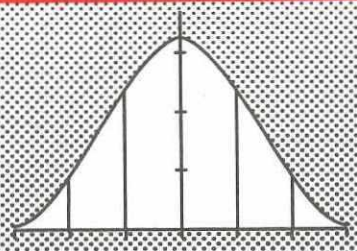
Approaches



Methods Developments

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The catchword

Ecological area sampling

The objectives of the environmental-economic accounting (EEA) made by the Federal Statistical Office are to supplement the system of national accounts by ecological accounts. Any statements concerning the state of the environment are based on physical quantities describing the stock of natural assets in Germany in terms of quantity and quality. The Federal Ministry for Education, Science, Research and Technology promoted a research project entitled "Development of a system of indicators concerning the state of the environment in the Federal Republic of Germany", which was carried out in the years 1995-1997. The project's aim was to suggest and, in part, test a set of descriptive indicators. These indicators are to supply periodic information on the following three aspects of the state of the environment: In how far do processes in ecosystems change (functionality aspect)? To what extent are ecosystems impaired by the input of substances (substances aspect)? To what extent does the structure of the landscape and of ecosystems change (physical structure aspect)?

As far as the field of substances is concerned, national monitoring systems already provide quite a considerable amount of data which may be used as secondary information to set up indicators. However, this is not the case with the other aspects mentioned. Hence, one of the focal points of the project was to develop a concept for ecological area sampling. Ecological area sampling is intended to fill the gap of information on the physical structure and to supply national and statistically reliable representative data on structural environmental characteristics that are of relevance to nature conservation. Moreover, all this is to be achieved in an efficient way, i.e. by drawing a sample and extrapolating the results. To this end, ecological area sampling takes into account the whole of the German territory and is not confined to protected areas.

Uniform national concepts and survey methods have been elaborated and agreed on for ecological area sampling. Specific ecosystems (or biotopes, respectively) in a breakdown by types serve as units for data collection and presentation. The sample is drawn from a stratified population, and in doing so, data are taken into consideration that have been obtained from both the CORINE Land Cover project and a classification of land classes in Germany, which were categorised by means of abiotic space information. The evaluation and presentation of results is based on the units "biotope types in land classes".

Ecological area sampling classifies structural characteristics according to a three-level scale: landscape quality, biotope quality and the occurrence of plants and animals in ecosystems. The following examples may be taken as indicators of landscape quality (in this case especially for agriculturally used areas in Germany): fragmentation, risk of erosion, degree of soil sealing, naturalness/artificiality, biotope diversity or share of endangered biotope types. Examples of indicators of an ecosystem's species diversity are the average number of species, the average shares of species indicating naturalness or average shares of strategy types (of plants), ecological indicator values or the average number of Red-Listed species (in each case relating to standardised survey areas in a specific type of biotope). The survey areas of ecological area sampling are subject to permanent monitoring. The landscape quality is monitored in areas of one square kilometre each (sampling fraction 0.02%). As far as the studying of species is concerned, major representatives of the great diversity of biotope types existing in Germany were selected to collect data on vascular plants and/or a number of relevant groups of animal species. This is done on the basis of a sub-sample of areas of a few square metres each. The survey makes use of colour infra-red aerial photographs. A field survey is then carried out to verify and supplement the interpretation of aerial photographs, and to record the characteristics of biotope quality and the occurrence of species. All the data are stored in a geo-information system.

Given a sufficient supply of data, information from other fields of environmental monitoring (e.g. from secondary data on substances) can subsequently be correlated with the classification created by the project (biotope types in land classes). Against the background of frequent requests made by environmental policy quarters, this provides the basis for implementing a system of ecological environmental monitoring in Germany, which should integrate, if possible, all the monitoring aspects relating to the state of the environment under the same reference unit, namely ecosystems.

The concept and methodology of ecological area sampling were tested in pilot areas in Thuringia and Brandenburg. On the whole, the concept proved to be successful, so that the experts involved recommended its implementation. After completing the indicator project, the Federal Statistical Office jointly with the Federal Office for Nature Conservation will therefore endeavour to carry out a national survey. For reasons of cost, however, only a so-called minimum programme with several extension levels is envisaged for collecting information on species variety.

Literature:

Back, H.-E.; Rohner, M.-S.; Seidling, W.; Willecke, S.: Konzepte zur Erfassung und Bewertung von Landschaft und Natur im Rahmen der Ökologischen Flächenstichprobe, Volume 6 of the series "UGR-Materialien" issued by the Federal Statistical Office, Wiesbaden.

Hoffmann-Kroll, R.; Radermacher, W.; Schäfer, D.; Seibel, S.: Differenzierung und Regionalisierung des Naturhaushalts, in: Ökologie, Grundlage einer nachhaltigen Entwicklung in Deutschland. Expert talks in Bonn-Bad

Godesberg, 29-30 April 1997. Summary of the contributions, issued by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Bonn, pp. 3-6.

Hoffmann-Kroll, R.; Schäfer, D.; Seibel, S.: Naturvermögen in den Umweltökonomischen Gesamtrechnungen, in: Wirtschaft und Statistik 10/1997, p. 696 ff.

Hoffmann-Kroll, R., Schäfer D., Seibel S.: Biodiversität und Statistik - Ergebnisse des Pilotprojekts zur Ökologischen Flächenstichprobe, in: Wirtschaft und Statistik 1/1998, p. 60 ff.

Radermacher, W., Zieschank, R., Hoffmann-Kroll R., v. Nouhuys, J., Schäfer, D., Seibel, S.: Entwicklung eines Indikatorensystems für den Zustand der Umwelt in der Bundesrepublik Deutschland mit Praxistest für ausgewählte Indikatoren und Bezugsräume, Volume 5 of the series "Beiträge zu den Umweltökonomischen Gesamtrechnungen" issued by the Federal Statistical Office, Wiesbaden, 1998.

Schäfer, D., Hoffmann-Kroll, R., Seibel, S.: Indicators of the Quality of Environment - Concepts of a Pilot Project in Germany. Contribution to the Joint ECE/EUROSTAT Work Session on Methodological Issues of Environment Statistics, Meze, France, 11-14 September 1995.

Seibel, S., Hoffmann-Kroll, R., Schäfer, D.: Land use and biodiversity indicators from ecological area sampling - results of a pilot study in Germany, in: Statistical Journal of the United Nations, ECE 14 (1997), pp. 379-395.

Pressemappe zur Ökologischen Flächenstichprobe: Ergebnisse der gemeinsamen Pressekonferenz von Bundesministerium für Umwelt - Statistisches Bundesamt - Bundesamt für Naturschutz. Press kit for the conference held at the Bonner Presseclub on 3 February 1998, issued by the Federal Statistical Office, Wiesbaden, 1998.

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Methods of federal statistics – Further development

Integrated survey management

Before collected data are available to users of statistics, the data are subjected to a series of alterations. In addition to these alterations, certain administrative functions have to be fulfilled in the course of a survey. There exist interdependencies between those stages of a survey which result in alterations of the data, and the administrative activities. If these interdependencies are continuously kept in mind during the execution of a survey and, thus, a process of permanent feedback is warranted, we will use the term *integrated survey management* in the following. This contribution will set out the experiences gathered with a system of integrated survey management and its implementation in terms of data processing techniques.

The processing and administration of a survey are usually considered separately. The *processing* includes all the activities where data are modified with the aim of producing statistics, i.e.:

- coding,
- data acquisition,
- plausibility checks,
- data record extension,
- extrapolation,
- evaluation and anonymisation,
- error calculation.

This is the common definition of the working steps in official statistics. The extension of data records is based on information derived from the data collected. It goes without saying that extrapolation and error calculation are only applicable to sample surveys.

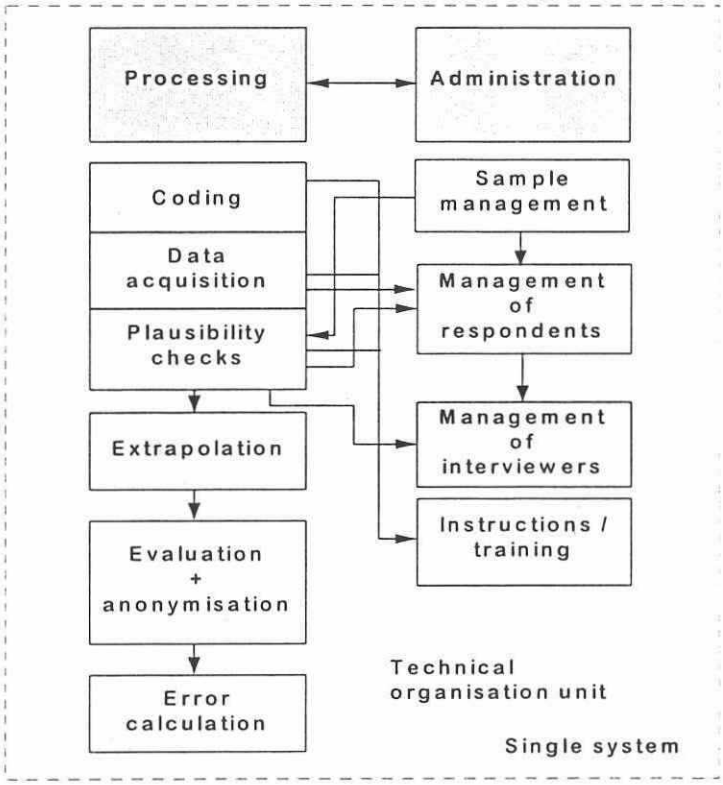
The *administration* of a survey encompasses all the remaining working steps, that is, all the activities concerning the management of respondents and perhaps interviewers, the management of the sample, as well as the preparation of instructions and exercise material for the statistical offices executing the survey. The term management of respondents may be used for the management of addresses, the recruitment and remuneration of respondents, while sample control and the distribution of survey documents can be referred to as sample management. In contrast to this, the remuneration of interviewers as well as the controlling and evaluation of interviewer use are part of the management of interviewers. By adding an exercise component, the staff can be trained in the fields of data acquisition, coding and plausibility checks, while a text file permits to integrate in-house working instructions.

In order to optimise the process of producing statistics, the interdependencies between the above tasks have to be taken into account, i.e. an *integrated survey management* is required.

Using state-of-the-art software, the processes of coding, data acquisition and plausibility checks are usually implemented simultaneously in interactive mode, which means that they are combined into one process. When this combined processing step has been concluded, the extrapolation, evaluation, anonymisation and error calculation can be made, with the arrows in the chart below indicating the information flows between the individual processes.

The processing as such, however, cannot be carried out without resorting to information from the field of administration. Prior to making plausibility checks, for instance, it must be verified whether a respondent complies with all the criteria governing the participation in a survey (see arrow pointing from sample management to plausibility checks).

At the same time, administrative tasks are facilitated by information that arises during processing. By means of the errors detected in the plausibility checks, for example, the addresses of the respective respondents can be compiled for follow-up inquiries (see arrow pointing from plausibility checks to the management of respondents). Furthermore, the information derived from the plausibility checks can be used for training interviewers. Owing to the establishment of these connections, the remuneration of respondents and interviewers can be calculated almost "at the push of a button" immediately after the data have been acquired or the incoming survey documents have been registered.



Design of the integrated survey management

Another feature of an integrated survey management is the implementation of all the processes mentioned within one data processing system, so that no additional work is required for transferring the data to other data processing systems. The technical organisation unit responsible for specific statistics can control all the processes on its own, so that further coordination between different organisational units is not required. Incidentally, this approach makes it possible to relieve highly specialised data processing experts of routine work.

As the chart shows clearly, such a data processing system is very complex. To facilitate its maintenance, the users themselves should be able to adapt such a system up to a certain degree to changing framework conditions (e.g. the definition of limits for sectoral checks, the maintenance of central steering files).

As part of the new conception of the continuous family budget surveys and in cooperation with the Land Office for Data Processing and Statistics of North Rhine-Westphalia, the Federal Statistical Office developed a data processing system with the above features in 1995. In 1996, the system was employed in a test survey by five Land statistical offices. This test was a great success and led to a considerable reduction in the processing work. There are plans to use the system after further optimisation in all the statistical offices of the Länder as of 1999.

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European Echo

PRODCOM, a concept for harmonized production statistics within the EU

As the Community single market was introduced and the European Economic Area developed, there was a growing demand for economic data comparable at European level. Thus a dimension of official statistics in the member states acquired greater significance which had so far been of minor importance: the international comparability of data.

Until then, the systems of economic statistics had aimed primarily at reflecting the respective economies and had been geared towards specific national features, much to the disadvantage of an international comparability of economic data. Eurostat, the Statistical Office of the European Communities, has attempted for some time now to create a consistent European statistical system from the conglomerate of different reporting systems in the member states applying the subsidiarity principle. Rather than to force the same data collection system on all member states, the aim is to harmonize the traditional statistical systems in the member states to a certain extent so that they can meet existing national requirements as well as the demands of a Community single market. In many cases, the solutions found have to be compromises.

Essentially, the harmonization concept relates to three areas:

- the harmonization of classifications on the basis of which economic statistics will be collected and processed,
- the harmonization of statistical methods, and
- the establishment of binding quality standards for statistical data.

This process of harmonization started with the NACE and PRODCOM regulations. *NACE* stands for *N*omenclature statistique des *a*ctivités économiques dans la *C*ommunauté *e*uropéenne. The relevant regulation is the Council Regulation (EEC) No 3037/90 of 9 October 1990 on the statistical classification of economic activities in the European Community (OJ No L 293, p.1), as amended by Commission Regulation of 24 March 1993 (OJ No L 83, p. 1). *PRODCOM* stands for *Prod*ucts of the *Com*munity. The relevant regulation is the Council Regulation (EEC) No 3924/91 of 19 December 1991 on the establishment of a Community survey of industrial production (OJ No L 374, p. 1).

Under the NACE regulation of 1990, all EU member states are obliged to classify economic activities according to a uniform breakdown in their statistics. For both survey and presentation purposes, the NACE Rev. 1 or a national classification of economic activities derived directly from the NACE Rev. 1 have to be used, the latter being subject to approval by the Commission.

Under the PRODCOM regulation, which was adopted by the Council towards the end of 1991, the member states are obliged to cover industrial production with a minimum level of breakdown laid down in the PRODCOM List. Moreover, the regulation rules that all enterprises employing at least 20 people must be surveyed, and that the statistical data have to represent at least 90 % of the output of an activity sector (NACE Rev. 1 four-digit level). Required are yearly data deliveries broken down to the most detailed level of the complete PRODCOM List, and quarterly data deliveries for specifically defined headings: manufacture of textiles (NACE Division 17), manufacture of wearing apparel; dressing and dyeing of fur (NACE Division 18) and manufacture of chemicals and chemical products (NACE Division 24). The findings have to be transmitted to Eurostat within six months after the end of the reference period.

These requirements met with widely differing starting conditions in the EU member states. In accordance with the subsidiarity principle, it was however left to the member states' bodies of official statistics to decide how they wanted to fulfil the requirements of the Council regulations with regard to their statistical systems. As some traditional data collection systems had to be modified considerably, the PRODCOM regulation provided for transitional periods until the end of 1994. 1995 was the first reference year in which surveys of production were carried out in twelve member states in accordance with the uniform criteria of the PRODCOM regulation. - Some member states started very early with PRODCOM surveys, and there are specific transitional periods for Finland, Austria and Sweden due to their later accession to the EU.

In Germany, the above regulations met with a well-established and differentiated system of production statistics, consisting of the quarterly production survey and the monthly rapid production report. Both had been conducted for a long time on the basis of the Law on Statistics in Production Industries. Being based on Germany's traditional structure of branches, they were geared also towards the needs of large user groups. It is true that in this situation the NACE and PRODCOM regulations merely effected changes in the classifications for the collection and presentation of data. (The introduction of the new classification into the statistics on the producing sector from 1995 was treated in No. 2/96 of this series.) However, these were by no means only marginal changes. In fact, the system of short-term surveys in the producing sector had to cope with the most fundamental changes of the last few decades. Far more had to be dealt with than just the usual adaptation of the product classification to changing technical and economic conditions. As the PRODCOM List was strictly based on the Combined Nomenclature of foreign trade statistics, the structural changes in the Product Classification for Production Statistics, 1995 Edition

(GP 95 - Systematisches Güterverzeichnis für Produktionsstatistiken) from the previous GP 89 were enormous. Nearly half of the former GP 89 headings were split up into several GP 95 headings, about 30 % were combined with others, and only some 20 % of the GP 89 headings remained unchanged as to their contents; they were merely given a new code within the new numbering system.

These structural breaks had far-reaching consequences for both the surveys and the presentation of data, i.e. for the producers of data and for users. Reporting local units and enterprises had to adapt the data material submitted to entirely different headings, the unfamiliar structure causing considerable problems of orientation. Especially during the initial phase, this resulted in poor data quality, the need for many corrections and considerable delays. Users complained about the unfamiliar structure of the data presented. As the activity sectors were redefined, some traditional structures of branches cannot be reflected anymore. Associations had problems defining their fields of organization. Furthermore, time series could not be continued and the new structures not be taken back due to fundamental structural changes. The new structures also led to stricter statistical confidentiality.

In the German public, the above factors caused a certain annoyance at the change-over to PRODCOM. The 1996 discussion about the short-term statistics of the producing sector clearly showed what price has to be paid for the European harmonization of statistics. To achieve data comparability in the EU, it has to be accepted that national findings will be less useful at least temporarily. If, on the other hand, advantages show only rather slowly at European level due to the sluggishness of the European harmonization process, the users' trust in statistics is at stake, especially if the long-term advantages of European data comparability cannot yet be assessed.

Eurostat has acknowledged the problem, and despite several gaps in the data material they published first PRODCOM figures and the respective foreign trade data on a CD ROM "EUROPROMS" in cooperation with the statistical institutes of the member states in May 1997. The organization and structure of EUROPROMS emphasize the long-term advantages of the harmonization concept. In addition to the comparability of member states' production figures, an improved comparability of production and foreign trade data due to the link between the PRODCOM List and the Combined Nomenclature makes it possible to calculate all-European market volumes for some 4400 types of products ("A headings" of the PRODCOM List). These data will attain great importance not only for the Commission, but also for structure and market researchers.

For some time now, the Federal Statistical Office has again provided the findings of the German quarterly production surveys timely both in Subject-Matter Series 4 and in STATIS-BUND, the Statistical Information System of the Federation, and since March 1997 also on the INTERNET. The derived (German) PRODCOM figures, too, can be obtained from the Federal Statistical Office as working material. They will also be provided in STATIS-BUND and on the INTERNET.

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Outline of the future scheme of household budget surveys

Introduction

The household budget surveys consist of the Income and Consumption Sample Survey (Einkommens- und Verbrauchsstichprobe - EVS), which is carried out every five years, and the Continuous Budget Surveys (Laufende Wirtschaftsrechnungen - LWR) with, at present, monthly reporting. Both sets of statistics shed light on the economic and social situation of households as regards the generation and use of income. They are based on the budget of individual households, that is registers of all the income received and the expenditure made from it. This information is used to describe the population's standard of living and the involvement of households in the economic process. They reveal, for example, the nature and extent of withdrawal from the market (Marktentnahme), savings activity, transfers of income and the effect of household characteristics on income levels. This makes it possible to monitor the impact of economic, financial and social policy decisions on the living conditions of the population. It also provides information on economic processes within the household sector. Data from the budget surveys are also important as a basis for calculating cost-of-living indices.

There is a long tradition of household budget surveys, marked by frequent refinements of the method. Recently, for example, proposals were made for further developing the concept of the budget surveys. The deliberately low degree of representativeness of the Continuous Budget Surveys - the small size of the sample and its restriction to only three types of household - greatly limits the use that can be made of the results. Instead, what is desired is a survey that can be used to provide data constantly on all households, if at all possible, and bridge the data gap between the income and consumption sample surveys. This of course assumes harmonisation of the two surveys' programmes, with them being developed into a composite system of budget surveys.

Despite its tremendous importance for showing the incomes and expenditures of private households, the EVS has come in for increasing criticism. There were, for example, from the outset difficulties in persuading enough households of self-employed persons, especially farmers, blue collar workers' households and very high income households to take part in this voluntary survey. This argues in favour of reducing the burden of this survey on the households concerned. Many users also complain that the data are out of date by the time they are published. This

is due chiefly to the extensive nature of the survey programme and the length of time required to process some parts of the survey with limited staff available to do it. In order to solve the latter problem, a lot of investment has been made in computerisation with dialogue-based processing. The existing publications based on EVS '93 show that processing time has been reduced significantly as compared to earlier surveys. Priority is nevertheless being given to getting the results even more up to date and significantly reducing the burden on respondents.

For the purpose of the necessary further development of the two surveys, the heads of the Statistical Offices of the Länder and of the Federal Statistical Office have therefore decided on a redesign based on existing legislation. The redesigned budget surveys will seek, among other things, to make the LWR more representative by no longer confining them to the previous types of households, to make the EVS more up to date while at the same time easing the burden on respondents, and to dovetail the EVS and LWR contents into a composite system.

Starting from the historical background in each case, this paper describes the new design of the Continuous Budget Surveys and the new method for the EVS that will be used for the first time for the 1998 survey.

1 New design for the Continuous Budget Surveys

1.1 Continuous Budget Surveys since 1949/50

Ernst Engel is considered the pioneer of budget survey statistics in Germany; in 1857 he used his observations of the incomes and expenditure of Belgian labourers' families to develop the law that bears his name, according to which the poorer a household is, the greater the proportion of its expenditure that must go on food. As early as the late 19th century there were a considerable number of scientists and organisations - chiefly motivated by social concern and using a variety of methods - inquiring into the budgets of households.[1)] The Reich Statistical Office conducted the first large-scale survey in 1907; others followed in 1927 and 1937. The budget surveys were concerned with - in the jargon of the day - "families of moderate means", in other words they covered primarily employee households in the middle and lower income groups.[2)]

The Continuous Budget Surveys have been conducted since 1949/50. Initially, they covered only middle-income four-person employee households, but since 1954 two-person households of pensioners and persons in receipt of social assistance have also been included. From 1964, a third type of household, four-person households of public officials (Beamte) and white collar workers (Angestellte) with higher incomes, was added. It remains characteristic of this survey that a daily record must be kept of all income received and expenditure incurred as well as of accruals in assets, for example as benefits in kind, from gardening, presents, etc[3)]

In the years of reconstruction following the Second World War, the objective was to obtain information, for social policy purposes, on the development of the standard of living of selected important population groups and to develop weighting schemes for calculating cost-of-living indices. These objectives were to be achieved with the least possible cost. The number of households included was therefore set very low at 1000. In order to get methodologically reliable results, only households sharing important characteristics with a major effect on the standard of living were chosen.

In the first few years, particular attention was paid to the level of consumption expenditure as an important indicator of the economic situation of households. As economic conditions steadily improved, the social policy orientation was abandoned in favour of a general economic orientation, the interest now being not simply expenditure to cover living costs, but the entire use of income. Starting in 1964, households were therefore categorised according to their total incomes. Since 1993, the Continuous Budget Surveys have also been conducted in the new Länder and East Berlin, increasing the scope of the survey to 2000 households.

1.2 New survey scheme

As mentioned in the introduction, many people have expressed a desire for up-to-date information on incomes and consumption that is not confined to the three types of household representing scarcely more than 5% of the total. In accordance with the objectives stated in the introduction, a new survey scheme has been devised for the Continuous Budget Surveys on the basis of existing legislation; this envisages conducting the LWR as a quarterly panel, which means that an unchanging representative circle totalling 6000 households must report its income and expenditure for one month in every quarter (see Table 1). There will be no restriction to certain types of household. Only households of self-employed persons cannot be included under existing legislation.

Basic information about the household, such as e.g. socio-demographic data, housing conditions and ownership of consumer durables, is ascertained in an introductory interview. Households must then enter all their income and expenditure for one month in every quarter in a household diary. These new arrangements have the advantage of reducing the recording period from a total of twelve months to four months in the year, greatly reducing the burden on the households concerned.

1) For more details see Oberschall, A.: "Empirische Sozialforschung in Deutschland 1884 - 1914", Freiburg, Munich 1997, p. 40 ff.
2) See Federal Statistical Office: "Bevölkerung und Wirtschaft 1872 - 1972", Stuttgart, Mainz 1972, p. 28 ff.
3) See Reddies, H.: "Das Verfahren der laufenden Wirtschaftsrechnungen von 1950 bis 1964 und ab 1965" in WiSta 8/1965, p. 496 ff.

Table 1: Planned sample rotation for the Continuous Budget Surveys

Total sample:	1st quarter			2nd quarter			3rd quarter			4th quarter		
6 000 Households	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2 000 Households	▒			▒			▒			▒		
2 000 Households		▒			▒			▒			▒	
2 000 Households			▒			▒			▒			▒

▒ = *keeping of household diaries*

Coding of the data will in future be converted to the COICOP/HBS (Classification of Individual Consumption by Purpose / Household Budget Surveys) and will no longer be in such a detailed breakdown as before. It will, however, be ensured that the information required to produce the weighting schemes for the consumer price statistics will be made available.

1.3 Pilot survey

The new LWR scheme was tried out in a pilot survey under § 7 (2) of the Federal Statistics Law over a period of 12 months (the whole of 1996) using a sample of about 800 households in Bavaria, Baden-Württemberg, Brandenburg, North Rhine-Westphalia and Saxony. The newly developed survey documents had already been tested in a pre-trial at the end of 1995, which also provided information about the potential for using modern survey methods and the willingness of households to take part. In tandem with the pilot survey, households were also in a parallel scientific inquiry asked, among other things, about their economic situation, their buying habits, difficulties in making entries and keeping a household diary, and about their general opinion of the survey documents.

Data acquisition and processing was also redesigned and programmed for the pilot survey. It is done using the BLAISE program, a software program developed by the Netherlands Statistical Office for dialogue-based survey management.

In order to optimise the compilation of the statistics, account is taken of the interrelationships between processing and the administrative work required for the survey. Coding, data acquisition and plausibility checks are carried out simultaneously in the dialogue procedure, i.e. combined into a single process. Once this processing stage has been completed, extrapolation, band-width enlargement, evaluation, ensuring anonymity and standard error calculation can take place. This means, for example, that information on the response status from the sample organisation must be referred to during processing; a check is made at the start of the plausibility check, for example, that the household concerned satisfies all the criteria for participation in the survey. Administrative work is also facilitated by information obtained during processing. For example, respondents' addresses can be compiled for queries where errors are shown up during plausibility checks. The connections made mean that the respondents' and interviewers' remuneration can be calculated almost "at the push of a button" once the data have been entered or receipt of the survey documents registered.

Another feature of this BLAISE application is that all the processes referred to are integrated into one DP system, thereby avoiding the costs of transferring the data to other DP systems. The specialist organisational unit responsible for a set of statistics can control all the processes itself, so there is no need for coordination between different organisational units.

The DP applications test was very successful and produced a significant reduction in the amount of processing work. The revised survey documents and the rotation of sample households also proved worthwhile. As the survey documents lend themselves to a written survey of households for LWR purposes, no interviewer is required as before. The use of retrospective questions was tested in the household diary in order both to obtain additional information about regular income and expenditure and where appropriate to make greater use of this method of enumerating characteristics in data collection. The results revealed significant quality defects in the data collected that way, so these questions will be abandoned in future. Because of the high cost and low response rate, the plan to introduce a random sampling procedure was not a success, and the households for inclusion in the sample will in future be obtained by a quota method using the EVS address material.

The results of this study are a contribution to the further development of the method and design of the LWR and will help to form a harmonised overall system of budget surveys in the future. A streamlined list of characteristics will allow data to be made available to a wider community of users more quickly and at less cost while at the same time easing the burden on respondents. On the basis of the experience and results available to date, the specialist

committees concerned recommend that the Continuous Budget Surveys should be conducted according to the new scheme, assisted by the BLAISE application, starting in 1999.[4)]

2 Further development of the Income and Consumption Sample Survey (EVS)

2.1 Income and Consumption Sample Survey since 1962/63

With the economic expansion and policies of the late 1950s, the limited information value of the Continuous Budget Surveys made the need for additional statistical information increasingly urgent. This led in 1961 to the passing of the Law on the Statistics of the Household Budget Surveys, which is the legislative basis of the Income and Consumption Sample Survey and the Continuous Budget Surveys. The innovative EVS brought macroeconomic aspects into the budget surveys: the selection of households and the concepts used were largely compatible with the data on consumption for all private households in the National Accounts.[5)]

The first EVS was conducted in 1962/63, covering some. 38,000 German households of employees, persons not in gainful employment and the self-employed. The primary objective at the time was to obtain information on consumption for the various sections of the population. Information was also collected on income and its composition, taking into account the size and social status of the household, and on the use of income over and beyond private consumption.[6)] In the second EVS in 1969, interest was particularly focused on the formation and distribution of individual and household incomes and wealth formation.[7)] The third EVS in 1973 was concerned mainly with expenditure on food. It also expanded the tabulation of property income.[8)] In the fourth EVS in 1978, the inclusion of questions concerning the amount and nature of state transfer payments received made it possible for the first time to have a very detailed picture of the importance of state transfer payments and their cumulation for the individual claimant and his household.[9)] Processing of the fifth EVS in 1983 also focused, among other things, on state transfer payments.[10)] Although the survey characteristics for the sixth EVS in 1988 were largely unchanged, foreigners' households were included for the first time in order to test the survey papers and the conduct of field work with this population group and ascertain their willingness to take part.[11)] The most important innovations in the seventh EVS in 1993 were the regular inclusion of foreigners' households and the extension to private households in the new Länder.[12)]

2.2 User survey

Questions as to what users might want or not want were repeatedly raised during discussions surrounding the redesigning of the budget surveys and the preparations for the 1998 EVS. The opinions expressed were usually based on generalisations of individual cases. No empirical information obtained from a large number of users was available. Desiring (even) greater user orientation in official statistics in general, it was decided to survey all the major data users as part of the preparatory work for EVS '98.

In order to obtain an overview of the many different user groups and what was of interest to them, a questionnaire was devised enquiring, among other things, about aspects of data quality, the classification of results and the speed at which they are obtained, the size of the sample, the importance of individual characteristics covered, the amount of detail recorded for food, beverages and tobacco, the presentation of the results and the purposes for which they are used. Since the complexity of statistics like the EVS cannot be covered in a few questions, a large space was provided at the end of the questionnaire for observations and comments over and beyond the questions asked. Many respondents took advantage of this opportunity to express desires, suggestions and criticisms of the EVS.

The survey was intended to cover in particular those users who were very much involved with the EVS and used it a lot. In the end, two large groups were chosen: firstly, persons or institutions who were known as users from their requests for individual material, special evaluations or regular or major enquiries to the information service and, secondly, the members of the Expert Committee on Prices, Wages and Household Budget Surveys, who had institutional connections with the survey because that body is responsible for harmonising the method and content of the survey programme.

The user survey was intended primarily to ascertain the expectations of and interests in the EVS as regards in particular the data quality, the availability of results and the main purposes for which the data were used. They would also be asked what might be omitted.

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4) Detailed results from the pilot survey will be published in a future edition of this journal.
5) See Horstmann, K.: "Die Einkommens- und Verbrauchsstichprobe 1962" in WiSta 10/1961, p. 563 ff.
6) See Sobotschinski, A.: "Die Einkommens- und Verbrauchsstichprobe 1962/63" in WiSta 8/1965, p. 483 ff.
7) See Euler, M.: "Die Einkommens- und Verbrauchsstichprobe 1969" in WiSta 6/1968, p. 289 ff.
8) See Euler, M.: "Die Einkommens- und Verbrauchsstichprobe 1973" in WiSta 7/1972, p. 375 ff.
9) See Euler, M.: "Einkommens- und Verbrauchsstichprobe 1978" in WiSta 9/1977, p. 576 ff.; Euler, M.: "Haushalte mit ausgewählten staatlichen Transferzahlungen 1978" in WiSta 8/1981, p. 563 ff.; Euler, M.: "Personen mit ausgewählten staatlichen Transferzahlungen 1978" in WiSta 9/1981, p. 640 ff.
10) See Euler, M.: "Einkommens- und Verbrauchsstichprobe 1983" in WiSta 6/1982, p. 433 ff.
11) See Euler, M.: "Einkommens- und Verbrauchsstichprobe 1988" in WiSta 8/1987, p. 662 ff.
12) See Euler, M.: "Einkommens- und Verbrauchsstichprobe 1993" in WiSta 7/1992, p. 463 ff.

The results of this survey showed that users of the EVS regard it as an important, recognised instrument for tackling a large number of chiefly scientific and political questions. However, in many respects the content and quality of the survey fall short of what users would like. One of the most pressing problems is the fact that the published results are not up to date. A great deal of attention will be paid when preparing for EVS '98 to the call, repeatedly made for many years, for the data to be made available more quickly. Political and economic planning and decision-making should be based on figures so far as possible reflecting the current situation. The aim will therefore be to publish the key findings of the EVS within two years of the actual survey.

The current differentiation of EVS data is essential for many users. The depth of breakdown of food, beverages and tobacco in particular should therefore in principle be retained. The time required for processing can be shortened by collecting the fine breakdown by quantities in a sub-sample.

The user survey showed that reducing the size of the sample so that the data could be made available more quickly would be acceptable, but the reduction would have to be small so as not to affect the confidence factor of the data while retaining the level of detail. The proposed shortening of the recording period seems an appropriate way forward.

So far as possible, the streamlining of the survey programme will involve abandoning survey characteristics not required by many users. More than half of them are able, for example, to manage without the following:

- information about gardens,
- the year of marriage,
- duration of journeys,
- nature of journeys.

The form in which the results are published is very important when it comes to user orientation. The special series will continue to be very important in the future. The visual presentation needs to be changed to make them more user-friendly. The layout in particular should be thought out again. Some tables have in the past contained a lot of items that were not represented or in which there could be no confidence because the underlying instances were too few. These tables, too, should no longer be published in the special series, but issued in another form or simply provided on request.

Many users want access to anonymised individual data. Apart from the factually anonymised data that can be made available only to scientists, consideration should be given to making individual data available to all users in the form of a public use file. It would be technically possible to do this both on CD-ROM and by on-line access.[13)]

2.3 Survey objectives and methodological changes in EVS '98

In further developing the EVS, care has always been taken to provide detailed information on incomes, expenditure, wealth, debts and other indicators of the living standards of households through a regular cross-section survey. There will be no major changes to the objectives of the EVS survey when the eighth one is conducted in 1998. The results will again seek to give a comprehensive picture of the economic and social conditions of households in all sections of the population and provide economists, politicians and scientists with basic data for analysis and planning.

A few changes have been made to the way in which the EVS survey is conducted in the light of the objectives for the new design of the budget surveys. The period for the survey of the income and expenditure of individual households is cut from one year to three months; the survey questionnaire is streamlined and the number of survey characteristics reduced. The concluding interview is dispensed with, the real estate questions being transferred to the introductory interview and the questions on other assets and on debts incorporated into the household diary.

2.4 Sample planning

Ideally, the households taking part in the EVS should be selected by random sampling. As reported above, a random procedure of this kind was used in the pilot survey for the Continuous Budget Surveys. Experience with that showed that the cost of the multiple-phase stratified random selection procedure tested would be considerably more than that of the quota method used hitherto. In view of the savings to be made in official statistics, it was therefore decided to use a quota method again to select the households for EVS '98.

Since the socio-economic characteristics of the households taking part in the EVS should correspond to the structure of all households, a so-called "survey target" is set when recruiting households. The basis for determining the "survey target" (around 74,000 households for EVS '98) is the most recent available microcensus. The sample population is divided on a Länder basis into strata by combination of the characteristics "region (Land)", "household

13) For details of the user survey see Ehling, M./Gertkemper, F.: "Nutzerbefragung zur Vorbereitung der Einkommens- und Verbrauchsstichprobe (EVS) 1998." Ergebnisbericht. Methoden - Verfahren - Entwicklungen. Materialien und Berichte, Wiesbaden 1996.

type", "professional status of principal income-earner", "household's net monthly income" and "survey quarter". The breakdown of the quota characteristics is shown in the table below.

The number of households to be included in the survey is set for each of these strata in such a way that every stratum is represented according to its proportion of the total population. For foreigners' and farmers' households, the number in the sample is set as a target for each region (Land) separately in order to ensure that enough of them are represented in the EVS. With an average sampling fraction of 0.2%, the sampling fractions are selected, within limits (between 0.19 and 0.24%), disproportionately at Länder level in order to improve comparability at Länder level. On average, smaller Länder are given a higher sampling fraction, so that the differences in the accuracy of the results are reduced somewhat.

Table 2: Quota characteristics for EVS '98

1. **Region (Land)**
2. **Type of household**
   - Single person households
   - Married couples/cohabitees without children
   - Single parents with at least one child under 18
   - Married couples/cohabitees with at least one child under 18, no more than one partner in gainful employment
   - Married couples/cohabitees with at least one child under 18, both partners in gainful employment
   - Other households
3. **Professional status of principal income earner**
   - Self-employed/farmers
   - Public officials (Beamte)
   - White collar workers (Angestellte)
   - Blue collar workers (Arbeiter)
   - Pensioners
   - Others not gainfully employed
4. **Net monthly income of household**
   - less than 1400 DM
   - 1400 DM < 2500 DM
   - 2500 DM < 5000 DM
   - 5000 DM < 7000 DM
   - over 7000 DM
5. **Survey quarter**

Table 3: Distribution of sample size between regions (Länder)

Baden-Württemberg	9 025
Bavaria	10 119
Berlin	3 864
Brandenburg	2 388
Bremen	858
Hamburg	2 000
Hesse	5 491
Mecklenburg-Western Pommerania	1 751
Lower Saxony	6 803
North Rhine-Westphalia	14 614
Rhineland Palatinate	3 721
Saarland	1 215
Saxony	4 238
Saxony-Anhalt	2 641
Schleswig-Holstein	2 755
Thuringia	2 393
Germany	73 876

2.5 Survey method

In detail, the survey scheme for EVS '98 is as follows: Households are recruited according to the quota plan. At the start of the survey year, they are asked in the introductory interview about, among other things, the composition of the household, demographic information on the various members of the household, the household income, housing conditions and real estate, and ownership of selected consumer durables.

The heart of the EVS, the recording of income and expenditure, is based on entries in the household diaries, with one quarter of the households involved having to keep a household diary in each quarter of the year. Each household is given a three-month recording period on a rotation basis, having regard to the sampling plan. This is intended to ensure that the records from all the households are spread as evenly as possible over the 12 months of the year in question.

Table 4: Conduct of the survey for EVS '98

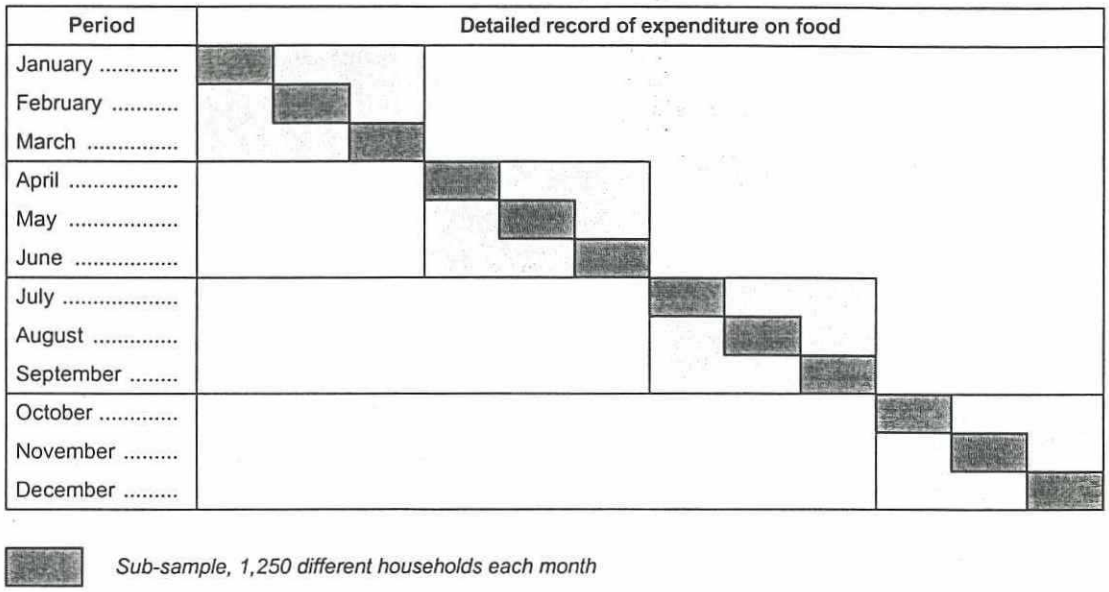
Period	Parts of survey and sample size
Start of year	Introductory interview (ca. 74,000 households)
January ..... February ..... March	Household diaries approx. 18,500 households
April ..... May ..... June	Household diaries approx. 18,500 households
July ..... August ..... September	Household diaries approx. 18,500 households
October ..... November ..... December	Household diaries approx. 18,500 households

Without such rotation, it was feared that in the months with a lot of public holidays, festivities, vacations or convalescent leave taken the number of households keeping records might be much lower than in the other months. That might result in purchases of a highly seasonal nature (e.g. fresh asparagus, sandals, skiing gear or toys) being under-represented in the sample.

Incomes, deductions and contributions payable for each member of the household are recorded separately in the household diary. Other receipts and insurance premiums are recorded for the household as a whole, as are receipts in kind (e.g. free accommodation, miner's house coal), home-grown garden produce and products of small animal keeping. The household diary is similar in design to the former four-monthly record book and the survey documents for the pilot survey for the Continuous Budget Surveys. It asks only for expenditure amounts, not for quantities. The expenditure categories specified are no longer based on the Classification of Income and Expenditure (SEA), but on the COICOP/HBS, as the Continuous Budget Surveys will also be in future. If there are several items of expenditure in particular categories of purchases, these may be recorded in a so-called "collective diary" before being entered in the household diary. The last section of the household diary asks about the formation and existence of savings or debts, the repayment of loans and the possession of life assurance, funeral expenses insurance, educational endowment insurance and children's endowment insurance.

The quantity of goods purchased or consumed is of interest primarily in the field of food, beverages and tobacco. However, since expenditure on these products does not vary greatly, it is sufficient to obtain it from only a small number of respondents. Food, beverages and tobacco are therefore recorded from a sub-sample of 1250 households each month, in other words 15,000 households in the year, detailed according to quantity and price. The sub-sample is around 20% of the size of the total sample. Expenditure on food, beverages and tobacco is recorded chronologically, without being sorted or categorized by respondents, in a separate household diary (detailed log book). This detailed log book is intended to be kept by the selected households for a period of one month in addition to the quarterly book.

Table 5: Detailed record of food, beverages and tobacco kept by a 20% sub-sample (about 15,000 households in the year)



Sub-sample, 1,250 different households each month

3 Conclusion

We have shown that the budget surveys are one of the key pillars of reporting on households in Germany. They have a long tradition in official statistics, extending back to before the First World War. Even in the past, the abundance of data these surveys provided was the source for the widest variety of appraisals and analyses by politicians, scientists, interest groups and also official statisticians themselves. The budget surveys are to be adapted to new requirements so that they can continue in the future to meet the needs for data in a proven manner.

The amount of work required for the EVS will be cut by reducing the number of survey characteristics and the recording period. The same applies for the Continuous Budget Surveys, since respondents will have to keep detailed log books for a total of only four months a year instead of the whole year as before. Shortening the recording period greatly relieves the burden on respondents. In the case of the LWR, the amount of work to be done in the Statistical Offices will be reduced in particular by the BLAISE application for sample management and processing of data. For both surveys, the results will be made available earlier and considerable cost savings will be possible.

The representativeness of the Continuous Budget Surveys will be increased appreciably, since information will be available from 6,000 households instead of 2,000 as previously, and all households except those of self-employed people will be included in the survey, which means it will no be longer confined to a small number of household types. Findings will be reported on quarterly. Because the Continuous Budget Surveys will be more representative, the results may, for example, be used to determine Private Consumption for the National Accounts.

The modified EVS scheme has the advantage that the total sample size remains the same, while the burden on respondents is reduced because they now have a simple procedure to follow (entries in income and expenditure categories) in keeping household diaries during a quarter. The abolition of the closing interview as a separate part of the survey will reduce the time spent in interviews and thus reduce the work for interviewers. The information available will for the most part allow evaluations to be made to the same extent as before.

One consequence of the modified survey scheme will be that households that found the burden of keeping records for a whole year too great will be more prepared to take part in the survey.

Because of the much smaller volume of material to be processed, the results from the EVS will in future be available much earlier than previously and thus appeal to a wider circle of users while meeting many users' demand for them to be more up to date.

In the course of the preparations for EVS '98 and the pilot survey for the LWR, the characteristics of both surveys were harmonised, so that the budget surveys are further developed into an integrated overall concept with dovetailing of the contents. After data collection, the next stage is to revamp its processing and the presentation of the results so that up to date information from the budget surveys can in the future be made available continuously (quarterly, annually and at five yearly intervals).

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