Chapter XXV
Household surveys in transition countries

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Abstract

The present chapter provides a review of the main aspects of design and implementation of household sample surveys (household sample surveys) in transition countries in the last decade, 1991-2000. In addition, the chapter presents information from 14 countries in transition on operational aspects of these surveys. Statistical offices of these countries delivered this information in 2001 by filling out special questionnaires and in some cases, they subsequently updated it.

This chapter consists of two sections: Section A provides a general assessment of household surveys in transition countries. Section B contains case studies of household sample surveys in selected transition countries.

Section A presents a synthesis of the main features of household surveys in transition countries. In particular, two main types of surveys are considered: the household budget survey (HBS), and the labour-force survey (LFS). The following features of the surveys are considered: sampling frame, sample design, size of samples, method of estimation, estimation of sampling errors, non-response rates, survey costs, and design effects. The transition countries already had a tradition of some experience with the HBS, although a redesign was needed in each country. The LFS is a completely new type of survey and has been introduced in different transition countries only in the last decade, in some cases with technical assistance from abroad. Section A concludes with recommendations for improving the household sample surveys in transition countries, taking into account 2000 censuses of population and housing.

Section B presents case studies of the following countries: Estonia, Hungary, Latvia, Lithuania, Poland and Slovenia. The descriptions outline the main features of the HBS, the LFS and other household surveys in each country.

Key terms*:* household budget survey, labour-force survey, cost of the survey, design effect, sampling error, non-response rate.

A. General assessment of household surveys in transition countries

1. Introduction

1. The purpose of the present section is to present certain aspects of design and implementation of household surveys in some transition countries, specifically certain of the Central and Eastern European countries and the Russian Federation, in the last decade. The fact that there are major differences between various kinds of household sample surveys (household sample surveys) in subject matter, units of response, periodicity, sample design and collection methodologies, leads to different levels of costs and non-response rates. The present chapter focuses on the design and implementation of two types of household sample surveys, namely, the household budget survey (HBS) and labour-force survey (LFS). However, other household surveys carried out by the countries in transition in the last decade are also mentioned.

2. Before considering the household sample surveys in transition countries in the last decade, a general description of household surveys in these countries previous to the transition period will be presented as a basis for understanding the further development of household surveys in these countries.

3. In preparing this chapter, a special questionnaire was constructed and sent to the following 14 countries in transition:

Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russian Federation, Slovakia, Slovenia and Ukraine.

4. Eight countries prepared comprehensive papers which were published in *Statistics in Transition* [vol. 5, No. 4 (June 2002)].

5. Special attention is given to design and implementation of household sample surveys in these countries, focusing on issues such as sampling frames, sample design, sample size, methods of estimation of parameters and sampling errors, non-response rates, survey costs and cost components, design effects and their use in statistical analysis. The chapter also describes future plans for improving the surveys after the 2000 round of Censuses of Population and Housing Censuses.

2. Household sample surveys in Central and Eastern European countries and the USSR before the transition period (1991-2000)

6. It is not easy to objectively assess household sample surveys in Central and Eastern European countries and the USSR before the transition period. It is very well known that these countries had a centralized system of statistics, and complete reporting or censuses were the main form of data collection. However, there are publications describing household surveys in these countries in that period and it is known that conferences, seminars and working group meetings were held to discuss survey methods.

7. The former communist countries, namely, the countries of Central and Eastern Europe and the Soviet Union, had a system of household sample surveys of which the most important were family budget surveys (FBS). Large-scale living condition surveys were also carried out periodically, as well as income surveys, microcensuses, health surveys, time-use surveys and different kinds of social and demographic sample surveys.

8. Starting in the 1950s, the family budget surveys were established according to the Soviet methodology based on the so-called branch approach (Postnikov, 1953). This involved choosing households from among employees in selected enterprises in each branch. The selected households that participated in the survey for several years kept income and expenditure diaries. The sample was not rotated and covered only households with persons employed in socialized enterprises, excluding those living too far from the selected enterprises. In each branch, households were selected according to a two-stage design. At the first stage of selection, a determined number of enterprises (or other units of the workplace) for the country were selected with a probability proportional to the total number of employees in the enterprises. In the second stage, in each selected enterprise the same number of households was systematically selected from a list of employees stratified by type of economic group. Each group was first ordered by size of wages or salaries. At each stage of selection, sampling units were selected systematically starting from the middle of the "sampling interval". It was assumed that such a method of sample selection was self-weighting for each branch. After selection, a special procedure was applied to check the sample for representativeness, using data on average wages and salaries. In the beginning, non-response rates were low and there were notable differences between countries.

9. In the years 1959-1962, special attention was given to the improvement and unification of the FBS. For this task, a Permanent Committee for Statistics of the Council for Mutual Economic Assistance (CMEA) established a special working group from among Central and Eastern European countries and the Soviet Union. Some progress was made in methodological areas such as concept definitions, classifications, and questionnaire design. Some countries questioned the branch approach, pointing out the disadvantages of having the same household in the survey for several years. In some countries, as non-response rates had increased steadily, it was suggested that a rotation method of sample selection be applied and that the length of participation of the same household in the survey be shortened. In the 1960s, some countries experimented with a “territorial approach”, essentially an area probability design, in which households were selected from census enumeration areas and dwellings stratified by region. The rotation of households in the sample shortened periods of participation of households in the survey [Glowny Urzad Statystyczny (GUS), 1971a; Kordos 1985, 1996].[86] In some Central and Eastern European countries (Bulgaria, Czechoslovakia, Hungary, Poland, Romania), the methodology of HBS began to change.

10. After some experiments, in 1971, Poland accepted the territorial approach for the HBS in 1971 and in 1982 the rotation method was applied [Glowny Urzad Statystyczny (GUS), 1971a; Kordos, 1982, 1985; Lednicki, 1982].

[86] GUS = Central Statistical Office of Poland.

11. In Hungary, after the development of the Unified System of Household Surveys (USHS) in the mid-1970s, the household budget survey became a continuous survey for the period 1976-1982, in the period 1983-1991 it was carried out biennially, and since 1993, it has again become a continuous survey. The Income Surveys, introduced in 1963, were carried out twice per decade. There were a number of household surveys carried out within the frame of the USHS, especially in the 1980s, for example, a Time-use Survey, a Prestige Survey (prestige of the various occupations), a Survey on Living Conditions and Social Stratification, etc. (Mihalyffy, 1994; Éltetö and Mihalyffy, 2002).

12. There were other household surveys being conducted in these countries during the pre-transition period. The CMEA Permanent Committee for Statistics included in its 1968-1970 work plan a topic on "Possibilities of larger application of sampling methods in statistical investigations of the member countries of the Council for Mutual Economic Assistance". In April 1970, Poland was responsible for organizing a seminar thereon and preparing the main paper (Kordos, 1970). Nine countries (Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Mongolia, Poland, Romania, the Soviet Union and Yugoslavia) participated in the seminar. Each country presented a paper in Russian, and these papers were later published in Polish in a special volume [Glowny Urzad Statystyczny (GUS), 1971a]. Methodological papers were also presented, and published in a second volume [Glowny Urzad Statystyczny (GUS), 1971b]. From these papers, it is possible to assess generally what kind of household surveys were conducted in these countries until 1970.

13. There were also several international conferences devoted to household surveys, and particularly to household budget surveys. Polish statisticians participating in such international meetings prepared comprehensive reports, which were published in Polish statistical journals. The author participated in the European statistical seminar devoted to household surveys which was held in Vienna in 1961 (Kordos, 1963), and in the second international conference on methodology of household surveys which was held in Geneva in 1981 (Kordos, 1981).

14. Household surveys in these countries were discussed also at the International Conference on Economic Statistics for Economies in Transition: Eastern Europe in the 1990s, held in Washington, D.C., 14-16 February 1991 (Garner and others, 1993).

15. From the above-mentioned publications, it is possible to determine that sampling methods were also used for: speeding up data processing of censuses of population and housing (Bulgaria, Czechoslovakia, the German Democratic Republic, Poland, Yugoslavia); microcensuses (Czechoslovakia, Hungary, Poland, the USSR, Yugoslavia); living conditions (Bulgaria, Hungary, Poland, Romania, the USSR); post-enumeration surveys after population and housing censuses (Bulgaria, Czechoslovakia, Hungary, Mongolia, Poland, Romania, the USSR, Yugoslavia); and time-use surveys (Bulgaria, Hungary, Poland, Romania). There were great differences in statistical development in these countries, which had some impact on the progress of household surveys in the transition period.

3. Household surveys in the transition period

16. The present section covers methodology and implementation of household sample surveys carried out in the transition period, namely, in 1991-2000. The surveys were considerably extended and modified in this period compared with the period before 1990. The household budget surveys were, and still are, being improved, and for the first time in each country a new survey, namely, a labour-force survey, has been, or is soon to be, introduced. Also, other new sample household surveys -- surveys on the well-being and health of the population, surveys of the living conditions of the population, and other demographic and social surveys -- are being launched.

17. We start with a discussion of HBSs and LFSs. Other periodic or one-time household surveys are also described in general terms. Next, special attention will be given to some methodological aspects common to all household surveys, such as sampling frame construction, a sample design, method of estimation, sampling error, design effect, costs of the survey, non-response, and plans for future improvement of household surveys.

18. In the last decade in nearly all transition countries, the HBS was redesigned and a new survey introduced. Since there were no LFSs before the transition period, new ones were designed and implemented. Table XXV.1 indicates the start year of the new HBS and of the new LFS, their periodicity and the last year of redesign.

19. As seen in table XXV.1, the new HBSs, after having been redesigned and adjusted to Statistical Office of the European Communities (Eurostat) requirements (Eurostat, 1997), were usually continuous surveys. The LFSs were introduced in the transition countries during the period 1992-1999.

4. Household budget surveys

20. The conduct of household budget surveys has a long tradition in transition countries. Much attention was paid to these surveys owing to their special role in the analysis of the living conditions of the population and in the calculation of consumer price indices. Various survey methods were experimented with and various attempts were made to improve methodology and organization. In some countries, such as Bulgaria, Hungary, Poland and Romania, improvements in survey methodology had begun in the 1970s and 1980s. At the beginning of the 1990s, other countries started to change the methodology of the HBS. The surveys were redesigned and adjusted to Eurostat requirements (Eurostat, 1997). Eurostat is committed to assisting member States, as well as other interested countries, in improving their survey methods and procedures through the provision of guidelines and direct technical support (Eurostat, 1995, 1996, 1998a, 1998b). Thus, new concepts, definitions and classifications have been adopted and new diaries and questionnaires constructed. For the first time, the surveys are also being used as an input into the building of national accounts for the purpose of measuring household final consumption at an aggregate level.

21. All HBSs are confined to the population residing in private households. Collective or institutional households (hospitals, old persons' homes, boarding houses, prisons, military

barracks, etc.) are excluded. All of the 14 transition countries, except the Czech Republic and Slovakia, have redesigned the HBS.

Table XXV.1. New household budget surveys and labour-force surveys in some transition countries, 1992-2000: year started, periodicity and year last redesigned

Country	Year started		Periodicity		Year last redesigned	
	HBS	LFS	HBS	LFS	HBS	LFS
Belarus	1995	-	Quart.	-	1995	-
Bulgaria	1992	1993	Cont.	Quart.	2000	2001
Croatia	1998	1996	Cont.	Twice	2000	2000
Czech Republic	1991	1993	Cont.	Cont.a/	1999	2000
Estonia	1995	1995	Cont.	Cont.	1999	2000
Hungary	1976	1996	Cont.	Cont.	1997	1997
Latvia	1995	1995	Cont.	Twice	1998	1999
Lithuania	1992	1994	Cont.	Twice	1996	1997
Poland	1982	1992	Cont.	Cont. b/	2000 c/	1999
Romania	2001	1994	Cont.	Cont. d/	2000	2001
Russian Federation	1997	1992	Cont. e/	Quart.	1996	1998
Slovakia	2003	1993	Cont. f/	Cont.	2002	1999
Slovenia	1999	1993	Cont.	Cont.	1997	Yearly g/
Ukraine	1999	1999	Cont.	Quart.	2000	1999

Source: Data from questionnaires submitted by selected countries.
Note: Quart. Means conducted quarterly; Cont. means conducted continuously; Twice means conducted biannually. Hyphen (-) means data not applicatle.
a/ Since 2000.
b/ Since fourth quarter of 1999.
c/ Since 1982, redesigned three times.
d/ Since 1996.
e/ Continuous since 1952 but redesigned in 1996. New survey started in 1997.
f/ Continuous since 1957, but redesigned in 2002. New survey starting from 2003.
g/ Ad hoc questions added every year.

5. Labour-force surveys

22. For transition countries, the labour-force surveys is a new concept, developed only after 1992. Eurostat and representatives of the national statistical offices and ministries of labour, in discussing the technical aspects of these surveys, met regularly several times a year at the meetings of the Employment Statistics Working Party held in Luxembourg (Eurostat, 1998a,

1998b). Thus, the LFSs were implemented according to International Labour Organization (ILO) recommendations and the methods and definitions of Eurostat (Eurostat, 1998a).

23. Since 1989, the ILO Bureau of Statistics had been actively involved in assisting Central and Eastern European countries and the former USSR in radically revising and restructuring their labour-force statistics systems in order to meet the new requirements emerging from their transition to a market economy. This technical assistance was provided in the form of a number of training sessions, seminars, conferences and expert visits.

24. With regard to the LFS, ILO experts carried out missions to the Russian Federation (twice in 1992 for the preparation of a pilot LFS and in May 1993 for a full-scale LFS); Ukraine (November 1991 and November 1992 for the preparation of a pilot LFS and in November 1993 to conduct a test survey); Bulgaria (December 1991, July and October 1992, April 1993 and February 1994); Slovenia (October 1993); Belarus (November 1993 and September 1994 for the preparation of a pilot survey and follow-up); Kazakhstan (March and June 1993 to examine the feasibility of launching a pilot LFS). In addition, three on-the-job training sessions on the preparation and conduct of an LFS were organized for Russian and Ukrainian specialists in Norway (1991) and Germany (1991 and 1992).

25. In 1994 (31 August - 2 September), ILO organized the International Conference on Restructuring of Labour Statistics in Transition Countries, in Minsk. The immediate objective of the conference was to take stock of what had been achieved and what still had to be done in order to produce reliable and consistent labour-market statistics for policy-making and information needs in transition countries. All documents prepared for this international conference were published in a special issue of *Statistics in Transition (*vol. 2, No. 1, March 1995).

26. There are some aspects of design and implementation of LFS in 14 transition countries that merit attention. As may be seen from table XXV.1, 13 of the transition countries have already started LFSs and Belarus is planning to start one soon. Seven out of 14 countries (the Czech Republic, Estonia, Hungary, Poland, Romania, Slovakia and Slovenia) carried out continuous surveys, which means that the reference weeks were evenly spread throughout the entire year. In three countries (Bulgaria, the Russian Federation and Ukraine), the survey was carried out quarterly and in three others (Croatia, Lithuania and Latvia) twice a year (semi-annually). In Estonia, until 1999, the survey was conducted annually (in the spring); but since 2000, it has been a continuous quarterly survey. All countries plan to redesign the LFS in the near future, using the results of the censuses of population and housing as a basis for improving the sampling frame, the sample design and the method of estimation.

6. Common features of the sampling designs and implementation of the HBS and the LFS

27. The HBS and the LFS constitute significantly different types of household surveys. However, inasmuch as some methodological and implementation features (such as sampling frame, sample design, method of estimation, sampling error estimation, design effect, cost, and non-response rates, and future plans for improving the surveys) are common to both, it is useful to consider them together.

28. The different countries have followed fairly similar procedures for the recruitment and training of interviewers. Generally, the interviewers are not recruited and trained exclusively for the HBS or LFS, but shared with other household surveys in the country. In all HBSs, data collection involves a combination of (a) diaries maintained by households or individuals, generally on a daily basis; and (b) one or more interviews.

29. For the LFS, the face-to-face personal interview is the main mode of data collection. The "reference person" provides information on the household, and each individual fills out a personal questionnaire. Interview by proxy is rare but most countries consider it a valid source of data. In situations where the individual cannot be personally contacted, a majority of the countries allow for "self-administration", that is to say, the interviewer leaves the questionnaire to be completed by the respondent. Self-administration is the preferred mode over proxy interviewing. Given the content of the questionnaire, telephone interviewing has not been widely used but there are early attempts to use computer-assisted telephone interviewing *(*CATI) (Estonia). A majority of the countries use the conventional "paper and pencil" mode of interviewing.

Sampling frame for the HBS and the LFS

30. Censuses of population and housing are the basis for a sampling frame construction of household surveys in several countries (Bulgaria, Hungary, Poland and Romania). Census data are used to create primary sampling units (PSUs) based on census enumeration areas (CEAs), usually adjusted to specific demands of the survey. In most cases, dwellings serve as secondary sampling units (SSUs). Usually, dwellings in selected PSUs are updated on an annual basis. The updating involved an estimate of the increase in the dwelling stock due to the completion of new buildings, and an estimate of the decrease of the dwelling stock due to the demolition of buildings and changes in the boundaries of districts as a result of changes in the administrative division of the country [Glowny Urzad Statystyczny (GUS), 1999; Kordos, 1982, 1996; Lednicki, 1982; Martini, Ivanova and Novosyolva, 1996; Mihalyffy, 1994].

31. Some countries of the former Soviet Union, for example, Belarus, Estonia, Latvia and Lithuania, use population registers (PR) and addresses from the PR and other available administrative documentation as sampling frames (Lapins and Vaskis, 1996; Martini, Ivanova and Novosyolova, 1996; Šniukstiene, Vanagaite and Binkauskiene, 1996; Traat, Kukk and Sostra, 2000).

32. In the Russian Federation, the 1994 microcensus was used effectively as the sampling frame for the HBS and the LFS (Goskomstat, 2000).

33. Generally, the target population covered includes all private households throughout the national territory of each country, with minor exceptions. In some cases, certain small population groups are not covered, mostly as a result of limitations in the coverage of the available sampling frame.

34. There are plans to use the results of the 2000 round of censuses of population as sampling frames for the HBS and the LFS and other household surveys in the future (Éltető and Mihalyffy, 2002; Kordos, Lednicki and Zyra, 2002; Lapins and others, 2002; Kurvits, Sõstra and Traat, 2002).

Sample size and allocation

35. For 2000, the range of sample sizes for HBS varied from 1,028 households in Slovenia and 1,300 in Slovakia to 36,163 in Poland and 48,675 in the Russian Federation. Table XXV.2 provides HBS and LFS sample sizes in transition countries in 2000.

36. Generally, larger countries, because of their greater need for disaggregated results and also their greater capacity, required larger sample sizes – but, of course, not in proportion to their size. Within some countries, the sample was distributed proportionately across geographical regions, so as to maximize the precision of estimates at the national level. However, three countries, namely Hungary, Poland and the Russian Federation, chose disproportionate allocations, sampling smaller regions at higher rates thus ensuring a minimum sample size for each region of the country.

37. In the year 2000

(a) *HBS*: Russian Federation had the largest sample size (48,675 households), followed by Poland (36,163), Ukraine (12,534) and Hungary (11,862). The countries with the lowest sample size were Slovakia (1,300) and Slovenia (1,028);

(b) *LFS*: Russian Federation had the largest sample size (123,041), followed by Ukraine (38,695), Hungary (36,500 quarterly), Poland (24,400 quarterly), Czech Republic (31,800), Bulgaria (24,000), Romania (17,600) and Slovakia (10,250). All other countries used sample sizes below 10,000.

Sample design and selection

38. Different sample designs for HBS and LFS were applied in transition countries in the last 10 years. Diverse criteria were used for the stratification of PSUs before selection. The most common criterion was geographical region and/or urban/rural environment. Stratification by population size of locality was also used in a number of countries (for example, Hungary, Poland, the Russian Federation and Ukraine).

39. Most of the surveys were based on two-stage sampling: the selection of primary sampling units (PSUs) at the first stage, followed by the selection of a small number of dwellings or households within each selected PSU at the second stage. Normally, selection probabilities at the two stages were balanced so as to obtain a "self-weighting"" sample of households within domains, i.e., PSUs are selected with probability proportional to size (PPS), usually to the number of dwellings; and in selected PSUs the same number of secondary sampling units (SSUs) were chosen. Direct (single-stage) samples of dwellings, households or persons were used in large cities in Latvia and Lithuania. By contrast, in Hungary, for small localities, the sample was

selected in three stages: large areas in the first stage, smaller clusters in the second stage, and addresses or households at the last stage.

Sample rotation

40. Response burden among the households can be reduced by periodic sample rotation. However, rotation of units increases the cost of the survey because of additional sample maintenance, possible additional training of interviewers, extra costs of initially collecting baseline information, and difficulties in grooming new units to provide data. Partial rotation of sampled units at some fixed rate is undertaken as a compromise between total rotation, that is to say, replacement of 100 per cent of units, which is very expensive and gives poor estimates of change, and no rotation at all (in other words, a panel survey) which leads to an unacceptable distribution of response burden. The rotation schemes keep a unit in the sample for a given period after which the unit becomes ineligible for reselection by the same survey for a minimum period.

41. Some pattern of sample rotation is applied in both the HBS and the LFS in most transition countries. For example, in Estonia, Poland and Romania have applied the 2-(2)-2 pattern, that is to say, two quarters in the sample, two quarters out, two more quarters in the sample, and then exit.

Weighting of the results

42. Non-response rates in the HBS are usually high, and they change considerably the socio-economic structure of households in the sample. To minimize this impact, the sample results are weighted. Both the sampling error and the non-response error can be substantially reduced when powerful auxiliary information is available and is used in re-weighting by a calibration method. Hungary was the only country where calibration was used in both types of survey (Éltetö and Mihalyffy, 2002; see also Deville and Särndal, 1992).

43. Information on basic characteristics of units in the frame can be useful for the purpose of sample design and selection. Even more important, such information can be used to compute weights, which are applied to reduce the effect of non-response. For this purpose, the required information on characteristics of the units has to be available both for responding and for non-responding units in the survey.

44. First, each household in the sample is weighted by the inverse of the probability with which it was selected. Weighting for non-response involves the division of the sample into appropriate weighting classes, and within each weighting class, respondents are weighted to adjust for the non-responding cases in that class. In some cases, appropriate weights from external sources are used. Additionally, for the HBS, appropriate weights from the LFS (for size of households, and urban and rural relation) are applied (Poland).

45. In the Baltic States, special procedures are used to obtain a self-weighting sample of households from a population register (Lapins and Vaskis, 1996; Šniukstiene, Vanagaite and Binkauskiene, 1996; Traat, Kukk and Sõstra, 2000).

46. The LFS data are used simultaneously for analysis at the household and personal levels. It is necessary, therefore, to use a weighting procedure that ensures complete consistency in analysis involving both types of units. All weighting of the original sample is applied at the household level, that is to say, the procedure ensures that persons within a household all receive the same weight.

47. The weights are derived in sequence. At any step after the first, the weights are computed from sample values already weighted according to the results of all preceding steps. The final weight of a unit is the product of the weighting factors determined at each step. Weights computed at each step are normalized, in other words, they are scaled so that the average value per sample unit equals 1.0 and the sum of the weights is equal to the original sample size.

Table XXV.2. Sample size, sample design and estimation methods in the HBS and the LFS, 2000, selected transition countries

Country	Sample size		Sample design		Estimation method	
	HBS	LFS	HBS	LFS	HBS	LFS
Belarus	6 000	_	2-stage	_	Weighted	_
Bulgaria	6 000	24 000	2-stage PPS	2-stage PPS	Direct	Weighted
Croatia	2 865	12 843	2-stage PPS	2-stage PPS	Weighted	Direct
Czech Republic	3 250	31 800	Quota	2-stage PPS	Last microc.	Weighted
Estonia	9 840	9 127	PR PPS	PR Eq.Pr.	Weighted	Weighted
Hungary	11 862 a/	36 500 b/	3-stage PPS	3-stage c/ PPS	Calibr.	Calibr.
Latvia	3 847	7 940	2-stage PPS	2-stage PPS	Weighted	Weighted
Lithuania	10 680	6 000	PPS person	PPS person	Weighted	Weighted
Poland	36 163 d/	24 400 e/	2-stage PPS	2-stage PPS	Weighted LFS	Weighted demogr.
Romania	17 827	17 600	2-stage PPS	2-stage PPS	Weighted	Weighted

Russian Federation	48 675	123 041	2-stage PPS	2-stage PPS	Weighted microc.	Weighted microc.
Slovakia	1 300	10 250	quota	2-stage PPS	–	Weighted
Slovenia	1 028	7 000 f/	2-stage PPS	1-stage person	Weighted	Weighted
Ukraine	12 534	38 695	2-stage PPS	2-stage PPS	Weighted	Weighted

Source: Data from questionnaires submitted by selected countries.
Note: "Last microc." was the 1995 microcensus; "weighted microc." = weighted microcensus; "PR" = Population Register; "Weighted LFS = weights used in LFS; "Weighted demog." = weights used from demographic projections-post-stratification control data; "calibr." = calibration method; "Eq Pr." = equal probability. Hyphen (-) = data not applicable.
a/ The number of household that cooperated with the survey was 10,191. To achieve this result, the interviewer had to call as many as 17,243 addresses.
b/ Selected quarterly.
c/ Except for the self-representing cities, where selection was two-stage.
d/ This sample size was achieved only in 2000. In the previous year, sample size amounted to about 32,000 households.
e/ Quarterly number of selected dwellings. Each quarter, the same number of dwellings is selected.
f/ Quarterly figure.

48. While a common set of procedures is used in all surveys, the specific variables involved at each step and the sources of the data used vary from one survey to another. Nevertheless, certain variables tend to be important in practically all circumstances, such as geographical location of the household, household size and composition, and distribution of the population by age, sex and other basic characteristics (Verma, 1995).

Estimation of standard errors

49. The majority of countries apply complex sample designs for the HBS and the LFS and thus are required to incorporate these complex features into the calculation of sampling variance (Wolter, 1985). Analytical variance expressions are not available for estimating the sampling error of complicated estimates; therefore approximation methods are used. Countries have used the random group method (for example, Poland for the HBS until 2000, and for the LFS until 1999), the jackknife method (Hungary), the Taylor series method (Poland for the LFS since the fourth quarter of 1999), the balanced half-sample method (Poland for the HBS since 2001) and a customized analytical method (the Russian Federation). Some countries (Estonia, Latvia and Slovenia) rely on Software for the Statistical Analysis of Correlated Data (SUDAAN), the well-known software package used for calculating standard errors for complex designs.

Non-response rates in the HBS and the LFS

50. If we take HBS average non-response rates in some transition countries for the last four years, it is possible to identify the following three groups from the data in table XXV.3:

(a) High non-response group (above 40 per cent): Estonia (43.6 per cent), Poland (43.4 per cent), Bulgaria (41.7 per cent) and Hungary (40.0 per cent);

(b) Middle non-response group (above 20 and less than 30 per cent): Russian Federation (25.6 per cent), Ukraine (25.0 per cent), Latvia (24.5 per cent and Lithuania (22.2 per cent);

(c) Low non-response group (below 20 per cent): Croatia (19.0 per cent), Slovenia (18.5 per cent) and Romania (11.0 per cent).

51. As may be seen from tables XXV.3 and XXV.4, non-response rates for the HBS were much higher than those for the LFS in all countries. In addition, in some countries, there was clear evidence of an increase of the non-response rates over time in both types of surveys. For the LFS, some increase of the non-response rates may be observed in:

(a) Poland (4.5 per cent in 1992 compared with 22.1 per cent in 2000);

(b) Bulgaria (10.1 per cent in 1993 compared with 17.2 per cent in 2000);

(c) Czech Republic (16 per cent in 1993 compared with 24 per cent in 2000);

(d) Croatia (6.3 per cent in 1996 compared with 15.7 per cent in 2000);

(e) Romania (2.6 per cent in 1994 compared with 8.9 per cent in 2000);

(f) Slovenia (9.0 per cent in 1992 compared with 12.0 per cent in 2000).

52. The data in table XXV.4 indicate that non-response rates differed considerably across countries, which may be divided into three groups based on the level on non-response:

(a) High non-response rate group (above 15 per cent): Ukraine (28.8 per cent), the Czech Republic (21.5 per cent), Bulgaria (16.1 per cent), Croatia ((15.7 per cent) and Poland (15.4 per cent);

(b) Middle non-response rate group (from 10 to 15 per cent): Estonia (12.5 per cent), Slovenia (12.2 per cent), Hungary (11.2 per cent) and Latvia (10.4 per cent);

(c) Low non-response rate group (below 10 per cent): Lithuania (9.1 per cent), Romania (7.7 per cent), Slovakia (5.6 per cent) and Russian Federation (5.4 per cent).

Table XXV.3. Non-response rates in the HBS in some transition countries, 1992-2000

Country	Non-response rate in year								
	1992	1993	1994	1995	1996	1997	1998	1999	2000
	Percentage								
Bulgaria	..	33.0	34.2	35.6	37.9	49.0	41.1	39.7	37.0
Croatia	..	..	..	..	..	..	19.0	21.0	17.0
Czech Republic	Not reported								
Estonia	..	..	..	44.4	50.2	44.9	46.6	47.5	35.2
Hungary	..	36.7	40.4	32.6	43.3	40.6	40.9	39.6	39.0
Latvia	..	..	..	..	26.1	24.1	21.9	23.1	28.7
Lithuania	..	..	..	..	24.0	20.3	22.7	22.8	22.8
Poland	23.2	27.6	25.3	25.1	31.4	34.3	40.7	49.4	49.2
Romania	..	..	..	8.0	10.2	9.6	10.4	11.6	13.4
Russian Federation	10.4	10.5	5.9	11.5	31.4	47.5	25.0	13.9	16.0
Slovakia	Not reported								
Slovenia	..	24.6	22.1	28.0	34.6	19.5	18.4	17.6	18.6
Ukraine	..	..	..	..	..	..	..	24.2	25.7

Source: Special country questionnaires.
Note: Two dots (..) indicate data not available.

Table XXV.4. Non-response rate in LFS in some transition countries in 1992-2000

Country	Non-response rate in year								
	1992	1993	1994	1995	1996	1997	1998	1999	2000
	Percentage								
Bulgaria	..	10.1	8.8	8.5	11.0	14.4	16.7	16.2	17.2
Croatia	..	..	..	..	6.3	14.0	18.1	15.0	15.7
Czech Republic	..	16	16	18	20	19	21	22	24
Estonia	..	..	..	7.4	..	13.5	13.4	13.2	9.9
Hungary	..	10.3	8.1	11.4	13.6	14.3	12.2	8.9	9.2
Latvia	..	..	..	13.7	13.3	12.4	9.8	9.4	10.1
Lithuania	..	..	..	..	..	9.6	9.0	8.7	8.9
Poland	4.5	5.3	8.9	9.9	10.0	9.6	11.6	18.2	22.1
Romania	..	..	2.6	2.3	6.4	6.7	7.4	7.9	8.9
Russian Federation	4.6	6.8	5.9	4.5	5.5	5.8	5.8	5.3	4.5
Slovakia	..	..	6.2	5.9	5.1	5.0	5.6	5.9	5.7
Slovenia	9.0	7.9	9.8	9.7	10.0	12.5	12.4	11.7	12.0
Ukraine	..	..	..	..	..	..	..	29.2	28.3

Source: Special country questionnaires.
Note: Two dots (..) indicate data not available.

Costs of household surveys

53. In any sample survey, two important questions should be answered, namely:

(a) What is the total cost of the survey?

(b) What is the degree of precision of the main estimates?

54. It is not easy to assess costs of household surveys in transition countries. Some countries give only the total direct cost of data collection, including interviewing, travel, material cost and services connected with data collection, but excluding other cost components such as survey preparation, means of methodological imputation, data processing, report writing and report publication.

55. In spite of the crucial importance of budgeting, cost estimation is one of the least developed aspects of survey planning. One of the problems involved in cost estimation is the often burdensome nature of maintaining detailed cost records. Another is the difficulty of separating costs of joint endeavours, especially administrative and other indirect expenses. Nevertheless, the development and maintenance of a comprehensive cost reporting system can pay important dividends with respect to future planning and the ability to attract the necessary support of data programmes (United Nations, 1984).

56. In Poland (Kordos, Lednicki and Zyra, 2002), the direct cost of the HBS in 2000 was €4,567,000 of which €3,571,394 (78.2 per cent) were interviewing costs, €146,144 (3.2 per cent) were travel costs and €429,298 (9.4 per cent) were incentive costs. Given that in 2000, the sample size of surveyed households was 36,163, this means that the average cost per household was €126.*3*.

57. Similar calculations were carried out for the LFS in 2000. Total direct costs of the survey were €1,094,200: €878,642.6 (80.3 per cent) were for interviewing and €45,956.4 (4.2 per cent) were for travel. There was no incentive cost for the LFS. Taking into account that in 2000, nearly 80,000 households were interviewed, a single interview cost on average €13.7. Note that the cost of the HBS was about 10 times that of the LFS, owing primarily to the fact that the HBS is very time-consuming, involving several interviews of the same respondents, and the use of diaries and supporting documents. On the other hand, the LFS involves just one interview.

58. Hungary provided interesting data for the costs of the HBS and LFS in the year 2000 (Éltetö and Mihalyffy, 2002). Detailed assessments of the cost structure for the HBS and the LFS are given in tables XXV.5 and XXV.6. Expenditures on the LFS (€432,000) exceeded those on the HBS (€326,000). However, considering that in the LFS a household was called four times a year and no incentive was given to the cooperating households, the expenditures per household were considerably lower than those of the HBS (€27.5 per household for the HBS compared with €8.4 per household for the LFS. Tables XXV.5 and XXV.6 show the structure of the costs of the HBS and the LFS, both in absolute terms (€) and in percentages.

Table XXV.5. Cost structure of the HBS in Hungary in the year 2000

Cost component	Cost in	
	€	Percentage
Monthly diaries	148 650	45.6
End-of-year questionnaires	35 865	11.0
Call on non-responding households	4 345	1.3
Incentives to cooperating households	75 855	23.3
Premium to interviewers	18 585	5.7
Material costs	42 700	13.1
Total	**326 000**	**100.0**

Source: Éltetö and Mihalyffy (2002).

Table XXV. 6. Cost structure of the LFS in Hungary in the year 2000

Cost components	Cost in	
	€	Percentage
Calls on households	22 032	5.1
Household questionnaires	65 232	15.1
Activity questionnaires	212 110	49.1
Supplementary questionnaires	42 336	9.8
Premium to interviewers	33 695	7.8
Material costs	56 595	13.1
Total	**432 000**	**100.0**

Source: Éltetö and Mihalyffy (2002).

Design effects

59. As can be seen from the description of household surveys in some transition countries, nearly all household sample surveys are based on a multistage. This means that the calculation of design effects is needed for statistical analysis of data from these surveys (Kish and Frankel, 1974).

60. We present an example from the Russian Federation (Goskomstat, 2000, pp. 219-220), in which the sample size for the quarterly LFS was determined for each region of the Russian Federation separately. The sample size was determined for various levels of the true unemployment rate. The desired level of precision of the estimate was set at 1.5 per cent, at 5 per cent and at 8 per cent for the Russian Federation, for larger and middle regions, and for small regions, respectively. The design effect was calculated in accordance with the formula in equation (7) of chapter VI, and on the basis of sample survey data on employment and unemployment in 1998. The calculated design effects were in the 1.52 to 2.14 range. Design effects were calculated for several characteristics of the HBS and the LFS. Some of the design effects are given in the annex to this chapter.

7. Concluding remarks

61. In this chapter, we have presented different aspects of sample design and implementation of household sample surveys, focusing on the most important surveys: the HBS and the LFS. From this general review of household surveys, it is possible to draw some conclusions. Household sample surveys in transition countries were redesigned and harmonized according to the new requirements of the market economy and the recommendations of Eurostat (1995; 1996; 1997; 1998a), with some differences between countries related to previous experiences and current possibilities. Although progress has been evident in household survey development, a number of problems need further attention at the statistical office level, such as calculation and presentation of standard errors, assessment of cost components, and calculation and publication of design effects and their use in statistical analysis. In addition, there are specific problems affecting particular countries, such as low response rates and less-than-adequate sample size for domains. These are very important and serious problems related to the comparability of the

results between countries. It is the task of Eurostat to address these problems since they affect the integration and harmonization of household sample surveys conducted in various countries. The transition countries have their own plans for the further development of household surveys. One such plan entails utilization of results of the 2000 round of population and housing censuses. Their data offer opportunities for improving sampling frames, sample designs and estimation methods, mainly for small domains.

62. The several case studies of selected countries in transition provided below present a more detailed picture of the problems of the design, implementation and analysis of related to household surveys in these countries. The case studies are followed by a comprehensive list of references, which may be used to study different aspects of household surveys in transition countries.

B. Household sample surveys in transition countries: case studies

63. The case studies offered in the present section were prepared by authors from the following transition countries: Estonia, Hungary, Latvia, Lithuania, Poland and Slovenia. More comprehensive articles from eight countries in transition were published in *Statistics in Transition*, vol. 5, No. 4 (June 2002). The information on the main features of the HBS, the LFS and other household surveys in each country presented below serves as a supplement to the information provided in section A.

1. The Estonian Household Sample Survey [87]

Introduction

64. The Statistical Office of Estonia implemented two major household surveys in 1995: the Estonian Labour Force Survey (LFS) and the Estonian Household Budget Survey (HBS).

65. The HBS is a continuous survey; its results are published quarterly and annually. In 1999, the survey was redesigned under a World Bank project, its diaries were changed, and the sampling and weighting procedures were more closely aligned with the most recently available data. The description of the survey is given in Traat, Kukk and Sõstra (2000) and in more detail in Traat (1999).

66. The LFS had been was a one-time survey in 1995. The next version, in 1997, was conducted with changed methodology. After that, it was executed on a quarterly basis until 2000 when it became a continuous survey. The survey is described in Kurvits, Sõstra and Traat (2002) and in Statistical Office of Estonia (1999).

67. In addition, the Statistical Office of Estonia has conducted many other household- or population-based surveys. These correspond to a series of similar studies in other European

[87] Prepared by Imbi Traat, Institute of Mathematical Statistics, University of Tartu (e-mail: imbi@ut.ee).

countries, and the resulting information has been used for national and international comparisons. These include the Adult Education Survey 1997, the Time-use Survey 1999–2000, the Living Conditions Survey 1994 and 1999, and the Health Behaviour of the Estonian Adult Population 2000 (Kurvits, Sõstra and Traat, 2002).

68. The Estonian Household Budget and Labour Force Surveys are described briefly below.

Data content

69. The HBS is a diary-based survey. Each sampled household provides information on its food consumption and expenditure for one week, as well as on all other expenditure and income for one month. There is also a pre-interview concerning household composition and other background information, and a short post-interview about changes in the household composition.

70. The data-collection programme of the LFS has been more extensive than that for an ordinary labour-force survey, especially in 1995-1999 when retrospective information was collected. The respondent's labour-force status (employed, unemployed or inactive) was recorded for the time interval since the previous survey. The start and end dates and other relevant data were recorded for each status. The standard module of the labour-force surveys focuses on the reference week and asks the employed persons about occupation, usual and actual working time, the economic activity of the enterprise/organization, etc. Unemployed persons were asked about the steps taken to find a job, the continuity of job seeking, and the characteristics of the job they were looking for, etc.

Data collection

71. The Interviewers Department (established in 1994) of the Statistical Office of Estonia is responsible for data collection for a variety of surveys. The 15 county coordinators organize the work of 130 interviewers, spread throughout the nation. In rural areas, an interviewer conducts, on average, 10-15 interviews per survey in one month, and in urban areas about 15-20; but in reality, their workload varies, depending on the regional sample sizes. The interviewing work is a second job for approximately half of the interviewers. They are paid for completed interviews as well as for attempts to contact non-respondents.

72. Data entry and coding are carried out in the Statistical Office using the survey processing system called *Blaise*. The first logical check is included in the data entry program. Data processing and more complex checks are performed using the Statistical Analysis System (SAS) software in the case of the LFS and FoxPro in the case of the HBS.

73. The total cost of the HBS and the LFS in 2000 was €153,000 and €128,000, respectively. The interviewers' salary, transportation, and communication represented approximately 70 per cent of the total cost and data entry about 15 per cent.

Sample design

74. The target population of the HBS comprises all Estonian households, excluding institutes. The target population of the LFS comprises residents of Estonia aged 15-74 years.

75. The sampling frame for both surveys is the Population Register. The sampling units are persons and they are sampled systematically from the list of records in the Population Register. Strata (three for the HBS, four for the LFS) with different sampling rates are used to obtain better regional coverage.

76. In both surveys, auxiliary information from the frame is used. The frequency of the address in the frame determines the inclusion probability of that address. The sample is divided into two parts, handled by different rules: the address sample (the records with complete addresses) and the person sample (the records with unknown or incomplete addresses). Unknown or incomplete addresses exist in rural regions where the address is just the name of the village without any other information.

77. In the address sample, all households living at the sampled addresses are included in the sample. In the person sample, only households with selected persons are included in the sample. A proper household is traced within a county. About 15 per cent of the households are sampled via selected persons.

78. The sample design uses probability-proportional-to-size (PPS) sampling where the size is either the address frequency on the frame or the household size (learned from the household). For the HBS, this is the final sample. Its PPS inclusion probabilities are used in deriving estimators. For the LFS, this is a first-phase sample of households/addresses for which the number of working-age members, if not available from the Register, is determined with the help of local authorities. The aim of the second-phase sampling is to yield an equal-probability sample of households (and its members). All the households (addresses) with one working-age member and, by systematic sampling, half of the households with two working-age members, one third of the households with three working-age members, etc., are taken into the final sample.

79. The current HBS samples 820 households every month.

80. Since 2000, the households in LFS have been rotated according to a 2-2-2 rotation plan. The households are interviewed four times: during two consecutive quarters and, after a two-quarter hiatus, in the corresponding two quarters of the following year. According to this rotation plan, in any quarter, 25 per cent of the households are participating for the first time and 50 per cent are households that were interviewed in the preceding quarter. In this way, there is a 50 per cent overlap between neighbouring quarters and also between the same quarters of neighbouring years.

Non-response

81. In diary-based surveys, the increased response burden tends to lead to higher non-response rates (see sect. A of the chapter).

82. In general, "refusals" represent about 50 per cent of total non-response and "not at homes" about 25 per cent.

83. The non-response rate in the LFS has always been much smaller than in the HBS. Furthermore, the refusal rate has been increasing owing to the time limits for the fieldwork as a result of the transition to the continuous survey approach. In addition, the inclusion of households four times in the LFS has led to increased non-response rates.

Weighting

84. Weighting is used in both the HBS and the LFS. In the HBS, the weights are calculated for households; in the LFS, for persons.

85. In the HBS, response rates and income/expenditure levels determine the six weighting groups. The initial sampling weights are multiplied by the inverses of group response rates. Response weights are then calibrated by sex/age distributions (five classes) based on known demographic statistics.

86. In the LFS, the weights are formulated in a sequence of steps (Verma, 1995). The initial weight of a respondent is the size of the target population (persons between ages 15 and 74) divided by the number of respondents calculated within each of four strata. Then six regional weighting groups of reasonably uniform size with different response rates R_j are formed. Within each group, the correction factor of the weight of an individual respondent is $w_j^{(0)} = \overline{R} / R_j$, where $\overline{R}$ is the overall (average) response rate. After that, the raking-ratio method with five iterations is used to calibrate the sample distributions to population benchmarks using sex, age (five-year groups) and place of residence (15 counties and the capital city).

Parameters and estimators

87. Most of the parameters estimated in the HBS and the LFS are totals and ratios. The weighted Horvitz-Thompson estimators or their ratios are used.

88. The variance estimates are calculated using SUDAAN. Since the software does not handle the exact design of the LFS and the HBS, the closest available design in SUDAAN – stratified with-replacement unequal-probability cluster sampling, with households as clusters, is used. Owing to the assumption of with-replacement sampling, the estimates slightly overestimate the true variances.

Future developments

89. The 2000 Population Census provides a wealth of information about Estonian households and individuals. The weighting system of the HBS and the LFS will be reviewed in light of these available census data which reflect the demographic situation in Estonia more precisely than the data used earlier.

90. Efforts will also be made to improve other survey phases. For example, in 2002 a new data-collection method -- computer-assisted telephone interviewing (CATI) with 10 laptops -- was tested for the LFS. There will be a trial run of face-to-face interviewing at first contact and telephone interviewing for the three subsequent interviews.

2. Design and implementation of the Household Budget Survey and the Labour Force Survey in Hungary[88]

Household Budget Survey

91. The HBS has a long tradition in Hungary. It began in the 1950s, based first on quota samples. It then used probability-based design as part of the Unified System of Household Surveys (USHS) in the mid-1970s. The sampling frame has always consisted of census enumeration districts (EDs), updated after every decennial census, most recently in 2002. Between 1976 and 1982, the HBS had been a continuous survey; between 1983 and 1991, it was carried out biennially; and since 1993, it has again been a continuous survey.

92. The sample of the HBS is selected in three stages, except for the self-representing cities, that is to say, cities with 7,000 or more dwellings, where the selection process consists of only two stages. In the case of non self-representing localities, the primary sampling units (PSUs) are the localities, the secondary units (SSUs) are EDs and the ultimate sampling units are the dwellings. In self-representing cities, the EDs are the PSUs.

93. Localities are stratified by size, resulting in eight strata, and also by county. The sample is, generally, not proportionately allocated to strata. The sampling rate is lower in smaller localities than in larger cities, especially Budapest. The annual sample size is distributed evenly over the months.

94. A household consenting to participate in the survey is asked to report its income and expenditures daily over a period of one month. During this period, interviewers collect additional data about the household such as age and occupational structure of the household, type, size and equipment of the dwelling, stock of consumer durables, etc. In addition, at the beginning of the following year, the interviewer again calls the household to ask the members about less frequent expenditures of high value during the whole year and certain types of annual income.

[88] Prepared by Ödön Éltetö and László Mihalyffy, Central Statistical Office, P.O. Box 51, H-1525 Budapest, Hungary.

95. The fact that, biennially, the interviewers call every household in their EDs to collect demographic and economic data, such as size of household, age, educational level, and economic activity of the head, constitutes an important aspect of the HBS. These data are used primarily for substitution purposes: owing to the rather high non-response rate, the use of substitute households (two in the larger cities and one elsewhere) is allowed. The substitute household is selected from the same stratum as the originally selected household and from the same ED assigned to the original interviewer.

96. Every year, the rotation of one third of the households is such that the sample size within each ED remains constant (six dwellings). Because non-responding households may be substituted, the actual number of households cooperating in the survey can be greater or fewer than the initial six. Thus, the rate of rotation in a given ED can be higher or lower than one third. A household that has participated in the survey for three consecutive years is rotated out permanently.

97. In 2000, the HBS sample covered nearly 1,980 EDs from 262 localities, and the number of initially selected households was 11,862.

98. As interviewers often encounter refusal or other types of non-response at the substitute addresses, too, the number of final interviews is smaller than the planned sample size. For example, in 2000, instead of the 11,862 (1,977 x 6) households, only 10,191 completed the survey; and to achieve this result, the interviewers had to call as many as 17,243 addresses. Non-response rates had increased after 1993, reaching 43.3 per cent in 1996, then decreased slightly. In 2000, the total non-response rate was 39 per cent with refusals accounting for nearly 27 per cent, and vacant dwellings, not-at-homes, invalid addresses and other factors accounting for the remainder. Given the problem of non-response, achieving the planned sample size is particularly difficult in the capital and in some large cities. Although until the end of 2002 cooperating households had received a monetary incentive for supplying their data, the amount was not large enough to motivate many households to cooperate with the survey and this incentive programme was terminated. However, a favourable change took place in the system of remuneration of the interviewers, inspiring them to increase their efforts to persuade households to cooperate in the survey. Overall, the refusal rate decreased from 34.4 per cent in 1996 to 26.9 per cent in 2000.

99. The design of the HBS sample ensures the conditions needed to make use of the familiar Horvitz-Thompson estimator. Totals are weighted sums of the observations, and the design weights are reciprocals of the inclusion probabilities. In each of the 98 design strata of the HBS sample, the design weight is unique, and is defined as the ratio of the number of non-vacant dwellings of the stratum in the population to the number of completed interviews. Because of the unit non-response, and also possible coverage deficiencies, the design weights are not suitable for computing the HBS data, hence calibrated weights should be used. In the course of the calibration process, the design weights are adjusted using the following auxiliary variables:

- Age-sex group (2 × 4 categories)
- Economic activity (9 categories)

- Level of education (3 categories)
- Household type (3 categories)

100. In the case of quarterly data, calibration is carried out for three major areas: the capital city, cities with county rights and the rest of the country. For annual data, the area breakdown for calibration is more detailed. The seven regions of the country -- Nomenclature des Unités Territoriales Statistiques (NUTS) II-level regions in terms of Eurostat -- are also considered.

101. The calibrated weights of the HBS are computed using the generalized raking ratio weighting procedure.

102. Sampling error estimates for detailed income and expenditure items obtained from the HBS data are regularly computed and published. The computations are carried out using the stratified jackknife option of the VPLX software developed by R. E. Fay. In future applications, the use of the bootstrap method is envisaged, in particular in the case of estimated quantiles.

103. The HBS is one of the most costly surveys of the Central Statistical Office (CSO). In 2000, the direct expenditures on the survey - excluding salaries of the personnel in the central and county offices of the CSO - namely, remuneration of the interviewers, incentives for cooperating households and material costs, amounted to 84,769,000 Hungarian fortint (Ft), corresponding roughly to €326,000.

104. The design effect in 2000 was about 2 for net available income, 2.5 for food expenditures, and 2 for total personal expenditures.

105. The results of the survey are published yearly in bilingual form (Hungarian and English) with a short analysis of the data. The last publication containing the 2001 HBS data appeared in 2002 under the title *Household Budget Survey: 2001 Annual Report* (CSO, Budapest, 2002). The publication is also available on CD Rom.

Labour Force Survey

106. The LFS is a new household survey introduced by the CSO in 1992. Its sample was selected in 1991 using the 1990 census as a frame. Self-representing cities were defined as those with 15,000 or more inhabitants. The initial sample for a quarter consisted of 9,960 EDs in 670 localities with 3 addresses from each ED, resulting in a quarter sample of 9,960 x 3 = 29,200 addresses.

107. In the second half of the 1990s, the demand for more detailed and reliable regional LFS data emerged, and the sample size was increased 40 per cent. The number of localities covered by the sample, especially the number of EDs, was also increased. In 2000, the sample contained 12,829 EDs from 754 localities and thus nearly 36,500 households were called quarterly. More details about the enlarged sample can be found in Éltetö (2000).

108. Currently, data collection takes place each month, with the week containing the twelfth day of the month as the reference period, and the next week as the period for collecting the data. LFS data are collected mainly via face-to-face interviews using traditional paper questionnaires, although there are plans to increasingly use telephone interviews, especially for repeated interviews. At the sample addresses, all individuals aged 15-74 are eligible for the LFS and are interviewed.

109. According to the rotation system applied in the LFS, selected households remain in the sample through six consecutive quarters, then leave. That means that in each quarter one sixth of the sample is rotated out.

110. The design weights of the LFS sample are computed in the same way as in the HBS. The final weights of the LFS sample are also determined using the raking ratio approach. In the calibration of the LFS sample weights, the following auxiliary variables are used in the 19 counties as well as in the capital city:

- Age-sex (2×10 categories)
- Residence in cities with county rights or elsewhere (2 categories)

111. Sampling errors for the LFS quarterly data in the "Main table" are run under the stratified jackknife model using VPLX software. Sampling errors for monthly data are also calculated but not published. In terms of sampling error, the LFS complies with the precision requirements of Eurostat as stated in Council Regulation (EC) No. 577/98 of 9 March 1998.

112. Non-response rates in the LFS - especially rates of refusals - are much lower than those in the HBS. From the beginning to 1997, a slight increase in the non-response rates had been reaching a maximum of 14.3 per cent. After 1997, the total non-response rate declined, reaching 9.2 per cent in 2000. Refusal rates also increased at first, reaching 7 per cent in 1996 and 1997, then decreased, reaching 3.2 per cent in 2000.

113. The LFS is an expensive operation. Direct expenditures on the survey in year 2000 were Ft 109,802,000 corresponding to €422,000. However, considering that a household is called four times a year and no incentive is given to the cooperating households, the expenditures per household are considerably lower than those in the HBS.

114. Mainly because the LFS sample contains many more PSUs than does the HBS, the design effect is considerably lower. In 2001, the design effect for total unemployment rate was 1.4, while for the female participation rate, the design effect was 0.8.

115. The LFS is supplemented by a module focusing on topics such as the situation of working women, questions concerning mothers on childcare leave, etc. These modules are included, on average, for three of the four quarters. One of the three modules, generally that for the second quarter of the year, covers the theme recommended by Eurostat for that year. Both the basic LFS questionnaires and those for the Eurostat modules contain all the information required by Eurostat.

116. Both quarterly and annual data of the LFS are published in bilingual bulletins.

117. It can be concluded that both the HBS and the LFS are very important household surveys of the Hungarian CSO. HBS data are used not only to calculate weights for the consumer price index, but also to estimate the consumption of households within the national account computations for producing the quarterly and yearly gross domestic product (GDP) values. In addition, its data are of vital importance for research areas such as the living conditions of various social strata, expenditure patterns of various types of households and changes in them, consumer demand for different types of commodities, etc. It must be mentioned, furthermore, that in order to enhance compliance with Eurostat requirements, 2001 expenditures have been grouped according to the Classification of Individual Consumption According to Purpose (COICOP) system (United Nations, 2000, part three).

118. Though information on the number of registered unemployed persons is available from other sources, LFS data differ from those both in concept and in detail. The information on the actual situation and changes in the labour market provided by the LFS is indispensable for both central and local governments as well as for researchers. The official unemployment rate based on LFS data is one of the most important economical indicators.

3. Design and implementation of household surveys in Latvia[89]

Latvian Household Budget Survey

119. The Household Budget Survey (HBS) is a continuous survey which has been carried out since 1995. The survey was redesigned in May 2001.

120. The HBS was introduced with the technical assistance of the World Bank in September 1995. It had already been in the preparatory phase when a requirement was established that the results should conform to Eurostat requirements.

Scope of survey

121. The target population of the HBS is all private households in Latvia. Persons living in institutional households (homes for the elderly, homes for disabled children, student hostels, hotels, barracks, hospitals, sanatoriums, penal institutions, etc.) and homeless people are excluded from the current survey.

Sampling

122. The sample represents the whole population as well as its most typical groups. Every month, 342 households are surveyed. Each household included in the sample is surveyed only once.

[89] Prepared by Janis Lapins, Statistics Department, Bank of Latvia; Edmunds Vaskis, Zaiga Priede, Central Statistical Bureau of Latvia; and Signe Balina, University of Latvia, Riga.

123. Stratified two-stage probability sampling is applied. Households are stratified by the degree of urbanization and by geographical allocation. The sample allocation between strata is made proportional to the population sizes within strata. In urban areas the population register has been chosen as the sampling frame, while in rural areas, lists of households have been used.

124. Six administrative districts of Riga, the capital city, together with the six major cities, form 12 self-representing strata. All other towns are used as the PSUs in the remaining urban areas, which are distributed among 10 strata defined by combining 5 regions and 2 size groups. At the first stage of sampling, PSUs are selected within each stratum with probabilities proportional to the total number of inhabitants. At the second stage, persons aged 15 years or over are selected by simple random sampling.

125. In rural areas, households are distributed among five strata or geographical regions. As a rule, *pagasts* (civil parishes; the smallest administrative rural territories) are used as PSUs; some of the small *pagasts* are added to a neighbouring territory. Within each stratum, PSUs are selected with probabilities proportional to the number of households. At the second stage, households are selected using simple random sampling.

Cost of the survey

126. The HBS is one of the most expensive statistical exercises. For the 2001 HBS, the survey cost per household was 24 Latvian lats (LVL) (approximately 40 US dollars). The main expenditure items are related to fieldwork. The compensation of interviewers reached 44 per cent of the total costs of the survey, followed by incentives to respondents (16 per cent), supervisors' salaries (14 per cent) and transportation costs (8 per cent).

Sampling error

127. In the HBS, the variances of selected estimates for the main domains of interest (capital city and six major cities, other towns and rural areas) are estimated using SUDAAN. On the basis of these estimates, the variances and design effects are estimated at the country level.

Non-response

128. The total level of non-response was 26.1 per cent in 2000. The main reasons for non-response were refusals, including those from the households that stopped participation during the survey month (46.0 per cent of all non-response cases), followed by “not at home (31.8 per cent) and “not able to participate due to illness or being too old” (11.6 per cent). The non-response level was much higher in urban areas (31.9 per cent) than in rural areas (12.2 per cent).

129. Households that refuse to participate in the survey, or do not respond to the questions of the survey, as well as households that are not found at the given address, may have an impact on the precision of the acquired results which should not be neglected. In order to keep an effective sample size at the chosen level, the sequential sampling approach was applied. A refusing or non-responding household was replaced by another from the reserve list and surveyed.

Redesign of the HBS in 2001-2002

130. The most recent redesign of the HBS sample was done on the basis of the population census, which was carried out in spring 2000. Survey instruments were significantly changed and the unified retrospective reference period of 12 months was introduced for durable goods, rarely made purchases and payments, seasonal income from paid work, and revenues from and expenditures in cash for agricultural production in the household. The previous HBS was terminated at the end of 2000.

131. Starting in January 2002, the samples of two surveys, the HBS and the LFS, were coordinated. For both surveys, the annual household sample is evenly distributed over time (the same number of households participates in the survey within each of the 52 weeks of the year). The sample of PSUs is also evenly distributed over territories within each quarter.

132. For the new HBS and the continuous LFS, the same interviewer network is used. Separate interviewer networks were used in the old HBS and LFS. Moreover, interviewers in rural areas are recruited from the local population. Under the new design, the interviewers are mobile and can work in different administrative territories. This allows for a distribution of the sample more widely over rural territories. (In the new HBS, the annual sample is spread over 208 different rural PSUs.) At the same time, the workload of interviewers is now more evenly distributed, and transportation is handled more economically. The reorganized interviewer structure of the Central Statistical Bureau (CSB) was instituted in January 2002.

Latvian Labour Force Survey

133. During the period 1995-2001, the Latvian Labour Force Survey had been carried out biannually, in May and November. The redesigned continuous LFS was implemented in January 2002.

134. The Latvian LFS was prepared in accordance with the internationally approved labour-force survey methodology of the International Labour Organization (ILO) which ensures comparability of information with other countries (Eurostat, 1998a; 1998b).

Scope of survey

135. The LFS survey population consists of all Latvian residents aged 15 years or over who reside in private households. Persons living in institutions such as homes for the elderly, homes for disabled children, hotels, barracks, hospitals, sanatoriums, penal institutions, etc., as well as homeless people, are excluded from the survey.

136. To follow the recommendations of Eurostat and to reduce the costs of the survey, all individuals of this age group who live in the same household with the sampled persons are also surveyed. The national sample size for one survey wave equals 7,940 households.

137. All questions in the survey refer to the calendar week (Monday to Sunday) before the day of the interview. Normally data are collected by means of face-to-face interviews using paper

and pencil. If a respondent does not want to open the door, he or she is asked to give an interview by phone.

Sampling

138. The sample for urban areas is drawn from the population register. The sample for rural areas is based on complete household lists. Since 1998, the rural sample has been based on the household register developed at the Central Statistical Bureau of Latvia.

139. The LFS covers 7 cities, 32 towns and all *pagasts*. In each survey wave, almost 16,000 persons are surveyed. For the construction of the sample, the procedure of one-stage sampling (in cities and rural areas) or two-stage sampling (in towns) is applied with stratification based on the administrative territorial division of the country. In urban areas, a simple random sample of persons aged 15 years or over is selected within each selected PSU. In rural areas, a simple random sample of households is selected within each *pagast*.

140. According to the rotation scheme for the sample of the LFS, persons from each household are included in the survey three times. Within each wave of the survey, the sample replacement rate is one third of the households in every city, town or *pagast*.

Non-response

141. The total rate of non-response reached 10.1 per cent in 2000. The non-response rate in rural areas (only 8.5 per cent) was lower than in urban areas (11.4 per cent). The percentage of refusals in rural areas was particularly small, only about 0.5 per cent. Proxy interviews have been used as a method to increase the response rate. Approximately one third of the interviews were conducted using proxy respondents.

Frame imperfections

142. Not all of the sampled persons were living at the address indicated in the register as their dwelling unit. Since tracking down and surveying these persons at the actual dwelling unit are costly, time consuming, and sometimes practically impossible, the interviewers have to survey households actually living at the sampled addresses. The analysis of non-participation cases showed that only 2.0 per cent of all non-participation cases (2.3 per cent in rural areas) were identified as being related to some frame imperfections (empty dwelling, demolished house, non-existent address, etc.).

Redesign of the LFS in 2001-2002

143. The questionnaire for the LFS was redesigned in 2001 in full compliance with the requirements of the European Union (EU). The LFS is now carried out as a continuous survey.

144. Since January 2002, significant changes in the sample design for the LFS have also been introduced. For the LFS and the HBS, the same interviewer network is used. As a result, starting in January 2002, the samples of both surveys - the HBS and the LFS - were coordinated. It is

expected that the coordination of samples of the two main household surveys, the HBS and the LFS, will promote more effective use of survey resources.

145. Training of the interviewers took place in December 2001. The continuous LFS started in January 2002.

Other household surveys

146. The Living Conditions Survey (LCS) was launched in 1994 and 1999 within the framework of the NORBALT project that was financed by the Norwegian Government, and in close cooperation with the Fafo Institute (Institute for Applied Social Science, Oslo).

147. Several other household surveys were initiated in the second half of the 1990s, inter alia, the Family and Fertility Survey (1995), the Time-use Survey (1996), the Consumer Confidence Survey (1993-1999), the Survey of Energy Consumption by Households (1996), the Domestic Tourism Survey (1998), the Survey on the Use of Personal Computers in Households (1998), the Special Poverty Module Survey (1998) and the Survey of Attitudes to Suicide Problems (1999), etc.

148. Since 1996, the Traveller Border Survey has been conducted three or four times per year. Both traveller flows, that of the Latvian residents returning from abroad and that of the foreign travellers leaving Latvia, are surveyed.

149. As a rule, the results of the surveys are published in both Latvian and English and are available in printed and electronic form. For research purposes, the CBS has ensured access to the anonymous microdata files for data users in Latvia and abroad.

Some concluding remarks

150. We expect that the development of the new highly professional and mobile interviewer service will make planning and execution of the new sample surveys and different ad hoc surveys more flexible.

151. The CSB is also planning to introduce modern data collection methodologies. One of the first steps will be to implement computer-assisted personal interview (CAPI) technology within the next few years.

4. Household sample surveys in Lithuania[90]

Introduction

152. The Household Budget Survey (HBS) was the first sample survey conducted in Lithuania. It was conducted for the first time over a 12-month period in 1936-1937. The HBS

[90] Prepared by Danute Krapavickaite, Institute of Mathematics and Informatics, 4 Akademijos str., LT 2600 Vilnius and Lithuanian Department of Statistics, 29 Gedimino Avenue, 2746 Vilnius.

was the only regular sample survey used to produce statistics for Lithuania's planned economy. After Lithuania achieved independence in 1990, the national economy turned towards a market economy. A new questionnaire had to be introduced in order to collect more data, a new sample design was needed to cover the private sector, and published results had to redesigned to provide users with data comparable with results of other countries. The main redesign of the HBS was done with the help of World Bank experts in 1996, as described in Šniukštiene, Vanagaite and Binkauskiene (1996). The sample design and estimation method remain unchanged.

153. The other regular household survey is the Labour Force Survey (LFS), which was started in 1994. The population register was modernized in 1996. Since then, it has been used for sample selection as a sampling frame for most household surveys, including the LFS.

154. Other household surveys, mainly one-time events, covered topics such as living conditions (1997), time-use (1998), the elderly (1999), household energy consumption (1997), accessibility of health-care service (1998) and providing households with computers (2000).

Estimates and errors in the Labour Force Survey

Sample design

155. The population of the LFS consists of residents of Lithuania aged 15 years or over. The sample is constructed as follows: having selected a simple random sample of approximately 3,000 persons from the population register, the members of their households are added to the sample, even if they are not on the register. The proportion of respondents who are women has been 52.5 per cent.

Sample rotation

156. In order to avoid major changes in the survey results from one survey to another, only one third of the sample is rotated for each survey. Each selected household participates in two surveys, rotates out for one survey, completes one more survey, and rotates out of the system.

Estimates and their precision

157. The distribution of the survey respondents by urban/rural areas, age and sex differs slightly from the corresponding distributions based on census data. Post-stratification of the sample was processed by 12 age groups, 2 sex groups and 10 counties, for a total of 240 weighting groups.

158. Different weighting systems are used for the estimation of employed and unemployed persons. In order to improve the accuracy of estimates of the unemployed, the indices of the labour exchange are also used for the post-stratification. Variance estimation is described in Krapavickaitë, Klimavicius and Plikusas (1997) for fixed size sample design.

Survey cost

159. The cost of one survey is about 70,000 Lithuania litai.[91] Printing the questionnaires and delivering them to the respondents represent 14 per cent of the total cost and the remaining 86 per cent covers payment of interviewers, transport expenses of the interviewers, and costs of post office delivery of the completed questionnaires to Vilnius. Expenses connected with the methodological work associated with sample design and questionnaire preparation, sample selection, data entry, editing and processing are not included.

Household budget survey

Sample design

160. The HBS is carried out continuously. The sample is drawn once a year, divided into 12 parts and distributed for each month. Each household participates in the survey for one month. The population of private households in Lithuania is divided into three strata, according to the type of residence. A simple random sample of 4,476 persons aged 16 years or over is selected from the population register in the largest cities: Vilnius, Kaunas, Klaipėda, Šiauliai and Panevėžys. A random sample of 20 clusters with probabilities proportional to their size is drawn from all 140 such clusters in small towns, and a random sample of 33 clusters with probabilities proportional to their size is drawn from the population of 463 clusters at the first stage. A simple random sample of persons is drawn from each selected cluster. All persons residing in the selected households are surveyed. In case there are several households at the same address selected, the household of the person with the closest birthday is included in the sample.

Estimates and their precision

161. Design weights are used for HBS estimation. The design effects of the estimates are larger than one. This suggests that auxiliary information should be used in future to obtain more accurate estimates.

Survey cost

162. The total yearly cost of the survey is approximately 900,000 litai broken down as follows: 61 per cent, payment to interviewers; 18 per cent, taxes; 14 per cent, payment to households; 5 per cent, transportation; and 2 per cent, other expenses.

Dissemination of the results

163. The results of the surveys are published by Statistics Lithuania. The main results are published in the monthly journal *Economic and Social Development in Lithuania*. All results are published in special issues dedicated to topics such as the labour force, employment and unemployment (survey data), and household income and expenditure.

Concluding remarks

[91] Exchange rate (2000 US dollars): 1 US dollar = 4 litai.

164. Provisional results of the Population and Housing Census 2001 estimate the total Lithuanian population to be 3,491,000 usual residents. This figure is 202,000 persons less than that derived from demographic data published on 1 January 2001. After finalizing Census results, Statistics Lithuania will have more reliable demographic data as a basis for improving future household surveys. It is expected that the systematic error will be reduced in those surveys.

5. Household surveys in Poland in the transition period[92]

Introduction

165. Household surveys in Poland have a relatively long tradition [Glowny Urzad Statystyczny (Central Statistical Office of Poland, (GUS)], 1987, 1998a, 1999; Kordos, 1985, 1996; Lednicki, 1982). In the 1980s, the so-called Integrated System of Household Surveys (ISHS) was gradually implemented. It was launched in 1982 and completed in 1992 (GUS, 1987; Kordos, 1985).

166. The most important component of the ISHS was the household budget survey (HBS), which was based on two-phase sampling, quarterly rotation of households within a year, and one-third rotation of households in the three following years. This means that two thirds of households were included in the panel for four consecutive years. There was also a four-year cycle of the survey of subsamples. This survey programme was discontinued in 1992. At the same time, that is to say, during the period 1983-1992, subsamples selected for the HBS were used for over 30 social surveys employing topical modules.

167. The attempts to integrate household surveys conducted in the 1980s facilitated considerably the adjustment of household surveys to the European standards (GUS,1997). Further integration and improvement of the methodology of household surveys are needed (Kordos, 1998).

Household surveys in the transition period

168. The surveys were considerably extended and modified after 1990. The HBS is still being improved, and in 1992 for the first time a new LFS was introduced. Also, other new household surveys were launched including a survey on living conditions, a survey on the health status of households, a time-use survey, a population microcensus, and a variety of post-enumeration surveys.

The Household Budget Survey

169. The household budget surveys have a tradition that started almost 45 years ago (GUS, 1999; Kordos, 1996; Lednicki, 1982). Various survey methods were experimented with and attempts were made to improve execution. At the beginning of the 1990s, the survey

[92] Prepared by Jan Kordos, Warsaw School of Economics; and Bronislaw Lednicki and Malgorzata Zyra, Central Statistical Office, Al. Niepodleglosci 208, 00-925 Warsaw.

methodology was changed. In the new method of conducting the HBS introduced in 1992, the classification of incomes and expenditure, as well as the classification of socio-economic types of the survey, was changed. For the first time all types of individual households in Poland encompassing about 32,000 households, were included in the survey. In 1997, efforts were made to improve the integration of household surveys.[93] In 2000, the redesign of the HBS was implemented and some methodological components were changed (Kordos, Lednicki and Zyra, 2002). Further improvement of the HBS and its integration with other household surveys are planned, much of this work being motivated by the Eurostat recommendations (Eurostat, 1997).

The Labour Force Survey

170. The survey on the economic activity of the population was implemented in Poland for the first time in May 1992 and was repeated on a quarterly basis until the third quarter of 1999 (Szarkowski and Witkowski, 1994). It was prepared according to the ILO recommendations. In each quarter, about 24,000 households and persons aged 15 years or over who were members of those households were surveyed. Occasionally, modules on selected social topics were included in the survey, extending considerably the opportunity for social and economic analyses as well as the range of published results.

171. The survey results are published quarterly. Redesign of the LFS took place in 1999 to adjust the survey to the new administrative division of the country and to improve its efficiency according to Eurostat requirements (Eurostat, 1998b; Verma, 1995).

The 1995 Microcensus of Population and Housing

172. Several ad hoc household surveys were conducted in the last decade, the largest of which was the 1995 Microcensus. In May 1995, a large-scale sample survey (microcensus) of the population and housing was conducted (Bracha, 1996; GUS, 1998a). This survey was the third microcensus, two previous ones having been conducted in 1974 and 1984. It should be added that the censuses provide an opportunity to capture data on the disabled, migration and other social science topics.

173. The 1995 Microcensus covered 5 per cent of the population, that is to say, nearly 600,000 households. The complete Census of Population and Housing was conducted in May and June 2002; the previous one had taken place in 1988.

Surveys of living conditions

174. Besides the HBS, starting in 1997, the decision was taken to conduct a multi-aspect survey of the living conditions of the population (Kordos, Lednicki and Zyra; 2002). The survey was carefully prepared in cooperation with experts from the French National Institute for

[93] See internal regularion No. 20 of the President of the Central Statistical Office of 30 October 1997 on the establishment of the Working Group for the Improvement of the Methodology and Integration of Household Surveys.

Statistics and Economic Studies [Institut national de la statistique et des études économiques (INSEE)] and conducted on a large sample for the first time in mid-1997. The survey was repeated on a smaller scale each year using panel subsamples and on a larger scale every few years.

175. In total, 12,524 households took part in the survey and the response rate in the case of households was 87 per cent, and for adult persons, 86 per cent. In mid-1998 the survey was repeated on a smaller scale.

176. The sample for 1999 consisted of two subsamples: the subsample selected in 1998 (panel) and a new subsample, the size of which was equal to the 1998 panel subsample. In this way, in each year there were a panel subsample and a new subsample selected from the updated sampling frame.

177. A new large-scale survey on living conditions was conducted in 2001, whose sample size was about 24,000 households, with 18,052 respondents and a non-response rate of 25 per cent. The survey is to be continued until the introduction of a new Income and Living Conditions Survey (EU-SILC), prepared according to the Eurostat programme (Eurostat, 2001), in 2005.

Population health status survey

178. This survey was conducted in April 1996, covering 192,000 households. The response rate was 88.6 per cent. This was the first survey of the health status of the population in Poland conducted on such a large scale.

179. The health survey of the population was based on the World Health Organization (WHO) recommendations which allow comparison of the results with other European countries, especially the EU member States and the countries of the Economic Commission for Europe (ECE) region.

Time-use survey

180. GUS conducted time-use surveys in 1969, 1976 and 1984 (Kordos, 1988b). In 1996, GUS carried out a small-scale time-use survey with a sample of 1,000 households including persons aged 10 years or over. One objective of the survey, among others, was to verify the applicability of the methodology proposed by Eurostat (GUS, 1998b). A large-scale time-use survey is to be conducted in 2004.

Common methodological aspects of household surveys

Sampling frames

181. Population censuses are the basis for sampling frames used by household surveys in Poland. Primary sampling units (PSUs) are constructed using enumeration statistical districts (ESDs) or census enumeration areas (CEAs) usually adjusted to the specific demands of a survey. Dwellings usually serve as secondary sampling units (SSUs). Dwellings in ESDs or in

CEAs are updated on an annual basis and the updating involves an increase of the dwelling stock due to the completion of new buildings, a decrease of the dwelling stock due to the demolition, and changes in the boundaries of districts due to the changes in the administrative division of the country. For each district, the sampling frame contains information on the addresses and estimates of the number of members of the population and the number of dwellings (GUS, 1998a).

182. For sample selection of the HBS and the LFS, it was necessary to merge neighbouring ESDs or CEAs to satisfy the minimum required size for each PSUs. For example, 29,172 PSUs were constructed for the HBS from 33,023 ESDs (from urban areas, PSUs had at least 250 dwellings, and from rural areas, 150 dwellings).

The household survey sample designs

183. Usually in each household survey, two-stage sample selection is used and PSUs are selected with probability proportional to size (PPS). Stratification is based on region (voivodship), urban/rural areas and, in some cases, size of locality. For continuous surveys, such as the HBS and the LFS, a different rotation pattern has been used, and final results are weighted to minimize the impact of non-response.

Sample designs for the HBS

184. Different sample designs for HBS were applied over the last 45 years (GUS,1999; Kordos, 1996; Lednicki, 1982). Here, we discuss the most recent HBS sample design, which has been in place since 2000. For the period 1992-2000, sample designs are described in detail in Kordos, Lednicki and Zyra (2002).

185. Since 2001, two subsamples of 675 PSUs have been selected from a total of 29,172 PSUs. PSUs are stratified by 16 voivodships, and in each voivodship, according to the class of size of localities. Large towns constitute separate strata. The number of strata in each voivodship ranges from 3 to 12. Altogether there are 96 strata. Allocation of the sample to strata is proportional to the total population of dwellings in each stratum. PSUs are selected with probability proportional to the number of dwellings according to the Hartley-Rao scheme. In each PSU, 24 dwellings are selected for two years (2 dwellings for each month, and the same dwellings are surveyed in both years). Additionally, in each PSU, 150 dwellings are selected independently as a reserve subsample, to be used in the case of non-response. Each year, a new subsample of 675 PSUs will be selected for two years.

Weighting for HBS

186. Non-response rates in HBS are usually high, and they affect considerably the socio-economic structure of households in the sample. To minimize this impact, the sample results are weighted.

187. First, each household in the sample is weighted in inverse proportion to the probability with which it was selected. Weights from external sources are used. For the HBS, additional

appropriate weights from the LFS (for size of households, and urban and rural proportions of the population) are applied.

Method of standard error estimation

188. The random group method of standard error estimation was used until 2000. Since 2001, a method of balanced half-samples has been used.

Sample design for LFS and its redesign in 1999

189. A sample for the LFS was selected in two stages with stratification. The PSUs were CEAs in towns; in rural areas, PSUs were ESDs. (In some cases, sampling units were created by collapsing two or more adjacent CEAs or ESDs, in order to achieve prespecified minimum size requirements.) Dwellings served as the second-stage sampling units (Szarkowski and Witkowski, 1994).

Redesign of the survey in 1999

190. Since the fourth quarter of 1999, the LFS has been carried out as a continuous survey. PSUs and SSUs were selected in the same way as in the previous survey, but sample allocation by 16 voivodships was changed. To achieve greater precision of estimates by voivodship, the size of the sample in a voivodship was allocated nearly proportional to the square root of the number of dwellings in the voivodship. The sizes of the strata created within voivodships were proportional to the sizes of localities.

191. PSUs within strata were selected with probability proportional to the number of dwellings in a PSU. Then, a determined number of dwellings (from four to nine) were selected from each PSU. Every 13 weeks in a quarter,[94] interviewers visit a determined number of randomly sampled dwellings (1,880-1,900) and collect data concerning economic activity during the preceding week. The survey covers all people aged 15 years or over living in the selected dwellings. A sample of dwellings to be visited is changed every week. Weekly samples result from a random division of a quarterly sample into 13 parts. The quarterly sample ranges from 24,440 to 24,700 dwellings (GUS, 2000).

192. The following rotation pattern of households is applied: two quarters in the survey, two quarters out, followed by two quarters in, and finally rotating out of the system [2-(2)-2 rotation pattern].

[94] According to Eurostat regulations, the term "quarter" as currently applied to the LFS is slightly different from the calendar quarter: every quarter in the LFS consists of 13 weeks and always starts on a Monday. Thus, the first quarter of 2000 lasted from 3 January to 3 April.

Weighting the LFS results

193. Weighting is performed in three stages (for details, see Kordos, Lednicki and Zyra, 2002).

Estimation of standard errors

194. Until 1999, standard errors of estimates were calculated according to the random group method. Since the redesign of the LFS in the fourth quarter of 1999, the Taylor linearization technique has been used.

Costs of household surveys

195. The Central Statistical Office of Poland has a system of household survey cost assessment. For each sample survey, the direct cost of the survey is assessed, using previous experiences in the field, and some administrative recommendations. Such cost survey assessment includes field interviewing costs, travel costs, material costs, services connected with the survey, incentives for increasing participation in the survey, taxes, etc. (GUS, 2001). Not included are coding and editing, computer runs, methodological contributions of indirect and overhead costs and the cost of personnel whose responsibilities extend over several projects.

196. As examples, costs elements for the HBS and the LFS in Poland in the year 2000 were presented in Section A of this chapter.

Design effects

197. For the Polish household surveys, that is to say, for the HBS and the LFS, the design effects for several characteristics were calculated (Kordos, Lednicki and Zyra., 2002). As an exercise, and for comparison with other countries, design effects were calculated for several parameters for the years 2000 and 2001.

198. For some characteristics of the HBS, the design effects and the relative standard errors (as a percentage given in parentheses) were as follows: total income: 4.24 (1.1); total expenditure: 4.16 (1.0); food expenditure: 3.53 (0.4); clothing and shoes: 2.72 (1.5); maintenance of dwellings: 4.04 (1.3); personal health care: 3.28 (1.7); transport and communication: 2.16 (4.5); and education: 2.50 (3.9).

199. For the LFS, 2000 and 2001 design effects were calculated for the total number of unemployed for different cross-classification groups based on urban/ rural areas, size of localities (classes of towns) and level of education. The highest dispersion was for classes of towns with design effect levels ranging from 1.7 to 3.55.

200. As may be seen from the above estimates, design effects for the HBS and the LFS data were usually greater than 1, and for some characteristics were even greater than 4. Hence, standard errors based on simple random sample assumptions tended to underestimate the standard errors derived from the applied complex sample design.

Non-response in household surveys

201. As discussed in Section A, non-response rates increased both for the HBS and for the LFS in the last decade. The main reasons for these increases were refusals and "not at homes". For the HBS, refusal rates increased from 10.2 per cent in 1992 to 25.0 per cent in 2000, and not at home rates increased from 4.5 per cent in 1992 to 14.5 per cent in 2000.

202. On an annual average basis, non-response rates in the LFS were steadily increasing throughout most of the period 1992-2000, from 4.5 per cent in 1992 to 22.1 per cent in 2000, as were refusal rates, from 2.0 per cent in 1992 to 10.9 per cent in 2000. Non-response rates increased significantly in the years 1992-2000, the main reasons being refusals and not at homes.

203. Non-response rates for the LFS differ according to size of localities, the largest being in Warsaw, and the smallest in rural areas. For the year 2000, the weighted annual non-response rates by size of localities were as follows: Warsaw: 54.5 per cent; cities: (500,000 to 1 million inhabitants) 32.6 per cent; cities: (100,000 to 500,000 inhabitants) 33.3 per cent; towns: (20,000 to 100,000 inhabitants) 23.1 per cent; towns: (below 20,000 inhabitants) 19.0 per cent; and rural areas: 11.1 per cent.

Concluding remarks

204. In this section, general descriptions of household surveys in the transition period of the Central Statistical Office of Poland (GUS) were presented, with special emphasis on two continuous surveys, namely, the HBS and the LFS. GUS has a long tradition of conducting household surveys and large experience in this area. This was helpful at the beginning of the transition period in redesigning the surveys and designing new ones.

205. Assimilating the results of the Population and Housing Census conducted in 2002 will constitute one of the most important tasks of household surveys in the coming years. The census will deliver not only updated sampling frames for household surveys but also auxiliary information for increasing precision of estimates and for small-area estimation methods which are now under study.

206. We have started preparing a new household survey -- EU-SILC, which is to be introduced in 2005 (Eurostat, 2001) -- and are improving current surveys to adjust them to EU standards.

6. The Labour Force Survey and the Household Budget Survey in Slovenia[95]

Introduction

207. The Republic of Slovenia gained independence in the early 1990s. Before that, within the former Yugoslavia, statistical activities were centralized in the Federal Statistical Office. At that time, household surveys did not feature prominently in the national statistical programme. With independence, the Slovenian Statistical Office was rapidly transformed from a regional office to a national statistical one. The transition process was relatively smooth owing, in part, to the fact that senior management remained unchanged and in power for the entire transition period.

Labour Force Survey (LFS)

Background

208. The first LFS was implemented in 1989 by the Faculty of Social Science of the University of Ljubljana (Vehovar, 1997). The Statistical Office of the Republic of Slovenia took over full responsibility for the LFS survey in 1995.

209. The LFS samples for 1989-1995 were designed and conducted in a rather ad hoc manner largely because of uncertain annual budgets. Starting in 1992, the design was a three-stage cluster sample with 3,000 new households each year. The units stayed in the sample for three consecutive years, with the total sample size about 8,500 units.

Redesign

210. In 1997, a major redesign took place owing to requests for more frequent (that is to say, quarterly) and more detailed (that is to say, regional) results. The Eurostat guidelines were also important stimuli for the redesign (Eurostat, 1998a).

211. The LFS was revised to become a continuous panel survey with quarterly sample selection and publication of results. Each quarterly sample is divided into six two-week intervals. The reference period for the interviews is the week (Monday to Sunday) prior to the interview. The rotation model 3-1-2 is applied, with households being interviewed for three consecutive quarters, then omitted for one quarter and included again for another two quarters. This model results in a 60 per cent overlap between two consecutive quarters and a 40 per cent overlap between two consecutive years.

212. The LFS sampling frame is the central register of the population combined with stratification information. The stratum definitions are based on 6 types of settlements (according

[95] Prepared by Vasja Vehovar, Faculty of Social Sciences, University of Ljubljana; and Metka Zaletel, Tatjana Novak, Marta Arnež and Katja Rutar, Statistical Office of the Republic of Slovenia.

to the size of the settlements and the proportion of the population that are farmers) and 12 geographical regions. After collapsing, there are a total of 47 strata.

213. In each stratum, the sample is selected using systematic sampling with a random start. Implicit stratification is implemented through a data sort by settlement, street, and building number. The sampling rate in each stratum is adjusted to account for the anticipated non-response rate. Field substitutions are not applied, as it has been shown that substitutions offer few advantages and entail considerable problems (Vehovar, 1999).

214. In each quarter, 2,000 new units are selected. In addition, about 5,000 (responding) households are included from the previous four quarters. Thus, approximately 7,000 households are selected per quarter (2,000 from the incoming sample and 5,000 from the continuing sample). Of these, about 6,000 are expected to be responding households. The total number of completed individual interviews is approximately 20,000.

Implementation

215. All households from the incoming quarterly sample are interviewed personally (face-to-face interview) with the help of computers (CAPI). There are about 30 experienced interviewers for the LFS, all equipped with portable computers. Repeated interviews are made from the telephone centre at the Statistical Office via CATI, except for non-telephone households and those unable to participate in a telephone interview. The national telephone coverage rate is about 95 per cent. Before interviewing, each household receives an advance letter with a description of the survey and a brochure with LFS results from previous surveys. Incentives are not offered.

216. For face-to-face interviews in the incoming part of the sample, non-response rates have been 17-18 per cent and refusal rates 12-13 per cent. In the repeated telephone interviewing for the households already in the panel, the non-response rates have been slightly lower (10-11 per cent) as have the refusal rates (6-7 per cent). The LFS non-response rate grew considerably starting in 1991 but has stabilized in the last four years.

Sampling errors and publication

217. The data are weighted for unequal probability of selection and for unit non-response. Post-stratification is performed according to the known population distribution of age (8 groups), sex and region (12 regions). The fact that post-stratification is carried out at the individual level means that members of the same household can receive different weights.

218. The sampling errors and design effects are routinely estimated only for the key variables: unemployment rate and employment/population ratio. The design effects are relatively low, for example, the design effect is 1.3 for the unemployment rate.

219. The coefficients of variation (CV) of the estimates are routinely calculated. The estimates with CV less then 10 per cent are published without any restrictions; estimates with CV between 10 and 20 per cent are published in a single bracket. CVs between 20 and 30 per cent are published with a double bracket. When the CV exceeds 30 per cent, the results are replaced with a dot (.) meaning "non-zero but unreliable".

220. The results of the survey are published quarterly in the Statistical Rapid Reports, Statistical Yearbook, and several other Slovenian publications. The special series "Results of the Survey" provides detailed results of the survey and the methodology. Data also appear in publications of other organizations such the World Bank, the United Nations Children's Fund (UNICEF) and Eurostat. Researchers outside the Statistical Office also analyse the microdata.

Household Budget Survey (HBS)

Background

221. The first survey on household consumption had been implemented in the 1960s. Until 1997, the survey was conducted according to the relatively advanced and innovative methodology designed by the Federal Statistical Office of Yugoslavia. The sample design encompassed a two-stage cluster sample with stratification of the PSUs at the first stage. Primary sampling units were enumeration areas (EAs), sampled with probability proportional to size (PPS). At the second stage, individuals were selected from the central register of population; they also determined the household. In each PSU, five households were interviewed. Until 1993, the substitution procedure was used to provide five responding units; however, starting in 1994, the "take" per cluster was increased from six to eight persons within each PSU, a design feature that required additional correction with weights. Two different HBS surveys were conducted regularly: one on a quarterly basis and another as an annual survey in five-year intervals. The last annual HBS included 3,270 households and the quarterly one included 1,000 households. In the annual survey, the interviewing was implemented at the end of the year for the whole year, while with the quarterly survey, sampled households were interviewed four times per year.

Redesign of the HBS sample

222. The main motivation for the redesign was the new guidelines from Eurostat (Eurostat, 1997).

223. The population register is used to select the individual respondents. These persons also determine the households. Weights are used to adjust for unequal selection probabilities for persons and households. Institutional households are excluded. The annual sample size includes 1,200 responding households. Since this constitutes too small a sample to allow the application of the "Nordic" model, data from samples of three consecutive years are merged and recalculated to the middle year. In this way, a sample size of 3,600 households can be secured.

224. Proportionate allocation to 47 strata is used. Owing to the relatively small sample and the large number of strata, stratification is performed only implicitly. In small settlements (fewer

than 1,000 inhabitants), the enumeration areas serve as PSUs and are selected with probability proportional to size (PPS). Four responding households are selected in each PSU. In larger towns and cities, the simple random sampling (SRS) method is applied. As a consequence, the design effects are relatively low, about 1.2 for key variables. The units are selected for each quarter separately and allocated into 12 weeks of the corresponding quarter. The thirteenth week is used for the remaining work with non-respondents.

Imlementation

225. Advance letters are sent one week before the first visit together with the incentive: a pocket calculator. As this is a continuous survey, it can be implemented with a smaller number of interviewers (for example, 20).

226. The interviewers register all contacts/attempted contacts with a household on a special form. The status with respect to dwelling, household and reference person of each unit is thus very clear as well as the number of contacting attempts, number of filled diaries and potential reasons for non-response.

227. Data are collected using a questionnaire completed by the interviewer and diaries completed by household members. Almost all interviews are conducted via computers (CAPI).

228. The households keep the diary for 14 days. During this period, they regularly fill in their daily expenditure information. The households are considered to be responding if they complete at least the basic interview questionnaire because two thirds of the data are obtained from the questionnaire. Relatively high and stable response rates (about 81 per cent) are obtained at the level of interview questionnaires. However, the response rate for complete response, including diaries, is lower, at about 70 per cent.

Sampling errors and publication

229. If all diaries for a given household unit are missing, the data are imputed using the hot-deck imputation method from a similar household donor. Missing item non-response is also imputed using hot-deck procedures. Each missing value is replaced with corresponding data from the previous respondent within the same imputation class defined by household size and sociodemographic characteristics. In particular, missing individual income is replaced with the income of a donor matching on employment status and education.

230. The method of calculation of the design weights and the post-stratification weights are similar to that for the LFS sample. In addition, specific expansion factors are developed to compensate for different reference periods. The coefficient of the recalculation is basically the ratio of the reference period of the survey (one-year) to the reference period of the individual variable. Special weights are also needed when combining the data for three consecutive years. The calculation for a specific date thus uses the three-year data with half of the data referring to the period before this date and half to the period after this date.

231. The HBS methodology and results are described in the publications cited above for the LFS.

Conclusions

232. Before independence in 1991, household sample surveys were not a common tool of data collection in Slovenia. However, unlike other transition countries, Slovenia had regularly conducted HBS surveys starting in the mid 1960s and the series of annual LFS surveys starting in the late 1980s.

233. After independence, the Statistical Office of Slovenia underwent a smooth and effective transition. The Statistical Office now routinely conducts the standard series of household surveys. The basic socio-economic surveys (LFS, HBS) are almost completely harmonized with Eurostat requirements (Statistical Office of the Republic of Slovenia, 2001). A variety of other household surveys have also been conducted: Household Energy Consumption Survey (HECS), 1997; Time-use Survey (TUS), 2000/2001; Monthly Consumer Attitude Survey (CAS); Quarterly Survey on Travels of the Domestic Population (QSTDP); and Annual Crime and Victimization Survey (2000, 2001).

234. There remains room for further improvement of the household sample survey system. Slovenia has a rich and accurate registration-based statistical system (taxation data, database of employees, insurance databases, etc.) that can be linked efficiently and effectively to geographical systems and to census data. Thus, additional advantages can be derived for application in the design of optimal samples as well as for estimation.

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