written diary methods. The households are questioned twice for about one hour each time. The purpose of the first interview is to establish the contact and to collect basic data on the household. The data collected are socio-economic characteristics of the household members, information on the dwelling and on the equipment of the households with consumer durables as well as information on regularly and irregularly employed

6) See Gershuny, J./Jones, S.: "Time Use in Seven Countries 1961 to 1984", Working Paper, Bath 1986, p. 5.

7) For the following, see Roy, C.: "Enquêtes françaises sur les emplois du temps (1974 à 1981) – nomenclature d'activités", Documentation, Paris 1984; INSEE: "Etude des emplois du temps 1985-1986, Instruction no. 1, Instruction générale sur le déroulement de l'enquête", Paris 1985; INSEE: "Etude des emplois du temps 1985-1986, Instruction aux enquêteurs no. 1, Objectifs et préparation de l'enquête", Paris 1985; INSEE: "Etude des emplois du temps 1985-1986, Instruction de chiffrement no. 2, les nomenclatures d'activités, de lieu, de compagnie et de but", Paris 1986.

Schedule 3: Overview of current time budget surveys in selected countries

Country	Current year of survey	Parent population (age in years)	Sample size (number of persons)	Collection technique	Duration of time covered in days	Number of activities	Conducting institutions
Denmark	1975 1)	≥ 16	3 700	Diary 2)	1	3)	National Institute for Social Research
Finland	1987/88	10 - 64	10 500	Self-administered diary	2	141	Central Bureau of Statistics
France	1985/86	≥ 15	24 000 in 16 000 households	Self-administered diary	1	200	INSEE
Great Britain and Northern Ireland	1983/84	≥ 14	1 300	Self-administered diary	7	190	Economic and Social Research Council
	1983/84	≥ 14	10 000	Interview on the previous day	1	42	BBC
Japan	1981 1)	≥ 15	209 000 in 83 000 households	Self-administered diary	1	18	Statistical Office
Canada	1981 1)	≥ 18	2 700	Diary 2)	1	3)	Statistics Canada
Netherlands	1987	≥ 12	All persons in 9 000 households	Self-administered diary	2	107	Netherlands Central Bureau of Statistics
Norway	1980/81	16 - 74	5 205	Self-administered diary	2	90	Central Bureau of Statistics
Austria	1981	≥ 19	20 000	Interview on the previous day	1	47	Austrian Central Statistical Office
Poland	1984	≥ 18	45 087 in 21 600 households	Self-administered diary	1	53	Central Statistical Office
Switzerland	1979	≥ 14	4 500 in 2 000 households	Self-administered diary	2	47	Scope Institute for Market Research and Opinion Polls and Federal Office of Statistics
Soviet Union	1985	≥ 12	51 000 households	Self-administered diary	1	Not less than 42	Central Statistical Office
Czechoslovakia	1979/80	15 - 69	34 871 in 16 583 households	Self-administered diary	1	92	Federal Statistical Office
Hungary	1986/87	15 - 79	10 500	Interview on the previous day	4 4)	100	Central Statistical Office
United States	1985/86	≥ 18	3)	Telephone interview on the previous day	1	3)	Survey Research Center, University of Maryland

1) More recent surveys are currently being conducted or are planned. — 2) Self-administered diary or interview on the previous day. — 3) No information available. — 4) Four interviews per person on the previous day, spread over the year.

household helps. In the second part of this interview, a household member over the age of 15 is chosen at random who, on the following day, is to complete a diary on the activities performed and the times needed. If this person has a spouse or partner, he/she has to keep a diary, too. The interviewer will familiarize the selected persons with the diary and with the requirements for the completion. It is an open diary, the only predetermined element being the time axis (no time intervals). The respondents are required to describe in the diary in their own words activities that took more than five minutes and to mark in each case the starting and finishing times on the time axis. Moreover, secondary activities, the presence of other persons and the location of the performance of the activity are covered – similar to the diary of the Central Statistical Office of Finland as shown in Schedule 3. At his second visit which takes place on the day after the diary was completed, the interviewer starts by looking through the diary, together with the respondent. He checks whether any periods have been overlooked and whether the activities have been described in sufficient detail. He also asks additional questions, for instance whether certain activities were performed for the own household or for third parties. This checking and complementing of the diary by the interviewer is considered very important for the data quality. After the interview, the interviewer has the additional task to enter the household information noted down in the diary onto a standardized and codifiable blank form, making use of his information. In the final part of the second interview, data are collected on the normal use of time or on influencing factors for certain activities. The questions asked here cover the employment (specific sets of questions for wage earners and salaried employees, farmers, self-employed, pupils and students as well as persons with secondary activities, respectively), housework (frequency of individual activities and performing persons), leisure-time behaviour, social relations and health.

The French time budget surveys have on the whole to be considered as involving relatively much time and effort (two interviewer visits and diary) and also high cost. This approach has, however, proved very successful with respect to data quality. So far, it has not been possible yet to achieve a similarly high quality by using alternative approaches. Attempts to limit the interviewer visits to just one and to question the respondents on the course of the previous day were rather disappointing. The number of activities per day was much smaller. Moreover, field observation has shown that, in the case of the interview on the previous day, both the respondents and in part also the interviewers refer too much to the "normal" day pattern, rather than to the actual course of the day. Also the attempt to make the respondents keep a diary for more than one day – such as one week – proved problematic. The diaries are less detailed, in some cases days were more or less copied and it is difficult to motivate the respondents, especially if the day pattern is relatively regular and uniform, because of the many repetitions involved. A major advantage of the open diary is perceived to be the fact that the coding and the evaluation can be done in great detail, for example by 200 activities. This enables purpose-related classifications to be set up for differing evaluations.

The sampling procedure forming the basis of the French surveys is a three-stage stratified random sampling. The items selected at random are regions in the first stage, communities in the second and dwellings in the third. In 1985/86, the sample size was 24 000 persons in 16 000 dwellings. The interviews were distributed over the whole year (exceptions: Christmas time in the second half of December and holiday time in the first half of August). Relative to the selected dwellings, a response rate of 65 percent was achieved in the survey. For 16 percent of the dwellings there were irrelevant non-response cases (destroyed, unoccupied dwellings, secondary dwellings), while complete refusals to respond, partial refusals (in particular during the first interview) and households that could not be contacted accounted for about 6 percent each. In the time budget survey, the readiness to respond was similar to that of comparable surveys concerning the living conditions of the French. Problems arose particularly in big cities (Paris) and with old people, to a smaller extent also with self-employed. On the whole, women were more often willing to respond than men.

Subsequent to the surveys, biases that occurred in relation to structural data already available are eliminated by factorial weightings ("redressement"). The "redressement" is performed for households (taking into account the characteristics household size, social status and age of the reference person as well as degree of urbanization of the community), for persons (with respect to the characteristics sex, age, extent of economic activity and social status) and for days of the week.

3.3 Austria

Within the Austrian microcensus, there have already been several special programmes concerning questions on the amount of time spent for certain spheres, such as occupational activity, cultural activities or housework and care of children. In September 1981, an attempt was made for the first time in a special programme to cover the course of a complete day in the sense of a time budget survey[8]). Since the survey was integrated into

8) For the following, see Österreichisches Statistisches Zentralamt (ed.): "Tagesablauf. Ergebnisse des Mikrozensus September 1981", Vienna 1984.

the microcensus, the collection technique to be used was automatically decided to be the interview. In the verbal interview, the course of the day preceding the survey date was reconstructed. No time intervals were planned for covering the activities. The interviewer collected the starting time of each activity. The activities were noted down by means of codes (keys of activities) taken from a list of activities which comprised 47 pre-determined activities. The questionnaire provided a total of 28 boxes for entering the time and the activity; the respondents reported an average of 12 to 15 activities. Entries had to begin at 0 a.m. of the reference day and ended with the starting time of the last activity. Only primary activities were covered, i.e. in the case of several activities being performed simultaneously, the dominating activity or the one that the respondent considered more important had to be entered.

The sampling procedure used in Austria for the microcensus is a one-stage random sampling of dwellings. In order to achieve comparable results for the regions, the same sample size is applied for all federal Laender. The sampling fractions vary between 0.4 percent (Vienna) and 4.1 percent (Vorarlberg). The sample covers a total of 1.08 percent of the Austrian stock of dwellings. The stratification characteristics of the dwellings are the social status of the head of the dwelling, the number of persons living in the dwelling, the period of construction and the useful floor space. The time budget survey covered all persons from the selected dwellings who were born in the months February, April, May, August, October or December and aged 19 years or over. The sample size was about 20 000 persons. The survey period was one week in September 1981 and 14.7 percent of the interviews were made on Monday, 15 percent on Tuesday, 14.2 percent on Wednesday, 14.2 percent on Thursday, 14.1 percent on Friday, 12.7 percent on Saturday and 15.2 percent on Sunday.

Contrary to the basic programme of the microcensus, the special programmes do not involve the obligation to provide information. Usually, the non-response rate for the special programmes is between 6 and 10 percent, while it was 16 percent for the time budget survey. A significantly higher rate of non-response was observed for persons aged 19 to 24 years (27.5 percent), for communities of 20 000 to 250 000 inhabitants (20.1 percent), in the federal Laender Tyrol (26.1 percent) and Vorarlberg (26.2 percent), for single persons (25.9 percent) and pupils/students (38.1 percent). A high willingness to participate was registered in the Burgenland and in Upper Austria. These structural data correspond with the experience made in other special programmes that were carried out in Austria, though the non-response level is higher. The lower willingness to respond as compared to other special programmes is attributed to the greater efforts involved in responding to the time budget survey.

It had been attempted in the survey to get a high percentage of information provided by the respondents on themselves. Finally, 77 percent of the replies related to the respondents themselves. The survey practice showed that in those cases where the respondent did not have enough knowledge on the day pattern of another household member, he/she refused to respond.

If, however, information is given by the respondent on himself, it usually includes more activities than if provided on other persons, and in the individual case the replies are also more convincing. Nevertheless, information on other persons was not entirely excluded, in order to obtain a complete image of all groups of the population.

In addition to the interview concerning the previous day, there was recorded the amount of time that had been spent for selected activities performed on the preceding Friday, Saturday and Sunday. A comparison between the time information obtained from the yesterday interview and these replies on the selected activities of the weekend showed a considerable correspondence. Problems arose in just some few cases where several activities were performed simultaneously, since only the primary activity could be stated. According to the officials in charge, it can be concluded both from an analysis of the original statistical data and from checking computations that the data are plausible and consistent. The data quality – not taking into account the lapses of memory that cannot be checked – is therefore described as good, although not every detail of the results can be generalized. Since the survey was conducted in early September, the beginning of school, heavy tourist traffic, after-season holidays and the like resulted in minor biases of the results, which, however, are of only little importance because of the large sample size.

3.4 Comparative international research projects

In order to present the international activities in this field, further projects have to be mentioned – in addition to time budget surveys conducted in individual countries – whose objective was or is the international comparison of time budget data. In the 1960s, UNESCO promoted the "Multinational Comparative Time-Budget Research Project" that has already been presented in Section 2 and within the scope of which time budget surveys were conducted in twelve countries, applying comparable methodologies. This project has set methodological standards and today it is still one of the most important studies in this field.

An international and intertemporal comparison of time budget data is also the main purpose of a project of the European Foundation for the Improvement of Living and Working Conditions. Though the European Foundation does not carry out any time budget surveys, it is engaged in setting up international time budget archives. So far, the archives contain the results of fourteen representative surveys from seven countries (Denmark, France, Great Britain and Northern Ireland, Canada, the Netherlands, Norway and the United States) and the results of the "Multinational Comparative Time-Budget Research Project" [9]). There are plans to include further surveys or countries. All the studies contained so far in the archives are based on the diary method. In other respects, the surveys show in part considerable methodological differences concerning, for instance, the groups of population covered (differing minimum age), the list of activities, the sampling procedure, the survey units, the structure of the diary, the duration of time covered, the collection technique (interviewer, written diary) as well as with regard to the general characteristics inquired of the persons included. By resorting to individual data, these methodological differences could be partly eliminated. For example, the different activity classifications of the individual countries were converted to a uniform classification by 40 sectors of activity, which was derived from the classification of the "Multinational Comparative Time-Budget Research Project".

Further research work aiming at the international comparison of time budget data was done by the Organisation for Economic Co-operation and Development (OECD) within the scope of the work on social indicators. The OECD activities included establishing indicators on the free and spare time available and on leisure-time activities [10]). The United Nations deal with time budget surveys above all under the aspect of the development of statistics and indicators on the situation of women. Moreover, comparisons of the use of time have also been made through direct contact between individual countries (e.g. Hungary and Finland, United States and Great Britain/Northern Ireland, Canada and Norway).

4 Discussion of the international state of research

4.1 General aspects

In most industrialized countries, time budget surveys have a long tradition. Historical observations show that, especially since the international time budget project (Multinational Comparative Time-Budget Research Project) was carried out in the mid-1960s, the interest in time budget surveys has increased in many countries and that an institutionalization has taken place. As has been mentioned several times already, time budget surveys are part of the programme of official statistics in many countries. More comprehensive surveys have also been conducted by universities and by institutes on behalf of media enterprises. From this research experience it is concluded, among others, that for general time budget surveys a survey rhythm of several years is sufficient – often an interval of about five to ten years is aimed at – since time use patterns change only rather slowly.

Also with respect to survey techniques, the international time budget project and the subsequent surveys in individual countries have led to new experience. At present, however, there are no international recommendations concerning methods and activity classifications for time budget surveys as yet. Relevant proposals and efforts have been discussed only recently at the Conference of European Statisticians in connection with the work on a framework for the integration of population and social statistics.

In addition, a working group of the International Sociological Association is dealing with a standardization for purposes of international comparison. Standards for assessing the methods are emerging in the international discussion [11]). In the following, an attempt will be made to present and compare international experience and discussion results obtained on the basis of the existing literature and from expert talks. The topics treated will essentially be non-response, survey techniques as well as the pre-set time and the activity classification.

4.2 Sampling procedures and non-response

Nearly all the time budget surveys listed in Schedule 3 are based on random sampling procedures covering persons or households. In some cases, this leads to considerable non-response rates that, as a rule, cause biases in the sample. In most cases, participation in official time budget surveys of foreign countries is voluntary. Since the completion of the questionnaires requires great efforts, the respondents have to be motivated to participate in the survey. This cannot be achieved by emphasizing the obligation to provide information. While the cases of non-response leading to biases in Finland (1979), Austria (1981) and France (1985/86) were less than 20 percent, diaries could be evaluated for only 35 to 54 percent of the households in a pilot

9) See Gershuny, J./Jones, S., cf. footnote 6.

10) For the results, see: "Living Conditions in OECD Countries", Paris 1986.

11) See Harvey, A.S.: "International Co-operation in Time Budget Research: Guidelines", contribution presented at the International Meeting on Studies of Time Use of the International Research Group on Time Budgets and Social Activities held in Budapest from 14 to 16 June 1988.

study with eight different survey designs conducted in the Netherlands [12]). Attempts are made to eliminate the biases by means of complex raising procedures. As reference are chosen statistics subject to the obligation to provide information that are more or less comparable to the German microcensus. When the response rates are however so low, the question arises to what extent such results are still considered consistent with the quality standards of official statistics in the countries mentioned. The structure of non-response cases varies from country to country. In France, for example, particularly men, elderly persons, people living in big cities and handicapped persons are overrepresented in non-response, whereas in Austria high non-response rates occur rather with pupils and students, with self-employed and in regions where response rates are traditionally low. Sometimes it is also presumed that in particular those persons are highly overrepresented in non-response who are under strong time pressure.

4.3 Collection techniques

The international discussion on collection techniques has shown so far that there is no method of time budget surveys which is ideal in every respect. In part, different approaches are judged differently in the various countries. There seems to be agreement, however, that for general time budget surveys the diary method – both in the form of the self-administered written diary and the interview on the previous day – is much better suited than the activity-oriented time budget survey. Although the activity-oriented time budget survey – whether in the form of an interview or as a written questioning – has the advantage of involving relatively low costs, its methodological shortcomings leading to considerable losses of quality are evident. Due to the fact that sometimes different activities are performed in the household simultaneously, the inability of the activity-oriented approach to distinguish between primary and secondary activities leads to time data whose total for one day may in some cases add up to well over 24 hours. In the United States, for instance, an attempt was made in an activity-oriented time budget survey to calculate and exclude the secondary activities with the help of results from diary surveys. But even after the secondary activities had been eliminated, it was found that the activity-oriented time budget survey involves an overestimation of the duration of activities [13]). References made in the questionnaire to the 24-hour limit do not have much effect either. The tendency to overestimate the duration of activities is attributed essentially to two causes. Firstly, the pre-determined activity classification for the activity-oriented surveys cannot be very detailed. The respondent thus has a wide scope for determining the delimitations regarding the contents of activities. This is why particularly housework is often considerably overestimated. Secondly, certain values are attributed to most activities. When questions on the duration of activities are answered, biases can thus easily emerge due to the social desirability of activities, for example by presenting an "active" person. For these reasons, activity-oriented time budget surveys are not considered suitable for covering the overall use of time [14]). In international time budget research, this method is, however, of importance for the coverage of activities performed rarely and irregularly. Since the recording of these activities in diaries is often difficult, one tries to obtain additional facts for assessing the importance of these activities by asking questions on the performance of these activities, on the frequency and in part also on the duration of such activities. If questions are asked over long time intervals, considerable lapses of memory cannot be excluded.

The demonstrated shortcomings of the activity-oriented survey are largely avoided with the diary method. The diary provides the possibility of covering separately primary and secondary activities or of focussing for a certain period only on the primary activity. By making the dimension of time the primary structuring pattern it is ensured that the 24-hour limit for the total of primary activities is observed. Moreover, as a consequence of the reconstruction of the spectrum of activities in chronological order, the information is much less biased by effects of the social desirability of activities. The sequence of activities may be presented in an open way or by complying with a pre-set classification of activities. By covering the sequence of activities it is also possible to ascertain series of activities or the time of performance of specific activities. It is, however, necessary to keep the diary, if possible, on the same day for which the notes are taken. Thus it is possible to largely avoid memory problems. Extensive test studies have shown that, under these conditions, the diary method produces highly detailed results which are largely reliable and consistent with the actual behaviour [15]). Information on sensi-

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12) See Luttikhuizen, R./Oudhof, J.: "Informal Economy, A Time Use Approach", contribution at the 20th general assembly of the International Association for Research in Income and Wealth in Rocca di Papa (Italy), 23 to 29 August 1987, p. 13.

13) See Robinson, J.P.: "The Validity and Reliability of Diaries versus Alternative Time Use Measures" in Juster, F.T./Stafford, F.P.: "Time, Goods and Well-Being", Michigan 1985, p. 45 ff.

14) See e.g. Robinson, J.P., cf. footnote 13; Juster, F.T.: "The Validity and Quality of Time Use Estimates Obtained from Recall Diaries" in Juster, F.T./Stafford, F.P.: "Time, Goods and Well-Being", Michigan 1985; Juster, F.T.: "Response Errors in the Measurement of Time Use", in Journal of the American Statistical Association, Vol. 81, No. 394, 1986, p. 390 ff.; Central Statistical Office of Finland: "Time Use Studies. Dimensions and Applications", Helsinki 1986; Central Statistical Office of Finland: "The Usefulness of Time Use Studies", report on the 9th meeting of the working group on a "Framework for the Coordination and Integration of Population and Social Statistics" at the Conference of European Statisticians from 4 to 6 May 1987 (Document CES/WP. 34/63); Luttikhuizen, R./Oudhof, J., cf. footnote 12.

15) For example, Robinson, J.P., see footnote 13, concludes from his comprehensive validity and reliability studies that "the burden of evidence clearly points to the strong likelihood that time diaries are the only viable method of obtaining valid and reliable data on activities" (p. 60); see also, for instance, Central Statistical Office of Finland: "The Usefulness of Time Use Studies", cf. footnote 14.

tive fields of activity, however, such as illegal or sexual activities, cannot be collected as such even by the diary method. Moreover, for the diary method, higher costs must be expected than for the activity-oriented survey.

For setting up the international time budget archives at the European Foundation for the Improvement of Living and Working Conditions, so far only time budget surveys have been included that are based on a version of the diary method[16]). As is shown in Schedule 3, this method is also being applied for the current more comprehensive general time budget surveys in the majority of the countries listed. Today, there is still considered exemplary the combination of the two forms of the diary method – the interview concerning the previous day and the self-administered, written diary – as it has been developed e.g. in the international time budget project and is applied in France as shown above. In most industrialized countries, the self-administered, written diary is the central part of the survey. In some cases, however, such as in Finland, no second visit by the interviewer is carried out, but the questionnaires are returned by mail[17]). As compared to the interview, the self-administered, written diary has in particular the practical advantage that covering several or all household members involves lower additional costs, and that the survey period can be extended to one week.

The differences between the two forms of the diary method, the interview concerning the previous day and the self-administered diary, are considered relatively small as far as the quality of the results is concerned[18]). It is also possible to draw absolutely meaningful comparisons between data from surveys with different versions of the diary method. Self-administered, written diaries, however, produce somewhat better results, as has been demonstrated, for instance, by Juster in his methodological studies[19]). Nevertheless, telephone interviews concerning the previous day are preferred in the United States and interviews concerning the previous day in Austria , for reasons of costs or reasons relating to the collection technique[20]). Also in Finland, Austria and France, the data quality of written diaries is considered to be better than in the case of the interview relating to the previous day. French experience, for instance, shows that in the interview concerning the previous day both interviewer and respondents tend to have in mind a "normal" course of the day, rather than the actual one. If, however, the survey designs in individual countries are examined more closely, one gets the impression that the decisive factor for the quality of the results is not really the basic decision whether to employ the self-administered diary or the interview relating to the previous day, but rather the differentiated configuration of the survey design and the attempt to counteract the shortcomings of the respective approach. In the United States, for example, special techniques of further queries have been developed for the interview concerning the previous day which have improved the quality of the results[21]). It is essential both for the interview relating to the previous day and for the self-administered diary, to provide for intensive interviewer training, focussing on the motivation of the interviewer and on the completion of the diary.

4.4 Coverage of the time dimension

The approaches for covering the dimension of time of the activities differ very much in the various time budget surveys. In some studies, time intervals of 10, 15 or 30 minutes are provided, while in others the respondents themselves note down the beginning and the end of activities or mark these points in time on a given time axis. A pilot study conducted in Norway on the comparison of the two possibilities[22]) has shown that, though the open approach (marking of the starting and finishing times) can lead to a somewhat higher number of activities per day, this requires greater efforts for evaluating and restructuring the diaries. A higher number of activities was however obtained with pre-determined time intervals in a Finnish pilot study[23]). In Finland, the efforts needed for restructuring the dimension of time from the diaries were smaller than in Norway. No significant differences emerged, however, in the two countries with respect to the average duration of activities as a function of the way of covering the time dimension. In particular for the self-administered diary and with respect to the objective of the general presentation of the time use, one advantage of pre-determined time intervals is that less processing work is involved. In the Netherlands, 15-minute intervals are considered suitable also for surveys on the field of informal economy since the relevant activities, as a rule, take more than 15 minutes[24]).

16) See Gershuny, J./Jones, S., cf. footnote 6.

17) See Niemi, I.: "The 1979 Time Use Study Method", Central Statistical Office of Finland, Helsinki 1983; Pääkkönen, H.: "Second National Survey on Time Use in Finland 1987-88", contribution presented at the International Meeting on Studies of Time Use of the International Research Group on Time Budgets and Social Activities in Budapest from 14 to 16 June 1988.

18) For more detail on the time budget interview, see Scheuch, E.K.: "The Time-Budget Interview" in Szalai, A., cf. footnote 5, p. 69 ff.

19) See Juster, F.T., cf. footnote 14, p. 88.

20) However, interviews concerning the previous day probably involve lower costs than the self-administered diary only if the survey is limited to a survey period of one day and to one household member selected at random.

21) See Juster, F.T., cf. footnote 14.

22) See Lingsom, S.: "Open and Fixed Interval Time Diaries. A Pilot Study on Time Use 1979", Central Statistical Office of Norway, Oslo 1980.

23) See Niemi, I., cf. footnote 17.

24) See Oudhof, J./Stoop, I.A.L./Luttikhuizen, R.: "De opret van het tijds bestedingsonderzoek 1987", manuscript, Voorburg 1987, p. 11.

4.5 Classification of activities

As has been mentioned earlier, the presentation of the activities requires either the concentration on primary activities or the separate coverage of primary and secondary activities. As a rule, the activity classifications as such are set up with relation to purpose. The classification of the international time budget project including nearly 100 activities is often taken as a reference classification [25]). A classification of 40 activities has been derived therefrom for international and intertemporal comparisons in connection with setting up the international time budget archives. The practices followed in the individual countries, however, deviate more or less markedly from the classification of the international time budget project [26]). In some cases, this appears to be necessary in order to improve the coverage of activities performed by the population groups that were not included into the international time budget project (e.g. persons under the age of 18, persons living in rural areas); some countries also apply a more detailed breakdown by types of activities. In France, for instance, 200 types of activities are distinguished. Such a highly differentiated presentation, however, can be achieved only with a sophisticated survey design. The respondents are given the opportunity to describe their activities in their own words (open response) and afterwards they review and complement the diary together with the interviewer. In the case of the self-administered diary, the open response version basically permits a more detailed breakdown to be employed than is possible with codes given for types of activities. The danger of an inappropriate and undifferentiated verbal presentation of the course of the day must, however, be counteracted by suitably training the household members for keeping the diary. Though processing the diaries kept by way of open response is more difficult, it guarantees an identical allocation of the same activities. If the objective is to make the respondents present certain activities (informal production) in more detail – as is the case in the Netherlands –, it is also possible to employ the open response, providing at the same time a list of activities for informational purposes.

5 Concluding remarks

The presentation of the current state of international research shows that in many industrialized countries general time budget surveys within the scope of official statistics are conducted as multifunctional surveys. The survey designs for time budget surveys have been developed and improved in particular by the 1965/66 international time budget project and by the numerous surveys conducted in subsequent years. The experience of foreign countries has shown that general time budget surveys can supply data usable in many fields of application, if the qualitative requirements permit biases and non-response cases to be accepted that are caused by the voluntariness to provide information. The in part differing methodological approaches also demonstrate, however, that planning such a survey requires the concepts of the objective and the intended uses to be as precise as possible in order to develop a meaningful and efficient methodological survey approach.

25) See Szalai, A., cf. footnote 5.

26) See Gershuny, J./Jones, J., cf. footnote 6, p. 17 ff.

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