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Household Budget Survey

2015 Wave

EU Quality Report

(Version 1)

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EXECUTIVE SUMMARY

Household Budget Surveys (HBS) are conducted in EU Member States (MS), some EU candidate and EFTA countries. Normally an HBS is a sample survey of thousands of households. The focus of the survey is on consumption expenditure, which is what people spend on goods and services to satisfy their needs and wants.

Generally, households are asked to keep records of their expenditures on different kinds of consumer goods and services. Measuring consumption expenditure is a way of measuring economic well-being, as a household's economic well-being can be expressed in terms of its access to goods and services.

The HBS was launched in most EU Member States at the beginning of the 1960s and Eurostat has been collating and publishing these survey data every five years since 1988, the most recent collection rounds being 2005, 2010 and 2015. The next HBS wave is in 2020.

Given that an HBS is voluntary and has no legal basis until wave 2020, the survey structure and implementation arrangements are different; this has implications for comparability. However, since the first HBS round (1988), all the participating countries and Eurostat have made great efforts to harmonize their HBS and to improve data comparability. Even so, there is still room for improvement. From 2026, HBS will be implemented under a legal basis (the IESS regulation¹), which will contribute to improving comparability of HBS data across countries.

HBS aims to measure private household expenditure. In this respect, collective households (elderly homes, hospitals, establishments for the disabled, boarding schools, military barracks, jails, and welfare institutions including those for the homeless, asylum seekers or refugees) are normally excluded from the survey, since a distinction cannot be made between an individual's expenditure and the collective household expenditure.

Except for two EU countries (DE and PL) which have relatively large effective samples (higher than 25,000 households), the effective sample size falls below 4,000 in most of the remaining EU countries (except for AT, IT, ES, NL, RO and FR. For two countries, LU and TR, the sample covers a period of three years).

Various types of sampling frames were used for sample selection. 16 countries used population registers, 13 countries used source such as a Census or a master sample of areas, the rest of the countries used other sampling frames. Except for 2 countries (CZ and DE, which resort to quota sampling) all the HBS samples were selected according to a probability sampling scheme.

The mean response rate at an EU level lies around 50%. There are however important variations between the countries: from 16.5% in NL to 86.1% in TR.

Looking at item non-response, the most problematic were the *Consumption abroad* variables: HJ00 (*Total consumption expenditure abroad*) was missing in 10 EU member state datasets: AT, BE, CY, EE, ES, FR, HU, IT, MT and SE.

The important variable HE042 (*Imputed rentals for housing*) was missing from the UK, CZ, MT and MK datasets and HH09.9 (*Net income (total income from all sources including non-monetary components minus income taxes)*) from the IT dataset.

¹ Regulation (EU) 2019/1700 of the European Parliament and of the Council of 10 October 2019 establishing a common framework for European statistics relating to persons and households, based on data at individual level collected from samples, amending Regulations (EC) No 808/2004, (EC) No 452/2008 and (EC) No 1338/2008 of the European Parliament and of the Council

The data collection period (Actual Survey year) varied from 2012 to 2017. For the countries which did not have the survey year matching the reference year of 2015, price coefficients were used to adjust the household expenditure in the reference year provided to the values for the year 2015. Eurostat publishes individual country, and European aggregates data every five years.

A common feature of all the HBSs is that households are asked to maintain detailed diaries of expenditure over a fixed time period. The recording period varies between the countries from one week to three month; two weeks being the most common. Many countries use household diaries, while others complement household diaries with individual ones in order to get more accurate information.

Different type of diaries were used for HBS 2015 wave. All countries used a paper diary except for 1 country which used only a WEB diary. A WEB diary (next to a paper diary) was used in 8 countries. Cash register receipts were collected in 10 countries, 1 country scanned receipts to record expenditures and 2 countries used administrative data.

Standard errors and confidence intervals for the main statistics derived from the HBS micro-data, that is for the mean consumption expenditure (total and by ECOICOP groups) and for the structure of consumption expenditure, were calculated by Eurostat. The Relative Confidence Interval (RCI) for total mean expenditure (CP00) as well as for food and non-alcoholic beverages (CP01) appears to be acceptable (below 5%) in most of the countries.

However, it seems that the level of accuracy is going down when considering 2-digit ECOICOP-Divisions, especially those for which the expenditure distribution is strongly skewed, e.g. Furnishings and household equipment (CP05), Health (CP06), Transport (CP07) or Education (CP10). In fact, the lowest level of accuracy was for Education.

In co-operation with the National Statistical Offices of the Member States, Eurostat has for many years worked on the quality - mainly the comparability - of HBS statistics within the EU. The new Regulation (EU) 2019/1700 of the European Parliament and of the Council of 10 October 2019 establishing a common framework for European statistics relating to persons and households, based on data at individual level collected from samples (the so-called IESS Regulation) would shape the new legal environment for collecting data in 7 domains of social statistics, including the consumption domain. The implementation of the HBS under the IESS regulation will start as of 2026. Eurostat, in collaboration with the Member States, will start work already in 2020 on preparing the necessary legislation package to support the implementation of the HBS under IESS.

ESTAT hopes that with this new legal framework in place, further progress as regards quality and harmonisation of HBS data will be achieved for the coming waves.

1. INTRODUCTION

Household Budget Surveys (HBS) are among the most comprehensive household surveys, conducted in EU Member States (MS). Normally an HBS is a sample survey of thousands of households that are asked to keep records of their expenditure on different kinds of consumer goods and services over a specified period. The size of the sample obviously depends on the resources available, but also on the extent to which it is desired to break down the survey results by region or type of household. An HBS may be taken at specified intervals of time, such as every five years, or it may be taken each year on a continuing basis.

The focus in this survey is Consumption Expenditure, which is the activity in which persons, acting either individually or collectively, use goods or services to satisfy their needs and wants. A household's economic well-being can be expressed in terms of its access to goods and services. The more that can be consumed, the higher the level of economic wellbeing, though the relationship between the two is not a linear one. Measuring consumption expenditure might therefore be a way of measuring economic well-being. Studies of consumption investigate how and why society and individuals consume goods and services, and how this affects society and human relationships.

Countries mainly carry out an HBS to provide the weights for the Consumer Price Indexes (CPI). The HBS falls under the responsibility of the National Statistical Institutes (NSI) in each MS and unlike some other European statistical domains, the HBS is voluntary and no EU regulation exists yet. There is thus considerable freedom for each MS to decide on the objectives, methodology, programming and resource assignment for their respective HBS. Even so, since 1989 MS have come together and tried to find a common framework by which this wealth of information can be combined for a more meaningful comparison between them. EUROSTAT has since then committed itself in assisting MS in fulfilling this objective. The new Regulation (EU) 2019/1700 of the European Parliament and of the Council of 10 October 2019 establishing a common framework for European statistics relating to persons and households, based on data at individual level collected from samples (the so-called IESS Regulation) would shape the new legal environment for collecting data in 7 domains of social statistics, including the consumption domain. The implementation of the HBS under the IESS regulation will start as of 2026. Eurostat, in collaboration with the Member States, will start work already in 2020 on preparing the necessary legislation package to support the implementation of the HBS under IESS.

In co-operation with the National Statistical Offices of the Member States, Eurostat has for many years worked on the quality - mainly the comparability - of HBS statistics within the EU. In spite of the important progress already done, there is still great room for improvement as regards quality and harmonisation of HBS data.

This report deals with the quality attained in the collection and collation of household expenditure data for the 2015 wave. Users should be aware that while these statistics contain a wealth of information, caution must be exercised in their use for the reasons specified above.

Quality is taken as relative to user needs and is viewed as a multi-faceted concept, so Eurostat has for a number of years considered quality from six different dimensions, namely

Relevance

Accuracy

Timeliness and Punctuality

Accessibility and Clarity

Comparability

Coherence

Cost and burden

2. RELEVANCE

Relevance is the degree to which statistics meet current and potential users' needs. It refers to whether all statistics that are needed are produced and the extent to which concepts used (definitions, classifications etc.) reflect user needs.

This section aims to describe the extent to which the HBS is useful to, and used by, users.

2.1. Relevance at National and EU level

As mentioned previously, the main goal of the HBS is to provide countries with the weights for their CPI. Beside this HBS is also used by other users, for example, ministries and public administrations use the data for economic and social policy planning purposes. Moreover, since 2010 Eurostat provides access to HBS microdata partially anonymised for scientific purposes. Universities and research organisations use the data for research on living conditions of private households. Private firms and consultants use is often directed towards analyses of consumption patterns of households in relation to the marketing of private consumer products. The general public often gets the information via mass media in general or publications published by the statistical offices.

As regards the tables and information disseminated at EU level, the main users are: other Directorates General (DGs), Members of the European Parliament, the European Central Bank (ECB), and international organisations such as the Organisation for Economic Co-operation and Development (OECD).

2.2. Relevance by user

2.2.1. Consumer Price Index (CPI)

The consumer price index, abbreviated as CPI, measures the change over time in the prices of consumer goods and services acquired, used or paid for, by households. It is an important measure of inflation.

The calculation of a CPI usually proceeds in two stages. First, elementary indices are estimated for each of the basic aggregates. Second, a weighted average is taken of the elementary indices using the expenditure shares of the elementary aggregates from the HBS as weights. The reliability of the CPI weights calculations will depend to a large extent on the reliability of the household expenditure data.

Being a sample survey, the HBS estimates are bound to be subject to sampling errors, which may be relatively large for small or infrequent expenditures. The quality of the estimates will also suffer from non-response and from the under-reporting of some types of consumption. For these reasons, to the extent possible, results from the HBS should be compared with statistics from other sources when constructing CPI weights, especially when the HBS sample is small.

Information from the HBS is normally supplemented with data from other sources like retail sales and National Accounts i.e. NA. Although this is logical, the CPI manual cautions that national accounts should not be viewed as if they were an alternative, independent data source to the HBS. **One has to remember that there may be differences in the scope and definition of consumption, and also a difference in the reference population** of households between the National Accounts and HBS.

2.2.2. Other Users

Policy makers and strategic planners understand that their decisions need to be assessed according to their results. Policy and management are increasingly more evidence-based and outcome-oriented. Economic performance is no longer seen as a simple product of the supply-side efficiency of economic operators. Managers, public servants and politicians are being forced to move from an "operations" to a more "marketing" oriented type of decision making. To do this, however, one needs the adequate tools. The information that is collected in an HBS can serve to satisfy this need. Besides information about consumption expenditure, information about the households and income of these households is also collected. Moreover, there are a number of countries that also collect information about quantities and also about location and outlets.

In view of this, the HBS is seen as a potentially rich source of information.

Requests from this group of users can be more challenging. For example, in the case of Policy Directorates-General they would like to see whether the policy decisions that are taken have any effect on consumption structures or patterns. To do this, one needs additional information on household members, regions, and income.

3. ACCURACY

The aim of this section is to assess the quality of the HBS data in relation to the sampling process. As noted in Section 3.2.1, countries are fully responsible for the sampling design of HBS. Although HBS surveys in most countries are based on probability sampling by design, there also are some exceptions. This lack of uniformity in sampling methods and methodology has made the analysis of the accuracy at a European level, very complex. This chapter collects all available information at county level in order to give a picture about the overall reliability of the data, reflecting the combined effect of sampling, non-response and response errors.

Like in any sample survey, the statistics generated from the HBS data may be liable to errors which are inherent in the **survey method** used. All the HBSs for the reference year 2015 are sample surveys of private households. Most of the participating countries drew a sample of households in a way that the probability of a household being selected is known (technically known as a probability design). In this way, the results can be reliably projected from the sample to the household reference population with known levels of precision, i.e. standard errors and confidence intervals for survey estimates can be constructed (see 3.1).

On the other hand, non-probability schemes (e.g. Quota selection) were implemented in CZ and DE. Although this type of sampling is generally quicker and cheaper, there is no assurance that the selection of households is not biased and is representative of the whole population. This error can be reduced if an alternative household with the same characteristics as the one that is not available, is chosen instead. Unfortunately, not enough information is available to guarantee that this has actually happened and to what degree.

When choosing the sample, one has to decide whether one chooses addresses or persons. For example for the HBS 2015 wave LU, FI and SE used individuals as sampling units while other countries used household or dwelling address for sampling.

The former implies that all the private households² currently residing at a selected address are eligible for inclusion in the HBS. If one targets the person, one normally includes all members of the household the sampled person belongs to. Moreover, many of the samples were stratified by geographical dimensions. This improves the representativity of the samples by ensuring a minimum adequate size by region.

Appendix 3 summarises the sampling design used in each country for the HBS 2015 wave. Except for CZ and DE (which resort to quota sampling) all the HBS samples were selected according to a probability sampling scheme. The majority of countries used multi-stage sampling with the exception of AT, EE, LT, LU, MT, SE, which use a simple random sample. More technical details on the HBS sample designs that were implemented can be found in **Appendix 3** and explanations can be found in paragraph 3.2.1. *Target population, sampling frame and coverage errors.*

The HBS data are weighted. Sample weights are needed to correct for imperfections in the sample that might lead to bias and also to rectify other departures between the sample and the reference population. The design weights are calculated for each sampled household as the inverse of its probability of selection as part of the sample.

Another issue which one has to contend with in such surveys is total **unit non-response** because some households, which are initially chosen, do not take part in the survey. Non-response generally increases bias in sample estimates, particularly if the non-respondents have specific characteristics. In order to reduce this, the household design weights are inflated by applying correction factors which represent the inverse of the household response probabilities. Response probabilities are estimated by fitting a response model to the data.

² A few countries based their HBS on Individuals or Dwellings. Please see Appendix 3 for details.

Finally, most of the HBS countries also “**calibrated**” the design weights³, corrected for non-response, to external data sources: this weight adjustment brought the sample estimates into agreement with known population characteristics (e.g. population totals by age group, gender, NUTS2 region...) to increase the accuracy of the overall results.

A classical typology of survey errors makes the distinction between **sampling and non-sampling errors**.

3.1. Sampling errors

Sampling errors arise from estimating a population characteristic by looking at only one portion of the population rather than the entire population. The size of the sampling errors depends on the sample size: the higher the sample size, the higher the accuracy. As mentioned above, all the HBSs are sample surveys of private households and in comparison with other EU household surveys, e.g. Labour Force Survey (LFS) or Statistics on Income and Living Conditions (EU-SILC), the HBS sample sizes attained by some countries are rather low.

Unlike non-sampling errors, sampling errors for a sample estimate can be quantified by calculating effective sample size, the design effect (Deff), estimated variance, the standard error and the confidence interval in which the sample estimate falls.

Eurostat collects information (in the metadata template) about countries’ *achieved* sample size. The *effective* sample size can be even smaller than the achieved sample size as a result of the way the sample has been designed. The Design Effect (Deff) provides an indication of how much the achieved sample size has effectively been increased or reduced as a result of implementing a sample design which is different from the basic Simple Random Sample design⁴. A value above 1.0 indicates a smaller effective sample size (for more details on the underlying methodology see **Appendix 3**).

Table 1 shows the achieved and effective sample sizes as well as the design effects in the countries for the 2015 wave. As it can be seen from the table, with the exception of CZ (0.9), all countries implemented design effects above 1, i.e. effective sample sizes have been reduced compared to the achieved samples. Except for two EU countries (DE and PL) which have relatively large effective samples (higher than 25.000 households), the effective sample size falls below 4,000 in most of the remaining EU countries (except for AT, IT, ES, NL, RO and FR) (see **Table 1**). Note also that for two countries, LU and TR, the sample covers a period of three years.

Table 1: Achieved and effective sample sizes for the 2015 wave⁵

Country	Achieved Sample Size	Deff ²	Effective Sample Size
AT	7162	1.5	4711
BE	6135	1.7	3691
BG	2966	2.2	1362
CY	2876	1.4	2034
CZ	2929	0.9	3298
DE	52412	1.7	30750
DK	2205	1.7	1228
EE	3395	1.7	2009
EL	6150	2.4	2565
ES	22130	2.3	9623
FI	3673	1.5	2532

³ Design weights are generally calculated for each sampling unit as the reciprocal of the probability of selection of the unit.

⁴ In particular, Deff for a given statistic is defined as the ratio between the estimated variance of that statistic under the actual sampling design to the variance that would be obtained under the Simple Random Sampling of the same size.

⁵ Please note, that the detailed quality statistics reproduced in Table 1 are not transmitted by the Countries, and are to be considered as Eurostat estimates.

FR	16978	2.9	5866
HR	2029	1.5	1351
HU	7185	3.9	1860
IE	6839	1.9	3528
IT	15013	3.7	4037
LT	3443	2.3	1481
LU	3167	1.6	1941
LV	3844	2.6	1464
MT	3691	1.3	2767
NL	14408	2.7	5280
PL	37148	1.5	25190
PT	11398	3.8	2965
RO	30625	4.5	6863
SE	2871	2.8	1038
SI	3750	1.8	2121
SK	4785	6.0	797
UK	4912	1.3	3730
NO	3363	2.7	1242
ME	1318	4.0	331
MK	2874	3.1	929
RS	6531	2.2	2985
TR	33709	2.0	17014
XK	2344	1.9	1240

Furthermore, we seek to work out accuracy measures, namely standard errors and confidence intervals for the main statistics derived from the HBS micro-data, that is the mean consumption expenditure (total and by ECOICOP groups) and the structure of consumption expenditure. The latter statistics is the distribution of the total mean expenditure between the different ECOICOP divisions, expressed in thousands of the total mean expenditure. This indicator is essential to examine how households split their expenditures among the different ECOICOP categories, and to monitor how the structure can be affected over time by price changes.

The results are presented in Tables 2 to 4. In particular, Table 2 shows the mean expenditures by ECOICOP 2-digit division as well as their Confidence Intervals (CI) (+/-). Table 3 shows the estimated relative confidence intervals (RTI) at 95% for the total mean HH consumption expenditure broken down by 2-digit ECOICOP divisions. And Table 4 presents the consumption structure (expenditure share) and the confidence intervals (CI) by ECOICOP divisions. More details on the estimation are provided in Appendix 2.

Table 2: Mean Expenditure and the Confidence Interval (+/-)⁶

Country		CP00	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
AT	Mean Exp.	35931	4235	813	1765	9369	2522	1368	5103	539	4123	401	2477	3216
	+/-	688	88	34	85	231	158	71	205	22	136	46	92	104
BE	Mean Exp.	36811	4732	752	1649	10572	2132	1677	4802	1088	3019	183	2306	3900
	+/-	780	98	37	72	169	148	102	321	21	213	32	139	112
BG	Mean Exp.	5874	1564	247	203	1951	212	296	401	245	245	27	250	231
	+/-	189	39	16	13	61	20	15	33	10	23	7	21	15
CY	Mean Exp.	31206	4781	502	1807	7967	1615	1614	3748	1267	1371	1408	2786	2341
	+/-	901	121	36	88	241	102	93	214	40	76	139	159	87
CZ	Mean Exp.	9430	1994	293	502	2100	596	259	1040	417	932	57	558	682
	+/-	161	36	14	15	44	29	12	56	9	30	6	22	20
DE	Mean Exp.	30931	3572	503	1442	10206	1495	1238	4130	802	3156	262	1568	2557
	+/-	236	24	7	17	67	34	31	101	7	43	10	25	39
DK	Mean Exp.	40858	4908	940	1672	13156	2339	975	5458	1032	4002	190	2099	4087
	+/-	1304	177	65	137	453	191	84	382	43	207	41	151	186
EE	Mean Exp.	10447	2469	383	564	1750	704	453	1369	492	1135	137	440	550
	+/-	375	68	24	50	62	50	33	137	19	72	23	43	37
EL	Mean Exp.	20590	3857	712	1004	5756	805	1308	1995	726	819	585	1811	1213
	+/-	560	97	32	50	128	44	68	122	23	53	56	74	52
ES	Mean Exp.	27420	4125	523	1395	8710	1165	972	3158	792	1593	380	2548	2058
	+/-	337	54	15	32	107	31	38	85	11	40	23	62	50
FI	Mean Exp.	36653	4381	792	1094	11533	1590	1259	5697	944	3361	55	1816	4129
	+/-	922	120	49	79	267	86	63	326	28	202	8	110	164
FR	Mean Exp.	31046	4433	776	1227	8967	1489	489	4098	731	2402	183	1693	4559
	+/-	522	86	33	34	141	65	22	147	13	91	20	63	107
HR	Mean Exp.	13076	3144	351	720	4152	481	310	1385	590	634	111	287	910
	+/-	390	94	26	49	110	34	26	90	22	38	17	24	40
HU	Mean Exp.	9095	1806	243	305	3366	294	372	823	529	485	68	268	535
	+/-	229	41	14	14	72	13	15	71	15	26	7	19	21
IE	Mean Exp.	41382	4750	936	1788	13160	1550	962	5324	1586	3423	948	2627	4330
	+/-	781	96	46	79	219	68	63	196	36	143	102	103	132
IT	Mean Exp.	29680	5298	529	1390	10518	1252	1353	3187	755	1517	177	1469	2236
	+/-	553	101	19	55	196	53	56	113	17	57	16	57	65
LT	Mean Exp.	9889	2417	304	534	3304	418	510	798	328	492	61	279	446
	+/-	309	69	20	42	115	27	32	62	12	33	11	28	28
LU	Mean Exp.	60044	5222	792	3211	20946	3769	1438	8486	1512	4161	467	4963	5077
	+/-	1623	144	60	123	788	232	87	475	48	192	131	216	164
LV	Mean Exp.	9921	2383	298	545	2348	424	573	1179	394	708	117	441	511
	+/-	392	80	25	53	90	37	35	88	16	60	19	37	33
MT	Mean Exp.	22348	4418	525	1768	1875	1655	1252	3182	970	1798	624	1857	2423
	+/-	650	92	35	97	145	110	87	189	34	185	63	90	134
NL	Mean Exp.	35329	3745	1020	1598	10748	1812	459	4426	1134	2962	463	2023	4939

⁶ Please note, that the detailed quality statistics reproduced in Table 2 are not transmitted by the Countries, and are to be considered as Eurostat estimates.

	+/-	526	63	48	48	160	90	28	143	23	90	29	51	86
PL	Mean Exp.	9998	2109	218	476	3401	438	463	770	441	591	90	365	637
	+/-	78	14	4	9	24	12	8	25	4	15	6	9	13
PT	Mean Exp.	20363	2914	320	706	6501	809	1126	2863	660	845	459	1786	1373
	+/-	491	74	18	31	140	41	35	125	15	37	40	83	46
RO	Mean Exp.	5833	1759	358	263	2063	192	223	287	231	183	20	65	188
	+/-	80	23	9	8	27	7	9	16	4	10	3	4	5
SE	Mean Exp.	34341	4058	627	1490	11133	1952	714	4753	1095	4952	55	1268	2243
	+/-	1258	171	46	136	353	198	89	352	48	321	87	111	157
SI	Mean Exp.	20490	2963	377	1159	5407	860	436	3601	989	1467	178	991	2062
	+/-	492	64	24	59	110	66	32	189	26	61	20	67	68
SK	Mean Exp.	12795	2492	342	600	4048	603	354	1378	619	768	88	586	917
	+/-	443	81	21	44	122	41	17	115	24	47	17	32	41
UK	Mean Exp.	33742	4067	814	1677	6332	2538	516	5208	1143	4871	504	3233	2839
	+/-	808	85	40	96	219	210	88	224	30	222	143	142	136
NO	Mean Exp.	51625	6094	1389	2799	16113	2903	1353	9686	978	5136	117	1844	3215
	+/-	1997	169	102	144	786	214	162	932	84	316	30	149	197
ME	Mean Exp.	8876	2527	274	634	2600	286	315	783	424	254	183	224	372
	+/-	523	154	29	57	163	29	33	68	28	27	46	20	33
MK	Mean Exp.	5288	2290	210	349	815	277	224	294	181	149	24	209	265
	+/-	342	115	17	45	84	76	36	45	22	48	13	33	40
RS	Mean Exp.	6974	2065	267	294	2145	265	241	560	313	269	71	161	324
	+/-	146	36	11	11	46	8	12	31	8	22	10	9	11
TR	Mean Exp.	13202	2600	563	677	3373	845	269	2324	486	383	300	825	557
	+/-	164	27	11	16	43	20	11	69	12	17	17	18	23
XK	Mean Exp.	7503	3202	308	318	2221	264	205	333	207	40	37	169	199
	+/-	198	95	18	21	68	11	18	18	7	6	8	16	12

Note: The CP00-CP12 columns in the table represent the following 2-digit ECOICOP Divisions:

ECOICOP Divisions (2-Digit)

CP00: Total

CP01: Food and non-alcoholic beverages

CP02: Alcoholic beverages, tobacco and narcotics

CP03: Clothing and footwear

CP04: Housing, water, electricity, gas and other fuels

CP05: Furnishings, household equipment and routine maintenance of the house

CP06: Health

CP07: Transport

CP08: Communication

CP09: Recreation and culture

CP10: Education

CP11: Restaurants and hotels

CP12: Miscellaneous goods and services

The next table (**Table 3**) shows the estimated Relative Confidence Intervals (RCI) at 95% for the total mean household consumption expenditure, broken down by two-digit ECOICOP⁷ Divisions.

⁷ The ECOICOP (EU Classification Of Individual Consumption by Purpose)

Table 3:

Mean Consumption Expenditure RCI +/- % (Total & 2-digit ECOICOP)⁸

Country	CP00	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
AT	1.9	2.1	4.2	4.8	2.5	6.3	5.2	4.0	4.1	3.3	11.5	3.7	3.2
BE	2.1	2.1	4.9	4.4	1.6	6.9	6.1	6.7	1.9	7.1	17.6	6.0	2.9
BG	3.2	2.5	6.5	6.6	3.1	9.2	5.1	8.3	4.0	9.5	26.5	8.4	6.4
CY	2.9	2.5	7.1	4.9	3.0	6.3	5.8	5.7	3.2	5.6	9.9	5.7	3.7
CZ	1.7	1.8	4.9	3.0	2.1	4.9	4.5	5.3	2.2	3.2	10.4	3.9	2.9
DE	0.8	0.7	1.5	1.2	0.7	2.3	2.5	2.4	0.8	1.4	3.6	1.6	1.5
DK	3.2	3.6	6.9	8.2	3.4	8.2	8.6	7.0	4.1	5.2	21.3	7.2	4.5
EE	3.6	2.8	6.3	8.8	3.5	7.2	7.2	10.0	3.9	6.3	16.5	9.8	6.6
EL	2.7	2.5	4.5	5.0	2.2	5.4	5.2	6.1	3.2	6.4	9.6	4.1	4.3
ES	1.2	1.3	2.9	2.3	1.2	2.7	4.0	2.7	1.4	2.5	6.2	2.4	2.4
FI	2.5	2.7	6.1	7.2	2.3	5.4	5.0	5.7	2.9	6.0	15.3	6.0	4.0
FR	1.7	1.9	4.3	2.8	1.6	4.4	4.5	3.6	1.8	3.8	11.0	3.7	2.4
HR	3.0	3.0	7.4	6.8	2.7	7.0	8.5	6.5	3.7	6.0	15.6	8.2	4.4
HU	2.5	2.3	5.7	4.7	2.2	4.5	3.9	8.6	2.8	5.4	10.7	7.1	3.9
IE	1.9	2.0	4.9	4.4	1.7	4.4	6.5	3.7	2.3	4.2	10.8	3.9	3.0
IT	1.9	1.9	3.6	4.0	1.9	4.3	4.1	3.6	2.3	3.7	8.8	3.8	2.9
LT	3.1	2.9	6.7	7.9	3.5	6.5	6.2	7.8	3.8	6.7	18.3	9.9	6.2
LU	2.7	2.8	7.6	3.8	3.8	6.2	6.1	5.6	3.2	4.6	28.1	4.3	3.2
LV	3.9	3.4	8.3	9.7	3.8	8.6	6.2	7.5	4.1	8.5	16.3	8.5	6.4
MT	2.9	2.1	6.8	5.5	7.8	6.6	7.0	5.9	3.5	10.3	10.1	4.9	5.5
NL	1.5	1.7	4.7	3.0	1.5	5.0	6.0	3.2	2.0	3.0	6.3	2.5	1.7
PL	0.8	0.7	1.9	1.8	0.7	2.7	1.7	3.2	0.9	2.5	6.3	2.5	2.0
PT	2.4	2.5	5.5	4.4	2.2	5.1	3.1	4.4	2.3	4.4	8.7	4.6	3.4
RO	1.4	1.3	2.5	2.9	1.3	3.6	4.0	5.7	1.8	5.3	15.1	6.2	2.9
SE	3.7	4.2	7.3	9.1	3.2	10.1	12.4	7.4	4.4	6.5	156.7	8.8	7.0
SI	2.4	2.2	6.4	5.1	2.0	7.7	7.4	5.2	2.6	4.2	11.0	6.7	3.3
SK	3.5	3.3	6.2	7.4	3.0	6.7	4.8	8.3	3.9	6.1	19.7	5.5	4.5
UK	2.4	2.1	4.9	5.7	3.5	8.3	17.1	4.3	2.7	4.6	28.4	4.4	4.8
NO	3.9	2.8	7.3	5.1	4.9	7.4	12.0	9.6	8.5	6.1	25.9	8.1	6.1
ME	5.9	6.1	10.5	9.1	6.3	10.2	10.5	8.6	6.6	10.5	25.2	9.1	8.9
MK	6.5	5.0	8.2	12.9	10.3	27.3	16.2	15.3	12.4	31.9	53.8	15.6	14.9
RS	2.1	1.7	4.0	3.9	2.2	3.1	4.8	5.5	2.5	8.0	13.6	5.7	3.5
TR	1.2	1.0	2.0	2.3	1.3	2.4	3.9	3.0	2.4	4.3	5.7	2.2	4.2
XK	2.6	3.0	6.0	6.5	3.1	4.1	8.8	5.4	3.4	14.3	21.3	9.3	6.3

The Relative Confidence Interval (RCI) for total mean expenditure (CP00) as well as for food and non-alcoholic beverages (CP01) appears to be acceptable in most of the countries, it lies below 5%

However, it seems that the level of accuracy is going down when considering 2-digit ECOICOP-Divisions, especially those for which the expenditure distribution is strongly skewed, e.g.: Furnishings and household equipment (CP05), Health (CP06), Transport (CP07) or Education (CP10). **In fact, the lowest level of accuracy was for Education.**

Table 4 shows the structure of consumption expenditure and Confidence Intervals (CI) broken down by two-digit ECOICOP Divisions

⁸ Please note, that the detailed quality statistics reproduced in Table 3 are not transmitted by the Countries, and are to be considered as Eurostat estimates.

Table 4: Structure (%) and CI (+/- percentage points) for mean consumption expenditure⁹

Country		CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
AT	Exp.Share.	11.8	2.3	4.9	26.1	7.0	3.8	14.2	1.5	11.5	1.1	6.9	9.0
	+/-	0.02	0.04	0.05	0.02	0.06	0.05	0.04	0.04	0.03	0.12	0.04	0.03
BE	Exp.Share.	12.9	2.0	4.5	28.7	5.8	4.6	13.1	3.0	8.2	0.5	6.3	10.6
	+/-	0.02	0.05	0.04	0.02	0.07	0.06	0.07	0.02	0.07	0.18	0.06	0.03
BG	Exp.Share.	26.6	4.2	3.5	33.2	3.6	5.0	6.8	4.2	4.2	0.5	4.3	3.9
	+/-	0.02	0.07	0.07	0.03	0.09	0.05	0.08	0.04	0.09	0.27	0.08	0.06
CY	Exp.Share.	15.3	1.6	5.8	25.5	5.2	5.2	12.0	4.1	4.4	4.5	8.9	7.5
	+/-	0.03	0.07	0.05	0.03	0.06	0.06	0.06	0.03	0.06	0.10	0.06	0.04
CZ	Exp.Share.	21.1	3.1	5.3	22.3	6.3	2.8	11.0	4.4	9.9	0.6	5.9	7.2
	+/-	0.02	0.05	0.03	0.02	0.05	0.05	0.05	0.02	0.03	0.10	0.04	0.03
DE	Exp.Share.	11.6	1.6	4.7	33.0	4.8	4.0	13.4	2.6	10.2	0.9	5.1	8.3
	+/-	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.01	0.01	0.04	0.02	0.02
DK	Exp.Share.	12.0	2.3	4.1	32.2	5.7	2.4	13.4	2.5	9.8	0.5	5.1	10.0
	+/-	0.04	0.07	0.08	0.03	0.08	0.09	0.07	0.04	0.05	0.21	0.07	0.05
EE	Exp.Share.	23.6	3.7	5.4	16.8	6.7	4.3	13.1	4.7	10.9	1.3	4.2	5.3
	+/-	0.03	0.06	0.09	0.04	0.07	0.07	0.10	0.04	0.06	0.16	0.10	0.07
EL	Exp.Share.	18.7	3.5	4.9	28.0	3.9	6.4	9.7	3.5	4.0	2.8	8.8	5.9
	+/-	0.03	0.04	0.05	0.02	0.05	0.05	0.06	0.03	0.06	0.10	0.04	0.04
ES	Exp.Share.	15.1	1.9	5.1	31.8	4.3	3.5	11.5	2.9	5.8	1.4	9.3	7.5
	+/-	0.01	0.03	0.02	0.01	0.03	0.04	0.03	0.01	0.02	0.06	0.02	0.02
FI	Exp.Share.	12.0	2.2	3.0	31.5	4.3	3.4	15.5	2.6	9.2	0.2	5.0	11.3
	+/-	0.03	0.06	0.07	0.02	0.05	0.05	0.06	0.03	0.06	0.15	0.06	0.04
FR	Exp.Share.	14.3	2.5	4.0	28.9	4.8	1.6	13.2	2.4	7.7	0.6	5.5	14.7
	+/-	0.02	0.04	0.03	0.02	0.04	0.04	0.04	0.02	0.04	0.11	0.04	0.02
HR	Exp.Share.	24.0	2.7	5.5	31.8	3.7	2.4	10.6	4.5	4.9	0.9	2.2	7.0
	+/-	0.03	0.07	0.07	0.03	0.07	0.08	0.06	0.04	0.06	0.16	0.08	0.04
HU	Exp.Share.	19.9	2.7	3.4	37.0	3.2	4.1	9.1	5.8	5.3	0.7	3.0	5.9
	+/-	0.02	0.06	0.05	0.02	0.05	0.04	0.09	0.03	0.05	0.11	0.07	0.04
IE	Exp.Share.	11.5	2.3	4.3	31.8	3.8	2.3	12.9	3.8	8.3	2.3	6.4	10.5
	+/-	0.02	0.05	0.04	0.02	0.04	0.07	0.04	0.02	0.04	0.11	0.04	0.03
IT	Exp.Share.	17.9	1.8	4.7	35.4	4.2	4.6	10.7	2.5	5.1	0.6	5.0	7.5
	+/-	0.02	0.04	0.04	0.02	0.04	0.04	0.04	0.02	0.04	0.09	0.04	0.03
LT	Exp.Share.	24.4	3.1	5.4	33.4	4.2	5.2	8.1	3.3	5.0	0.6	2.8	4.5
	+/-	0.03	0.07	0.08	0.03	0.07	0.06	0.08	0.04	0.07	0.18	0.10	0.06
LU	Exp.Share.	8.7	1.3	5.4	34.9	6.3	2.4	14.1	2.5	6.9	0.8	8.3	8.5
	+/-	0.03	0.08	0.04	0.04	0.06	0.06	0.06	0.03	0.05	0.28	0.04	0.03
LV	Exp.Share.	24.0	3.0	5.5	23.7	4.3	5.8	11.9	4.0	7.1	1.2	4.5	5.2
	+/-	0.03	0.08	0.10	0.04	0.09	0.06	0.07	0.04	0.09	0.16	0.08	0.06
MT	Exp.Share.	19.8	2.4	7.9	8.4	7.4	5.6	14.2	4.3	8.1	2.8	8.3	10.8
	+/-	0.02	0.07	0.05	0.08	0.07	0.07	0.06	0.04	0.10	0.10	0.05	0.06
NL	Exp.Share.	10.6	2.9	4.5	30.4	5.1	1.3	12.5	3.2	8.4	1.3	5.7	14.0
	+/-	0.02	0.05	0.03	0.01	0.05	0.06	0.03	0.02	0.03	0.06	0.03	0.02
PL	Exp.Share.	21.1	2.2	4.8	34.0	4.4	4.6	7.7	4.4	5.9	0.9	3.7	6.4
	+/-	0.01	0.02	0.02	0.01	0.03	0.02	0.03	0.01	0.03	0.06	0.03	0.02
PT	Exp.Share.	14.3	1.6	3.5	31.9	4.0	5.5	14.1	3.2	4.2	2.3	8.8	6.7
	+/-	0.03	0.05	0.04	0.02	0.05	0.03	0.04	0.02	0.04	0.09	0.05	0.03
RO	Exp.Share.	30.2	6.1	4.5	35.4	3.3	3.8	4.9	4.0	3.1	0.4	1.1	3.2
	+/-	0.01	0.03	0.03	0.01	0.04	0.04	0.06	0.02	0.05	0.15	0.06	0.03
SE	Exp.Share.	11.8	1.8	4.3	32.4	5.7	2.1	13.8	3.2	14.4	0.2	3.7	6.5
	+/-	0.04	0.07	0.09	0.03	0.10	0.12	0.07	0.04	0.06	1.57	0.09	0.07
SI	Exp.Share.	14.5	1.8	5.7	26.4	4.2	2.1	17.6	4.8	7.2	0.9	4.8	10.1
	+/-	0.02	0.06	0.05	0.02	0.08	0.07	0.05	0.03	0.04	0.11	0.07	0.03
SK	Exp.Share.	19.5	2.7	4.7	31.6	4.7	2.8	10.8	4.8	6.0	0.7	4.6	7.2

⁹ Please note, that the detailed quality statistics reproduced in Table 4 are not transmitted by the Countries, and are to be considered as Eurostat estimates.

	+/-	0.03	0.06	0.07	0.03	0.07	0.05	0.08	0.04	0.06	0.20	0.06	0.04
UK	Exp.Share.	12.1	2.4	5.0	18.8	7.5	1.5	15.4	3.4	14.4	1.5	9.6	8.4
	+/-	0.02	0.05	0.06	0.03	0.08	0.17	0.04	0.03	0.05	0.28	0.04	0.05
NO	Exp.Share.	11.8	2.7	5.4	31.2	5.6	2.6	18.8	1.9	10.0	0.2	3.6	6.2
	+/-	0.03	0.07	0.05	0.05	0.07	0.12	0.10	0.09	0.06	0.26	0.08	0.06
ME	Exp.Share.	28.5	3.1	7.1	29.3	3.2	3.6	8.8	4.8	2.9	2.1	2.5	4.2
	+/-	0.06	0.10	0.09	0.06	0.10	0.11	0.09	0.07	0.10	0.25	0.09	0.09
MK	Exp.Share.	43.3	4.0	6.6	15.4	5.2	4.2	5.6	3.4	2.8	0.5	4.0	5.0
	+/-	0.05	0.08	0.13	0.10	0.27	0.16	0.15	0.12	0.32	0.54	0.16	0.15
RS	Exp.Share.	29.6	3.8	4.2	30.8	3.8	3.5	8.0	4.5	3.9	1.0	2.3	4.7
	+/-	0.02	0.04	0.04	0.02	0.03	0.05	0.06	0.03	0.08	0.14	0.06	0.03
TR	Exp.Share.	19.7	4.3	5.1	25.6	6.4	2.0	17.6	3.7	2.9	2.3	6.3	4.2
	+/-	0.01	0.02	0.02	0.01	0.02	0.04	0.03	0.02	0.04	0.06	0.02	0.04
XK	Exp.Share.	42.7	4.1	4.2	29.6	3.5	2.7	4.4	2.8	0.5	0.5	2.3	2.7
	+/-	0.03	0.06	0.07	0.03	0.04	0.09	0.05	0.03	0.14	0.21	0.09	0.06

3.2. Non-sampling errors

Non-sampling error is an error in survey estimates which cannot be attributed to sampling fluctuations. Such errors can be either coverage errors, measurement errors, non-response errors, processing errors or model assumption errors.

3.2.1. Target population, sampling frame and coverage errors

- Excluding certain parts of the population from the target population

HBS aims to measure private household expenditure. In this respect, **collective households** (elderly homes, hospitals, establishments for the disabled, boarding schools, military barracks, jails, and welfare institutions including those for the homeless, asylum seekers or refugees) are normally excluded from the survey, since a distinction cannot be made between an individual's expenditure and the collective household expenditure.

In addition, some countries exclude certain households or households in remote geographical areas which are difficult to access:

- BE: German-speaking Community, i.e. 6 municipalities in BE3 and households containing exclusively persons aged more than 76 years
- DK: small not bridged islands;
- UK: Scottish off-shore Islands and the Isles of Scilly;

Furthermore, some countries exclude households with particular characteristics. For example:

- DE: households with a monthly net income higher than EUR 18,000;
- SE: households in which all the members are 76 and over;

Excluding households with an income higher than EUR 18,000 from the target population will underestimate the mean expenditure based on the assumption that the higher one earns, the more there is a tendency to consume, although this is not necessarily linear.

Similarly, the mean consumption expenditure of households in which all the members are 79 and over is likely to be lower than for younger households. Consequently, excluding those households from the HBS target population will tend to over-estimate the mean expenditure. Having said all this, the impact of such exclusions should be quite limited, given that they account for a very small proportion of the HBS target population.

- Divergence between the sample frame population and the target population: coverage errors

Coverage errors occur when there is a divergence between the frame population and the target population.

Except for 2 countries (CZ and DE, which resort to quota sampling) all the HBS samples were selected according to a probability sampling scheme. Probability designs involve using sampling frames from which to draw the sample. There should be a one-to-one relation between the units which are recorded in a sampling frame and the units of the target population. However, such an ideal situation rarely happens: there are usually units in the sampling frame which do not belong to the target population (*over-coverage*¹⁰) and units in the target population which are not listed in the frame (*under-coverage*¹¹).

Under-coverage can cause bias in the estimates, especially if the units which are not covered have specific survey characteristics (e.g. specific consumption patterns). If non-eligible units are treated as non-respondents¹², over-coverage might create bias as well. It also entails a loss of accuracy because a part of the sample will be dropped. Contrary to under-coverage, the size of over-coverage can be estimated by dividing the total number of non-eligible units by the gross sample size. For more details about the main sampling characteristics see **Appendix 3**.

Two main kinds of sampling frames were used for sample selection:

- AT, BE, DK, EE, ES, FI, IT, LT, LU, LV, MT, NL, PT, SE, SI and TR have population registers which can provide up-to-date lists of households or individuals, with many relevant characteristics useful for stratification and efficient selection of the sample. Coverage errors in registers are generally kept to a minimum if well maintained.
- Other countries (BG, HR, CY, FR, HU, IE, EL, PL, SK, RO, ME, MK, XK) obtained a sample of area units from a suitable source such as a Census or a master sample of areas. In the areas selected, lists of addresses, households or persons were then prepared or updated from other sources in order to complete the process of sample selection. Twelve countries over-sampled certain domains. For more details on over-sampling see **Appendix 3**.

3.2.2. *Unit non-response, substitutions and Item non-response*

A common feature of all the HBSs is that households are asked to maintain detailed diaries of expenditure over a fixed time period (two weeks in most countries). This puts a heavy burden on the sampled households and as a result, leading to non-response errors. Given the relatively higher respondents' burden in HBS as compared to that in other surveys, higher non-response rates are generally reported for the HBS than for other surveys.

There are two types of non-response errors. *Unit nonresponse* occurs when no data are collected from a unit in the sample; and *item nonresponse* occurs when values for some but not all survey data items (variables) are obtained from a unit.

➤ Unit non-response

Overall, the reasons for a household not to participate are quite diverse: failure of the data collector to locate/ identify/ make contact to the sample unit; refusal of the household to participate; inability of the household to participate (e.g. due to illness, absence, etc.); language barriers, etc.. Non-response is a source of bias in sample estimates, particularly if the non-respondents have specific characteristics.

¹⁰ For example: a household has moved abroad; single-person households where person died before the survey

¹¹ For example: immigrants who came to the country before the survey; persons who moved from a household to create a new household

¹² For example: a household contacted by mail which does not send back the contact letter, can be either an eligible household refusing to participate or a non-eligible household

Besides, non-response makes the achieved sample size lower, thus making the data less accurate. The following **Table 5** presents the household response rates¹³ which were attained by the different countries:

Table 5: Household response rates

Country	%
AT	28.4
BE	21.9
BG	50.6
HR	54.0
CY	74.4
CZ	-
DK	74.0
EE	42.0
FI	45.8
FR	65.5
DE	-
EL	64.1
HU	60.5
IE	40.0
IT	40.9
LV	34.7
LT	32.8
LU	30.7
MT	62.0
NL	16.5
PL	40.8
PT	64.0
RO	80.0
SK	65.1
SI	51.0
ES	75.3
SE	38.0
UK	46.0
NO	48.9
ME	72.3
MK	62.0
RS	73.8
TR	86.1
XK	78.0

CZ and DE use quota sampling

The mean response rate at an EU level lies around 50%. There are however important variations between the countries: from 16.5% in NL to 86.1% in TR. For wave 2015, the data collection in the NL was entirely done via Internet (only web diary/ no paper diary). The response rate was the lowest in the EU (16. 5%).

In order to reduce the burden on households when completing the detailed expenditure diaries, households have been increasingly encouraged to attach cash register receipts (scanner receipts) that contain the details of the purchases, to their diaries instead of directly recording such information. This should reduce errors in recording when completing the diaries. Moreover some countries used incentives to get people to co-operate.

¹³ The unit response rate is calculated the ratio of the number of respondents (i.e., units for which data for some or all data items have been collected) to the total number of units in the sample.

In addition to the efforts which have been made to prevent non-response at the data collection stage, most of the countries actually adjusted their weights with the aim of reducing non-response bias: the lower the response rate of a household, the higher the re-weighting factor that was applied.

BG, EL, ES, IT and PL chose to allow substitution for non-responding households. This made their samples bigger and then the level of accuracy was expected to be better. Such substitution must be strictly controlled: non-responding households should be substituted with households having similar characteristics (size, geographical region, type of ownership, current activity status of the head of household...). All these countries described the preventive measures they applied in order to control their substitution procedures.

Table 6 shows the response rates which these countries achieved before and after substitution:

Table 6: Household response rates (%) – Before and after substitution

Country	% (Before substitution)	% (After substitution)
BG	50,6	96,9
EL	64,1	98,0
ES	75,3	65,3
IT	41,0	40,8
PL	65,6	53,1

➤ *Item non-response*

Item nonresponse occurs inevitably in almost all surveys because some sampled units refuse to respond to sensitive items or may not know the answer to some items. Also as HBS is voluntary and no EU regulation exists yet, not all countries collected all required variables.

For the HBS 2015 wave the most problematic were the *Consumption abroad* variables. For example HJ00 (*Total consumption expenditure abroad*) was missing in 10 EU member state datasets: AT, BE, CY, EE, ES, FR, HU, IT, MT and SE.

The important variable HE042 (*Imputed rentals for housing*) was missing from the UK, CZ, MT and MK datasets and HH09.9 (*Net income (total income from all sources including non-monetary components minus income taxes)*) from the IT dataset.

High item non-response makes survey results less comparable between countries.

3.2.3. *Measurement and processing errors*

Measurement errors are errors that occur during data collection and cause recorded values of variables to be different from the true ones. Measurement errors arise while completing the expenditure diaries. As mentioned, households have been encouraged to attach their receipts to their diaries. This way, recording errors should have been kept to a minimum.

Besides, there are certain expenditures which many households tend to under-report. For example, many households either deliberately, or unconsciously, understate the amounts of their expenditures on certain “undesirable” products, such as gambling, alcoholic drinks, tobacco or drugs.

The HBS also includes household interviews which are generally conducted before and after the period of diary recording: they aim to collect basic information on the selected households and on their members. In addition, income information and certain regular expenditures (rents, energy bills...) are generally collected at this stage. Here some households may have experienced recall problems since the information actually refers to a longer time period (up to one year for income reference period).

The interviewer plays a key role in the HBS to motivate the households to complete their diaries. National Statistical Institutes organise training sessions prior to survey launch in order to have the interviewers familiar with the survey components. In this respect, the use of experienced interviewers by the countries is highly welcomed, given that the relative complexity of HBS demands experienced staff to carry it out.

Finally, computer-assisted interviewing (CAPI) and computer-assisted web interviewing (CAWI) was used by several countries in order to keep processing errors to a minimum. In this way:

- routing problems within the questionnaire are eliminated
- the interviewers do not miss questions or ask the wrong questions
- mathematical calculations are carried out within the program
- the computer checks for inadmissible or inconsistent responses

4. TIMELINESS AND PUNCTUALITY

4.1. Timeliness

Timeliness refers to the length of time between data availability and the event/ phenomenon the data describe.

A number of countries conduct continuous expenditure surveys and are able to revise and update their expenditure weights each year.

Table 7 shows the frequency and the year that the survey was carried out in the countries. Half of the countries carry out annual surveys, while the remainder have five-year or even longer intervals between surveys.

Table 7: Survey frequency and data collection years for the HBS 2015 wave

Country	Frequency	Actual Survey Year(s)
AT	Every 5 years	2014/2015
BE	Annual by 2010, from 2012 every 2 years	2014
BG	Annual	2015/2016
CY	Every 5 years	2015/2016
CZ	Annual	2015
DE	Every 5 years	2013
DK	Annual	2014/2015
EE	Every 3 years, 2 years in a row	2015/2016
EL	Annual	2015
ES	Annual	2015
FI	Approximately every 5 years	2016
FR	Approximately every 5 years	2016/2017
HR	Annual by 2011, afterwards every 3 years	2014
HU	Annual	2015/2016
IE	Every 5 years	2015/2016
IT	Annual	2015
LT	Every 4 years	2016
LU	Annual	2014/2016
LV	Every 5 years	2015
MT	Annual	2015/2016
NL	Annual by 2013, from 2015 every 5 years	2015
PL	Annual	2015
PT	Every 5 years	2015
RO	Annual	2015
SE	Irregular	2012
SI	Annual by 2011, from 2012 every 3 years	2015
SK	Annual by 2012, from 2012 irregular	2015
UK	Annual	2015/2016
NO	Irregular	2012
ME	Annual	2015
MK	Annual	2015
RS	Annual	2015
TR	Annual	2014/2016
XK	Annual	2016

For the countries which did not have the survey year matching the reference year of 2015, price coefficients were used to adjust the household expenditure in the reference year provided to the values for the year 2015. Eurostat publishes individual country, and European aggregates data every five years.

4.2. Punctuality

Punctuality refers to the time lag between the actual delivery of the data and the target date when it should have been delivered.

In previous HBS Quality Reports, a suggestion was made to shorten the period from the survey reference year to the date of publication of the HBS data.

In the case of HBS 2015, data were received by Eurostat between 07/10/2016 and 25/11/2019. In the case of several countries, datasets had to be re-transmitted because problems were discovered by Eurostat with certain variables.

Many countries did not follow the transmission format requirements issued by Eurostat and this led to considerable delays in processing and publishing the data.

For most countries, the HBS 2015 data tables were disseminated on Eurostat's website in May 2018. Eurostat has noticed that there is clearly a room for improving the time between the reference year and the publication date.

Eurostat has made considerable efforts to collect all the information necessary to compile this European Quality Report as quickly as possible, including sending requests for clarification of meta-data to the countries.

In the future, all the necessary information should be made available via the ESS Meta-Data Handler (based on a new Metadata template) to ensure that the Quality Report be published at the same time as the data are disseminated.

5. ACCESSIBILITY AND CLARITY

5.1. Accessibility - Forms of dissemination

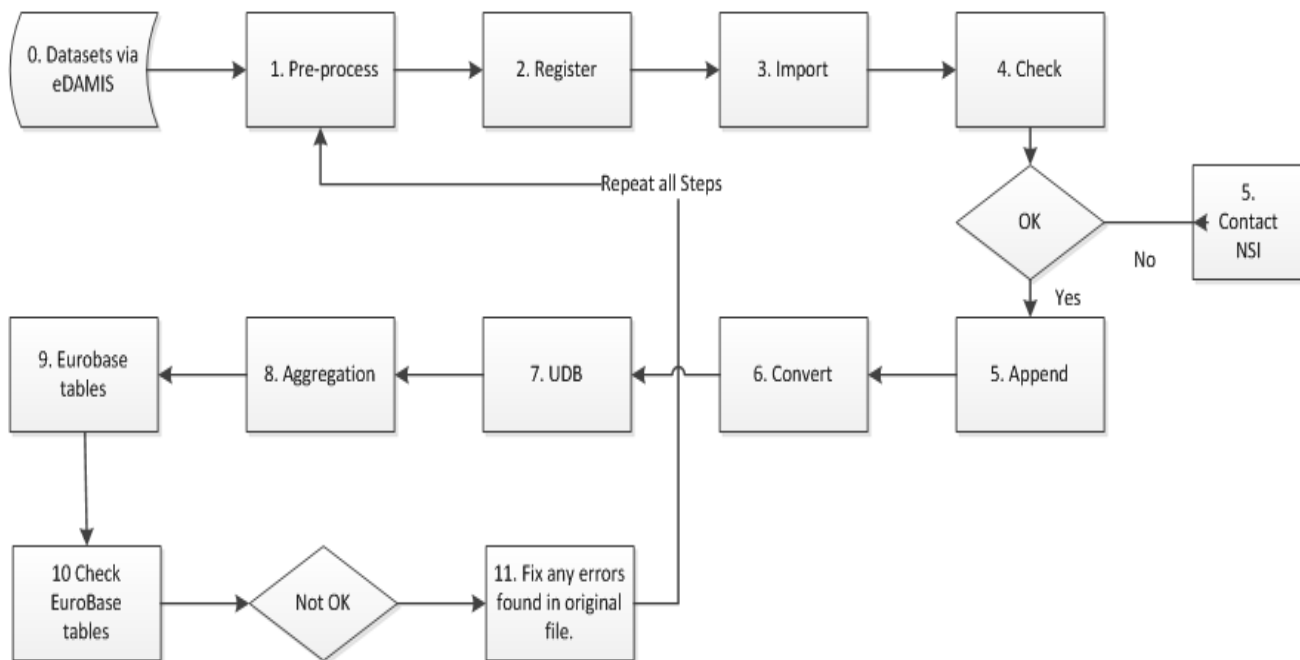
5.1.1. Production Data Base

Accessibility and clarity mean simplicity and ease, the conditions and modalities by which users can access, use and interpret statistics, with the appropriate supporting information and assistance.

NSIs provided Eurostat with the results from their national HBSs, via eDamis, Eurostat's secure network for transmission of data. Validation tests were carried out and a validation report generated. Eurostat contacted individual countries, when serious problems were identified, either for an explanation or to ask for a re-transmission.

After being validated, the harmonised HBS 2015 micro-data is stored in a set of Oracle Tables (User Database. i.e. HH UDB and HM UDB) within the GSAST-HBS IT Application and will be the source used to build the Eurobase Tables, Anonymised Datasets for researchers and for Ad-hoc requests.

BS 2015 WorkflowAST-HBS IT system workflow



1. Pre-process Micro-data so that they respect the variable names/types in the HBS 2010 Transmission Document
2. Register 4 HH datasets in the eDAMIS input folder in GSAST-HBS
3. Import and validate micro-data
4. Check Validation Report
5. Append each Dataset type (HHbasic, HHderived, HHquantities, HHmember) together for all countries
6. Convert to Euro/PPS/Reference Year
7. Create User DataBase (UDB)
8. Generate EU/EA Aggregates
9. Generate EuroBase tables & Upload them to EuroBase
10. Download and check each Eurobase table for a specific Country
11. Write ad-hoc SAS program to 'fix' identified problem in delivered files and then Repeat from Step 1

The complete description of the workflow for the 2015 HBS wave, from the definition of the variables required to the data dissemination in Eurobase is as follows:

- The Income and Living Conditions working group approves the list of variables to be transmitted in the next HBS wave.
- The transmission document which indicates the Format & Type of the variables and the Code Lists, is sent out to each National Statistical Institute (NSI).
- Each NSI transcodes the results of their national HBS, for the specified reference year, into the format described in the transmission document.
- **Micro-data** are transmitted via eDamis directly to the Server in the Secure Environment.
 - A GSAST-HBS Pre-processing Step is first run to try to make the variable Names, Type & Code Lists used, consistent with the Transmission Document.

- An Initial Data Validation Report is produced and possible problems identified and an ad-hoc SAS program written to fix these problems in the initial transmitted datasets. Then the Pre-processing Step and Validation Step are repeated.
- If there are serious problems identified, then an E-mail is prepared asking for an explanation, and is sent to the NSI. The NSI will provide feedback which enables problems to be resolved, or a new version of the data will be transmitted. These step(s) will be repeated until the data has no serious errors.
- Micro-data are appended together for all the countries into a collection of Oracle Tables in GSAST-HBS. These are converted to EUR/PPS Units after being mapped to 2015 year prices.
- An Excel workbook is generated containing the Indicators for the current and previous waves, side-by-side. These Workbooks are sent to each NSI to check, before Eurostat can publish the indicators in Eurobase.
- Finally the Eurobase tables are exported to text files in a format required by the Eurobase load program, in the Dissemination Step. These files are then uploaded to Eurobase.

5.1.2 Modernisation of the Data Collection

Different initiatives have been set up by Member States. They aim at reversing the decreasing trend in response rates by lowering the survey's burden both for the respondents, as the HBS data collection poses a heavy burden on them (especially the diary part); and for National Statistical Institutes (NSIs), as the data processing (i.e. data cleaning, checking, validation, coding, etc.) is costly and labour intensive.

Currently new tools for data collection, including the linking of new data sources, are being developed in some Member States. Apart from the scanning of receipts combined with the automatic recoding of the data, new tools include electronic diaries and questionnaires, which are either web-based or smartphone applications. They exploit the features of modern smartphones such as their practicality and connectivity, their processing power and memory capacity, together with built-in sensors. By using these applications it should be possible to collect expenditure in an easy and quick way, either online or offline.

Apps might be installed on each household member's smartphone and could be used on a desktop computer and be active for the defined period of the data collection. Other tools are more helpful to NSIs, e.g. a back-office to facilitate the configuration of questionnaires and diaries, or perform logical controls and validation checks in different parts of the process (e.g. in real time as data are being entered by the respondent). More advanced tools offer predictive data entry for the respondents, text interpretation and transformation to COICOP codes and possibility of selecting items listed in a tree structure (according to the COICOP structure).

As for the linking of new innovative data sources, efforts concentrate on the use of transaction data, being either payment only data (from banks) or purchase data (from retailers' cash registers), in combination with other administrative data. As the availability of this kind of data is restricted their use has been only tested in pilot studies. Other projects consist in fully automating the receipt-scanning process in combination with Optical Character Recognition OCR capabilities, and machine learning for the automatic coding of expenditure to COICOP categories.

The first ESS shareable tools are scheduled to become available for testing during 2020.

5.2. Dissemination of HBS Data

5.2.1. The structure of the EuroBase HBS Domain



<http://ec.europa.eu/eurostat/web/household-budget-surveys/database>

5.2.2. Publications by Eurostat based on HBS 2015 data:

Some Ad-hoc requests based on HBS 2015 data, from other Eurostat units have already been processed and queries from other Commission DGs and external users are also received. A Statistics Explained publication based on HBS 2015 data is planned for publication in 2020

Methodological documents:

"Household Budget Surveys in the EU: Methodology and Recommendations for Harmonisation"; Luxembourg, 2003.

http://ec.europa.eu/eurostat/cache/metadata/Annexes/hbs_esms_an1.pdf

"Description of the data transmission for HBS (Reference Year) 2015"; Luxembourg, 2016.

https://ec.europa.eu/eurostat/documents/54431/1966394/HBS2015_Transmission_DOC_V3.2018_05_22.pdf

6. COMPARABILITY

By comparability we mean the extent to which differences between statistics can be attributed to differences between the true values of the statistical characteristics. This can only be carried out under a premise of common concepts, definitions and classifications.

Comparability between different data sets implies that the data measure the “same thing”. Comparability as a dimension of quality is distinct from data accuracy. An ‘adequate’ level of accuracy is essential for comparability.

Given that an HBS is voluntary and has no legal basis, the survey structure and implementation arrangements are different; this has implications for comparability. However, since the first HBS round (1988), all the participating countries and Eurostat have made great efforts to harmonize their HBS and to improve data comparability. Even so, there is still room for improvement. From 2026, HBS will be implemented under a legal basis (the IESS regulation), which will contribute to improving comparability of HBS data across countries.

6.1. Definitions, basic concepts and classifications

6.1.1. Household, household membership and reference person

The basic unit of data collection and analysis in an HBS is the household. The definition of household used in an HBS is more complex than a group of people who are living together “under the same roof”: a household is a social unit which meets one or more conditions of “living together” in addition to sharing a common accommodation.

Increasingly restrictive definitions of what constitutes a household can be achieved by adding criteria from (1) to (4) below:

- (1) Co-residence (living together in the same dwelling unit)
- (2) Sharing of expenditures including joint provision of living essentials
- (3) Pooling of income and resources
- (4) The existence of family or emotional ties

See **Table 8** for an overview of the different definitions used by the Countries.

Table 8: Household Definition

Country	Household defined as persons sharing:			
	accommodation	expenditure	income	family or emotional ties
AT	X	X	X	
BE	X	X		
BG	X	X	X	
CY	X	X		
CZ	X	X	X	
DE	X	X	X	
DK	X	X	X	
EE	X	X	X	
EL	X	X	X	X
ES	X	X	X	

FI	X	X	X	
FR	X	X	X	
HR	X	X	X	
HU	X	X	X	
IE	X			
IT	X	X	X	
LT	X	X		
LU	X	X		
LV	X	X		
MT	X	X	X	X
NL	X	X	X	
PL	X	X	X	
PT	X	X		
RO	X	X	X	X
SE	X	X	X	
SI	X	X	X	
SK	X	X	X	
UK	X			
NO	X			
ME	X	X	X	X
MK	X	X	X	
RS	X	X	X	
TR	X	X		
XK	X	X	X	X

In all the HBSs sharing common accommodation is a prerequisite for a group of persons to be considered a household. In addition, most of the countries include the sharing of a common budget in their definition of household. Finally, in EL, MT, RO, ME, XK it is necessary for household members to have family or emotional ties, which is rather a restrictive household definition.

In practice, these definitions need to be elaborated to specify exactly what categories of persons are included or excluded from the definition. The definition adopted has a bearing, for instance, on whether or not resident employees, lodgers, boarders and other unrelated persons living at the sample address are included in the same or a different household. Furthermore, the definition is often extended to include certain categories of persons who are absent from the household for some specified reason, such as full-time education or military service. Countries differ in the exact rules applied for this purpose as well as the operational meaning given to the four criteria noted above. Many countries mention, though, as general criteria, that a potential member is included in the household if there are economic links between the person and the household. See **Table 9**.

Table 9: Household membership

Country	Usually resident, related to other members	Usually resident, not related to other members	Resident border, tenant	Visitor	Live-in domestic servant, au pair	Resident, absent from dwelling in the short-term	Children in household in education away from home	Long-term absence with household ties: working away from home	Temporary absence with household ties: in hospital, nursing home or other institution
AT	X	X			X	X	X	X	X
BE*	X	X	X	X (if last entire month)	X (if last entire month)	X (if last entire month)	X (if last entire month)	X (if last entire month)	X (if last entire month)
BG	X	X	X			X	X	X	X
CY*	X	X			X	X	X	X	X

CZ	X	X				X	X	X	X
DE*	X	X				X	X (if temporary absence for a short time)		X
DK	X	X				X	X	X	X
EE	X	X	X	X	X	X	X	X	X
EL	X	X	X	X	X	X	X	X	X
ES*	X		X	X	X	X	X	X	X
FI	X	X				X	X	X	X
FR	X	X				X	X		X
HR	X	X	X		X	X	X	X	X
HU*	X	X				X	X	X	X
IE*	X	X	X	If residing in household > 6 months prior to interview	X	X	(if not third level)	Only if contribute income and return one night a week	X
IT	X	X				X	X		X
LT	X	X				X			X
LU	X	X	X	X	X				
LV	X	X	X		X	X	X	X	X
MT	X	X	X		X	X	X	X	X
NL*	X	X				X	X (if registered at the parents' address)	X	X
PL*	X	X			X		X(≤15)	X	X (<1 year)
PT*	X	X	X		X*	X	X	X	X
RO	X	X	X		X	X	X	X	X
SE*	X	X				X	X*		X
SI	X	X			X	X	X		X
SK	X	X	X	X	X	X	X	X	X
UK*	X	X	X		X	X			X
NO	X	X			X	X		X	X
ME	X	X			X	X	X	X	X
MK*	X	X	X		X*	X	X		X
RS	X	X			X	X	X	X	X
TR	X	X			X	X	X	X	X
XK	X	X	X	X	X	X	X	X	X

* Some differences in household membership concepts

The concept of the **"household reference person"** is central to the EU HBS in the sense that it constitutes a socio-economic classification of households according to the profile of a member who is supposed to be "representative". Table 10 shows the definitions of the household reference person used by the countries:

Although there have been suggestions to use an objective definition for the household reference person, that is, the person aged 16 or more who most contributes to the household income, some countries continue to use subjective criteria such as

- The person who is designated as such by the other members (ME)
- The householder (UK)

Table 10: Household's reference person

Country	Household's reference person
AT	Person who contributes most to the household income (≥17 years).

BE	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
BG	The adult (16+) contributing most to the household income or person chosen by the household members.
CY	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
CZ	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
DE	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
DK	Reference person' is the Household member (≥ 18) who contributes most to the total income of the household
EE	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
EL	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
ES	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
FI	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
FR	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
HR	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
HU	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household..
IE	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
IT	The name referred to in the Municipality Population Registers as the head of household.
LT	The person allocating the largest income to satisfy the needs of his/her family.
LU	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
LV	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household
MT	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
NL	1) In a single-parent family, the parent is the main breadwinner in all cases. 2) In case of (married) couples, one of the partners is always the main breadwinner, regardless of the merits of any children or other household members. a. The partner with the highest self-employment income (even if this is negative). b. The partner with the highest personal income.
PL	Person aged 16 and over with the highest permanent income use for household needs.
PT	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
RO	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
SE	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
SI	Reference person' is the Household member (≥ 18) who contributes most to the total income of the household.
SK	Reference person' is the Household member (≥ 18) who contributes most to the total income of the household.
UK	Reference Person is the householder, that is, the person who: owns the household accommodation, or is legally responsible for the rent of the accommodation, or has the household accommodation as an emolument or prerequisite, or has the household accommodation by virtue of some relationship to the owner, who is not a member of the household. If there are joint householders, the HRP is deemed to be the one with the highest income. If the income is the same, then the eldest householder is taken.

NO	The person who contributes most to the financial support of the household.
ME	The reference person is household member recognisable to other household members. The reference person is a person in household selected by the other household members, makes important decisions and responsible for finances and wealth of household members.
MK	Reference person' is the Household member (≥ 16) who contributes most to the total income of the household.
RS	Head of household, person familiar to all household members. Most often this is a person who makes important decisions or is responsible of the financial situation and well-being of household members.
TR	Adult household member who has the most accurate information about the socio-economic status of the household and the personal characteristics of all members of the household, responsible for the management and livelihood of the household.
XK	The reference person is recognized as head by the other members of the household. Usually he/she is the main income earner or responsible person for financial support and welfare of the household.

From the EU comparability point of view, it is important to identify and apply a consistent definition of a reference person which can be used in the classification and analysis of information on the household. Leaving the choice of the reference person to the household itself gives too much room for arbitrary decisions that will damage the comparability of data afterwards. By assigning the person who contributes most to the household income, there should be a clear connection between the income of the household and its expenditure patterns.

6.1.2 Standard HBS 2015 Classifications

To facilitate Eurostat's task of producing indicators based on the HBS 2015 at an EU level, National Statistical Institutes are encouraged to use standard classifications in their national HBS surveys.

The following table summarises the main classifications to be used for the HBS 2015 Wave:

CLASSIFICATION	Description
ECOICOP 5-DIGIT 2013	Consumption expenditure of households
NUTS 2013 (1- & 2-digit level)	Territorial units and regions
ISCED-2011	Education level
ISCO08	Occupation
NACE rev 2	Economic Sector in Employment

Table 11 summarises the main classifications actually used for the HBS 2015 Wave.

Table 11 Overview of the main classifications used by each Country.

Country	COICOP	NUTS	ISCED	ISCO	NACE
AT	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	NA	NA
BE	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
BG	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
CY	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
CZ	ECOICOP 5-DIGIT 2013	CZ-NUTS - 2011	ISCED-2011	ISCO08	NACE rev 2
DE	Systematik der Einnahmen und Ausgaben 2013 (based on newest version of EU-COICOP)	NA	ISCED-2011	NA	NACE rev 2
DK	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
EE	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
EL	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
ES	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
FI	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
FR	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
HR	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
HU	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
IE	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
IT	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
LT	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	
LU	ECOICOP 5-DIGIT 2013	NA	ISCED-2011	ISCO08	NACE rev 2

LV	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
MT	COICOP 1999	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
NL	ECOICOP 5-DIGIT 2013	NUTS 2010	NA	NA	NA
PL	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
PT	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
RO	COICOP 5 – DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
SE	COICOP1999	NUTS 2013 (1- & 2-digit)	ISCED- 1997	-	NACE rev 2
SI	ECOICOP 5-DIGIT 2013	NUTS 2015	ISCED-2011	ISCO08	NACE rev 2
SK	ECOICOP 5-DIGIT 2013	NUTS 2013 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
UK	COICOP 1999	NUTS 2010	ISCED- 1997	ISCO08	NACE rev 2
NO	COICOP 1999	NUTS 2010	ISCED 1997	ISCO08	NACE 2007
ME	ECOICOP 5-DIGIT 2013	NA	ISCED-2011	ISCO08	NACE rev 2
MK	ECOICOP 5-DIGIT 2013	NA	ISCED-2011	ISCO08	NA
RS	ECOICOP 5-DIGIT 2013	NA	ISCED-2011	ISCO08	NACE rev 2
TR	ECOICOP 5-DIGIT 2013	NUTS 2010 (1- & 2-digit)	ISCED-2011	ISCO08	NACE rev 2
XK	ECOICOP 5-DIGIT 2013	NUTS 2010 (1- & 2-digit)	ISCED 1997	ISCO88	NACE rev 2

Detailed information about all these standard classifications may be found in RAMON, the Eurostat's classification server at the URL:
http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=DSP_PUB_WELC&StrLanguageCode=EN

6.1.3 Consumption expenditure

For the purpose of measuring living conditions the essential reference for the HBS is the concept of household final consumption expenditure, that is, the expenditure incurred by households on individual consumption goods and services. In particular, services for collective consumption (such as national defence, the usage of public infrastructures or public broadcasting) are not considered as household consumption.

Household **final consumption expenditure** has a monetary and a non-monetary part. The monetary part covers all payments, whereas the non-monetary part includes:

- Services of owner-occupied dwellings, measured as an *imputed rent*.
- *Income-in-kind*, such as goods and services received as income in kind by employees or goods or services produced as outputs of incorporated enterprises owned by households that are retained for consumption by members of the household. Cases in point are food and other agricultural goods, housing services by owner-occupiers and household services produced by employing paid staff (servants, cooks, gardeners, chauffeurs, etc.).

The **actual final consumption of households** is derived from their final consumption expenditure by adding the value of *social transfers-in-kind* received from the government (such as expenditures on Health and Education) and non-profit institutions serving households (NPISH).

Households actual final consumption¹⁴ Social transfers in kind by the government to the households
- Social transfers in kind by the NPISH to the households
= **Households final consumption expenditure**

- Non-monetary expenditure
= **Household final monetary consumption expenditure HICP**

Table 12 shows the different consumption expenditure approaches adopted by the countries for the HBS 2015 wave.

¹⁴ European system of accounts (ESA 2010) <https://ec.europa.eu/eurostat/documents/3859598/5925693/KS-02-13-269-EN.PDF/44cd9d01-bc64-40e5-bd40-d17df0c69334>

Table 12: Consumption expenditure approach – HBS 2015

Country	Consumption expenditure approach		
	Actual final consumption	Final consumption	Monetary final consumption
AT		X	
BE	X	X	X
BG		X	X
CY	X	X	X
CZ		X	X
DE		X	
DK	X	X	X
EE		X	X
EL	X	X	X
ES		X	X
FI	X	X	X
FR			X
HR		X	X
HU		X	
IE		X	
IT			X
LT		X	X
LU			X
LV		X	X
MT			X
NL		X	
PL		X	X
PT		X	X
RO		X	X
SE			X
SI		X	X
SK			X
UK			
NO		X	
ME		X	X
MK		X	X
RS		X	X
TR		X	X
XK	X	X	X

6.1.4 Imputed rent

According to the European System of Accounts (ESA), which is the reference for the HBS, the purchase of a dwelling as such is regarded primarily as capital formation (investment) and not consumption expenditure. However, the ownership of a dwelling is considered to produce a service – a shelter, which is actually consumed over time by the households. As a consequence, ESA requires the estimation of the price of the shelter, by imputation of a rent, since no monetary transaction is involved. This imputed rent is part of household consumption expenditure. So, for the HBS to be consistent with the ESA principles, it has been recommended to exclude the acquisition of dwellings (from monetary consumption), whereas the consumption of the service of the dwelling should be included (as imputed rent (i.e. non-monetary consumption)).

Different methods can be used in order to estimate imputed rent. The choice of method generally depends on the size and the structure of the national rental housing market:

- Self-assessment: this approach is based on information provided by the home-owners on the market rent they would pay if they were to rent their accommodation.
- Stratification: the sample of dwellings is divided into uniform groups. The mean of the rent values actually paid within each group is then given to the owned dwellings.
- Regression approaches: Heckman regression, Log-linear regression.
- User Cost method.

Table 13 shows the different approaches which were adopted by the countries to calculate the imputed rent for the HBS 2015 wave:

Table 13: Estimation of imputed rent – HBS 2015

Country	Self-assessment	Stratification	Log-linear regression	Heckman regression	User Cost	Other	Variables
AT						X	Linear regression: Nuts2, Population density-level, type & size of the dwelling, number of rooms, availability of bathroom, WC, garage & central heating
BE				X			
BG		X					Location (district centre with university, other district centre, smaller town, rural area); Size of the dwelling - Number of rooms (1, 2, 3, 4+); Amenities - Availability of central heating.
CY	X						
CZ	Imputed rent not provided						
DE		X					Size of municipality, region, construction year of dwelling
DK		X					Location, size, age, amenities
EE					X		
EL	X						Self-assessment is made by the interviewee. The interviewer checks and corrects, where necessary, the answer taking into account the locality, mean actual rent per locality, number of rooms in the dwelling, area of the dwelling, year of construction and quality of the building/dwelling. Data are collected both for main and secondary residence.
ES	X	X					Useful living area in m2 (3 categories) Area quality indicator (6 categories)
FI		X					In the stratification method, the mean gross rent / m2 was imputed to the floor area (square meter) of the sample households' main dwellings by the following classes: - type and size of the dwelling - construction or renovation year - municipality and district area in the municipalities with the greatest number of population
FR			X				Size of urban unit; period of completion of housing; number of habitable rooms; surface of the lodging; presence of a basement / an independent kitchen; the living area of the dwelling, the status of the city: suburbs, downtown, isolated

							town, rural; the detailed climatic zone for the city; regional zoning; age of the reference person; socio professional category of the reference person; type of the household.
HR	X						
HU			X				Market price of the dwelling, complex indicator of settlement facilities, dwelling size, Settlement type, cost of housing maintenance, number of rooms, detached house
IE		X					Accommodation type, size of dwelling unit, location, year of construction
IT	X						Imputed rent for main dwelling) Imputed rent for garage(s) Imputed rent for basement(s) or attic(s)
LT		X	X				Geographical area, type of dwelling, having a bath, toilet, kitchen, heating, hot water, gas, cold water, sewerage and total area of the dwelling, current rent related to occupied dwelling.
LU						X	Hot-deck imputation: Type of dwelling, year of construction and localisation (Luxembourg-city/rest of the country)
LV			X				Form of renting, year of construction, living area in m ² , years living in the same dwelling, location: urban or rural area, region of Latvia, presence of two utilities: town gas and separate WC.
MT	Imputed rent not provided						
NL							Regression based on the value of the dwelling
PL			X				Class of locality (6 levels), region NUTS2 (voivodship – 16 levels), dwelling area (quantitative, logarithm), • type of dwelling owner (3 levels), • house or a flat in multi-occupied building (2 levels), age of building (5 levels), dwelling standard (4 levels), type of heating (4 levels,) security and building protection (4 levels), self-contained dwelling or not (2 levels), furnished or not (2 levels); calculated imputed rentals refers to unfurnished dwellings).
PT	X						
RO	X						
SE		X					Type of dwelling, year of construction, number of rooms, useful living area in m ² , population density domain, household size, income in quartiles
SI		X					Location (Ljubljana, outside Ljubljana); availability of central heating (yes, no); size of the dwelling and number of rooms (a bed sit, 1, 2, 3, 4 +); profit rent.
SK						X	Average prices of dwellings by size in regions
UK	Imputed rent not provided						
NO		X					Geographical area, type and size of the

							dwelling, in total 24 stratum. An average rents for each stratum is calculated, and these average rents are used in the household budget survey when calculating consumption expenditure for owner-occupiers.
ME	X						
MK	Imputed rent not provided						
RS	X						
TR	X						
XK	X						Demographic characteristic, basic demographic characteristics of the reference person and household members, education, activity, main source of the household's income, individual income, household's consumption expenditure

Experience has shown that imputed rent is very sensitive to the estimation method and it has a large impact on the consumption expenditure structure. Consequently, the fact that countries used different estimation methods to calculate the imputed rent for the HBS 2015 wave is likely to have seriously reduced comparability across the countries. **The following countries have not imputed any rent for the use of owner-occupied dwellings as household main residence: UK, CZ, MT and MK.**

6.2 Other potential sources of non-comparability

There are two other specific aspects in the HBS where problems of comparability are likely to arise, or where at least a close examination is called for:

- Different HBS reference years
- Different survey instruments

6.2.1 Different HBS reference years

As was shown in Table 7 above, 26 out of 34 countries carried out the survey in the reference year. For the remaining countries, household level price coefficients were used to adjust expenditure and income. This has evident implications for comparability.

6.2.2 Different survey instruments

A common feature of all the HBSs is that households are asked to maintain detailed diaries of expenditure over a fixed time period. The recording period varies between the countries from one week to three month; two weeks being the most common. Furthermore, there are some variations in the survey instruments: many countries use household diaries, while others complement household diaries with individual ones in order to get more accurate information.

Different type of diaries were used for HBS 2015 wave. All countries used a paper diary except NL which used only a WEB diary. A WEB diary was also used in AT, BE, DE, EE, HU, SK and NO. Cash register receipts were collected in EE, FI, IE, LU, PL, SI, SE, NO, RS and TR. FI scanned receipts to record expenditures. Additionally SE and SI used administrative data.

Table 14 presents the different survey instruments which were used by the countries:

Table 14: Survey instruments

Country	Diaries	Recording unit	Recording period
AT	WEB, computer-based, paper	Household and Individual	Two weeks

	diary		
BE	WEB, paper diary	Household	One month
BG	Paper diary	Household	Two weeks
CY	Paper diary	Household and individual	Two weeks
CZ	Paper diary	Household	One month
DE	Paper diary	Household and individual	Three month
DK	WEB, paper diary,	Household and individual	Two weeks
EE	WEB, paper diary, cash register receipts	Household	Two weeks
EL	Paper diary	Household and individual	Two weeks
ES	Paper diary	Household and individual	Two weeks
FI	Paper diary, cash register receipts, receipt scanner	Household	Two weeks
FR	Paper diary	Household and individual	One week
HR	Paper diary	Household	Two weeks
HU	WEB, paper diary	Household and individual	Two weeks
IE	Paper diary, cash register receipts	Household and individual	Two weeks
IT	Paper diary	Household	Two weeks
LT	Paper diary	Household	Two weeks
LU	Paper diary, cash register receipts	Household	Two weeks
LV	Paper diary	Household and individual	Two weeks
MT	Paper Diary	Household and individual	Two weeks
NL	WEB diary	Household	Four weeks (1 week: all expenditures three weeks: expenditures > 20 euro)
PL	Paper diary, cash register receipts	Household	One month
PT	Paper diary	Household and Individuals	Two weeks
RO	Paper diary	Household	One month
SE	Paper diary, administrative data, cash register receipts	Household	Two weeks
SI	Paper diary, cash register receipts, administrative data	Household and individual	Two weeks
SK	WEB, paper diary	Household	One month
UK	Paper diary	Adults aged 16+ and children aged 7-15	Two weeks
NO	WEB, paper diary, cash register receipts	Household	Two weeks

ME	Paper diary	Household and individual	One month
MK	Paper diary	Household and individual	15 days
RS	Paper diary, cash register receipts	Household and individual	Two weeks
TR	Paper diary, cash register receipts	Household and individual	One month
XK	Paper diary	Household and individual	One month

7 COHERENCE

Coherence is an attribute of statistics measuring the adequacy of the data to be reliably combined in different ways and for various uses.

Consistency does not necessary mean being identical: often there are genuine and inherent differences in the information coming from sources of different types. What it means is whether different sources together lead to a consistent picture, with each making a contribution towards the completion of the picture. In the case of the HBS, the most relevant sources for external comparison include the EU Statistics on Income and Living Conditions (EU-SILC), National Accounts (NA), the Weights used in the Harmonised Index of Consumer Prices (HICP), Labour Force Surveys (LFS), and various administrative and other sources depending on the country.

7.1 Comparison with EU-SILC

EU-SILC is the main source for the compilation of comparable indicators on social cohesion used for policy monitoring at EU level. It is collecting annually multidimensional micro-data on income, poverty, social exclusion and living conditions. Every year, both cross-sectional data (pertaining to a given time or a certain time period) and longitudinal data (pertaining to individual-level changes over time, observed periodically, typically over a four year period) are collected.

Table 15 shows the values for five indicators: at-risk-of-poverty threshold; at-risk-of-poverty rate; relative at-risk-of-poverty gap; income quintile share ratio S80/S20, and, the gini coefficient, from the HBS 2015 micro-data and EU-SILC 2015¹⁵. In order to increase comparability, the EU-SILC methodology was used. That is, the HBS database was turned into an individual one by replicating the household records according to the household size (per capita). In particular:

- For each household, the household net monetary income was divided by the “equivalised” household size¹⁶ and the result was given to each household member as an estimate of the “personal” income.
- The indicators were calculated at individual level using this “personal” income as well as the household sample weights.

¹⁵ Source: EuroBase tables [ilc_li01], [ilc_li02], [ilc_li11], [ilc_di11] and [ilc_di12]

¹⁶ The “equivalised” household size is calculated according to the modified OECD scale: it gives a weight 1 to the first adult of the household, 0.5 to any other adult above 14 years old and 0.3 to any child under 14

Eurostat reminds the reader that these two surveys are from different samples with different sample sizes. There are inherent methodological differences between the two instruments: EU-SILC has been designed to be the reference source of income data at EU level, while HBS rather focuses on household consumption expenditures and provides less information on income, mainly for categorical purposes. Even though efforts have been made by countries to increase income comparability between HBS and EU-SILC, one cannot expect the household income collected from HBS to be as accurate as with EU-SILC. For instance, seasonal income components or small amounts can be under-represented in the HBS. Besides, divergences could also be explained by a difference in the definition of income. Finally, in some countries there are differences in the income reference period between HBS 2015 and EU-SILC 2015.

Table 15: Comparison HBS 2015 / EU-SILC 2015 ¹⁷

Country	At-risk-of-poverty threshold (EUR)		At-risk-of-poverty rate (%)		Relative at-risk-of-poverty gap		Income quintile share ratio S80/S20		Gini coefficient	
	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS	EU-SILC	HBS
AT	13956.0	13686.8	13.9	15.8	20.5	19.7	4.0	3.9	27.2	26.2
BE	12993.0	12937.0	14.9	12.2	17.4	14.2	3.8	3.4	26.2	24.1
BG	1999.0	1761.4	22.0	15.2	30.3	19.5	7.1	4.0	37.0	26.9
CY	8276.0	8154.0	16.2	16.0	19.8	21.1	5.2	4.7	33.6	30.7
CZ	4454.0	4666.3	9.7	7.0	19.2	14.3	3.5	2.8	25.0	20.3
DE	12401.0	12244.6	16.7	14.9	22.0	18.0	4.8	4.2	30.1	28.5
DK	17019.0	21072.1	12.2	13.8	22.0	16.0	4.1	3.8	27.4	26.5
EE	4733.0	4320.0	21.6	16.9	21.0	16.1	6.2	4.2	34.8	30.1
EL	4512.0	4857.0	21.4	20.3	30.6	30.7	6.5	6.5	34.2	34.5
ES	8011.0	6840.0	22.1	20.4	33.8	28.9	6.9	5.7	34.6	32.1
FI	14258.0	14688.6	12.4	10.5	13.2	14.8	3.6	3.5	25.2	25.3
FR	12849.0	12287.3	13.6	17.1	15.7	21.7	4.3	5.0	29.2	31.2
HR	3272.0	3267.5	20.0	19.5	26.4	24.6	5.2	5.0	30.4	30.6
HU	2734.0	2881.6	14.9	14.6	21.8	18.9	4.3	4.3	28.2	28.3
IE	13013.0	14237.0	16.3	16.3	18.5	19.4	4.5	4.4	29.8	29.0
IT	9508.0		19.9		29.3		5.8		32.4	
LT	3108.0	2511.5	22.2	19.4	26.0	12.2	7.5	4.5	37.9	29.8
LU	21162.0	19680.0	15.3	14.4	17.4	18.9	4.3	4.3	28.5	29.4
LV	3497.0	2898.8	22.5	16.2	25.5	22.7	6.5	4.7	35.4	30.6
MT	8131.0	8309.4	16.6	16.7	17.5	19.3	4.1	4.2	28.1	28.3
NL	12775.0	13466.4	11.6	13.1	16.8	17.3	3.8	4.0	26.7	27.2
PL	3333.0	3097.4	17.6	17.7	22.3	24.3	4.9	5.2	30.6	31.5
PT	5061.0	5070.0	19.5	19.1	29.0	22.2	6.0	6.1	34.0	35.0
RO	1389.0	1543.0	25.4	21.8	38.2	27.2	8.3	5.5	37.4	32.0
SE	15184.0	15554.8	16.3	14.7	19.9	20.6	4.1	3.8	26.7	25.6
SI	7399.0	7174.9	14.3	15.7	20.3	21.4	3.6	3.9	24.5	26.0
SK	4158.0	4408.5	12.3	8.8	28.9	17.1	3.5	3.0	23.7	21.6
UK	12617.0	15016.7	16.6	19.5	20.4	22.6	5.2	5.2	32.4	31.9
NO	24890.0	23675.4	11.9	8.5	19.7	18.5	3.5	3.2	23.9	22.9
MK	1272.0	1318.2	21.5	22.3	33.1	35.8	6.6	6.3	33.7	33.1
RS	1429.0	1553.3	26.7	21.0	37.5	26.9	10.7	5.9	40.0	32.7
TR	2031.0	2645.0	22.5	22.1	27.8	30.0	8.6	8.3	41.9	41.1

7.2 Comparison with National Accounts (NA) and HICP weights

The sets of households covered by the HBS, NA and HICP are not intended to be the same: HBS is typically covering a smaller set of households, while household consumption expenditure in NA covers the expenditures made by all households, including institutional households resident in the country or region, whether those expenditures are made inside or outside the country or region of residence. On the

¹⁷ Please note, that the detailed quality statistics reproduced in Table 15 are not transmitted by the Countries, and are to be considered as Eurostat estimates.

other hand the HICP does not include imputed rent and it includes the expenditure of tourists in the country, with an obvious effect on the structure.

Table 16 compares for each country the structures of final household consumption expenditure which have been obtained from HBS 2015, the NA and the HICP:

Table 16: Consumption Expenditure Structure (%): Comparison 2015 HBS / National Accounts / HICP ¹⁸

Country	Domain	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
AT	HBS2015	11.80	2.30	4.90	26.10	7.00	3.80	14.20	1.50	11.50	1.10	6.90	9.00
	HICP	11.67	3.85	7.19	14.18	7.61	5.08	14.50	2.19	11.18	1.15	14.27	7.14
	NA	10.0	3.3	5.9	22.2	6.6	3.9	12.0	1.9	10.2	0.8	12.9	10.3
BE	HBS2015	12.90	2.00	4.50	28.70	5.80	4.60	13.00	3.00	8.20	0.50	6.30	10.60
	HICP	15.99	4.76	5.73	14.65	7.83	7.16	14.21	3.42	9.19	0.55	7.27	9.25
	NA	13.3	4.2	4.6	24.4	6.2	6.3	10.8	2.3	8.6	0.4	6.3	12.5
BG	HBS2015	26.60	4.20	3.50	33.20	3.60	5.00	6.80	4.20	4.20	0.50	4.30	3.90
	HICP	22.77	7.18	3.62	9.51	6.73	5.84	17.72	6.04	6.60	1.00	7.98	5.01
	NA	19.4	5.2	3.1	19.9	4.8	6.1	15.1	4.8	7.6	1.0	7.1	5.9
CY	HBS2015	15.30	1.60	5.80	25.50	5.20	5.20	12.00	4.10	4.40	4.50	8.90	7.50
	HICP	17.51	7.10	6.43	7.26	5.48	6.08	11.42	4.14	6.40	3.42	18.32	6.45
	NA	14.6	6.0	5.0	16.5	4.3	5.0	11.7	3.3	6.1	2.7	16.5	8.4
CZ	HBS2015	21.10	3.10	5.30	22.30	6.30	2.70	11.00	4.40	9.90	0.60	5.90	7.20
	HICP	17.83	9.69	3.88	17.76	6.35	3.00	11.08	3.24	9.35	0.70	9.97	7.15
	NA	16.1	8.4	3.4	25.9	5.3	2.5	9.6	2.8	8.6	0.5	8.7	8.3
DE	HBS2015	11.50	1.60	4.70	33.00	4.80	4.00	13.40	2.60	10.20	0.80	5.10	8.30
	HICP	11.77	4.37	5.30	22.49	5.71	5.28	15.23	3.30	12.38	0.98	5.28	7.92
	NA	10.6	3.3	4.6	24.1	6.8	5.2	14.2	2.9	9.1	0.9	5.3	13.1
DK	HBS2015	12.01	2.3	4.09	32.2	5.73	2.39	13.36	2.53	9.79	0.47	5.14	10.0
	HICP	13.43	4.59	5.28	21.26	5.83	3.43	13.61	2.18	12.26	0.94	6.55	10.65
	NA	11.4	3.6	4.3	29.3	5.2	2.9	11.7	2.0	11.4	0.8	5.6	11.8
EE	HBS2015	23.60	3.70	5.40	16.80	6.70	4.30	13.10	4.70	10.90	1.30	4.20	5.30
	HICP	20.41	9.16	6.48	14.86	4.45	3.73	12.83	4.09	8.27	1.22	9.65	4.86
	NA	20.6	8.9	6.7	17.7	4.3	3.1	11.3	2.7	8.1	0.5	7.8	8.3
EL	HBS2015	18.80	3.50	4.90	28.00	3.90	6.40	9.70	3.50	4.00	2.80	8.80	5.70
	HICP	21.19	5.37	4.31	11.13	4.34	5.37	13.50	4.47	4.60	2.63	15.61	7.49
	NA	17.1	5.0	3.7	20.7	2.9	4.1	13.1	4.4	4.5	2.1	14.9	7.6
ES	HBS2015	15.00	1.90	5.10	31.80	4.20	3.50	11.50	2.90	5.80	1.40	9.30	7.50
	HICP	19.18	2.86	7.74	12.95	6.22	3.44	14.77	3.47	7.22	1.59	13.71	6.86
	NA	13.1	3.7	4.3	23.0	4.2	4.1	11.2	2.4	7.2	1.8	15.7	9.1
FI	HBS2015	12.00	2.20	3.00	31.50	4.30	3.40	15.50	2.60	9.20	0.10	5.00	11.30
	HICP	16.10	5.97	5.78	15.96	6.29	5.61	14.78	2.84	11.67	0.53	8.12	6.37
	NA	12.4	4.5	4.4	28.1	4.9	4.4	11.7	2.3	10.6	0.4	6.3	9.9
FR	HBS2015	14.28	2.50	3.95	28.88	4.79	1.58	13.20	2.35	7.74	0.59	5.45	14.68
	HICP	16.59	4.09	5.05	15.96	6.38	4.23	16.24	2.87	8.69	0.46	8.77	10.67
	NA	13.4	3.8	3.9	26.5	4.9	4.2	13.0	2.6	8.0	0.5	6.8	12.5
HR	HBS2015	24.00	2.70	5.50	31.80	3.70	2.40	10.60	4.50	4.80	0.90	2.20	7.00
	HICP	21.14	6.79	4.90	13.98	5.69	4.93	11.98	3.57	9.19	1.74	9.61	6.49
	NA												

¹⁸ Please note, that the detailed quality statistics reproduced in Table 16 are not transmitted by the Countries, and are to be considered as Eurostat estimates.

HU	HBS2015	19.90	2.70	3.40	37.00	3.20	4.10	9.10	5.80	5.30	0.70	2.90	5.90
	HICP	21.25	8.33	3.43	12.77	4.97	5.38	15.50	4.22	7.10	1.80	8.18	7.08
	NA	18.2	7.4	3.6	19.5	4.5	4.4	12.9	3.8	7.2	1.7	8.2	8.6
IE	HBS2015	11.50	2.30	4.30	31.70	3.80	2.30	12.90	3.80	8.30	2.30	6.40	10.50
	HICP	12.64	5.74	4.73	13.02	4.82	5.72	13.48	3.28	8.04	2.78	18.46	7.30
	NA	9.7	5.4	4.0	23.2	4.5	5.1	13.5	2.8	6.3	2.7	14.6	8.3
IT	HBS2015	17.90	1.80	4.70	35.40	4.20	4.60	10.70	2.50	5.10	0.60	4.90	7.50
	HICP	17.57	3.47	8.10	12.36	8.12	4.00	14.69	2.71	6.22	1.29	11.88	9.61
	NA	14.3	4.1	6.3	23.8	6.2	3.5	11.9	2.3	6.6	1.0	10.0	9.9
LT	HBS2015	24.40	3.10	5.40	33.40	4.20	5.20	8.10	3.30	5.00	0.60	2.80	4.50
	HICP	21.75	8.44	6.65	12.09	6.28	6.32	15.31	2.75	6.99	1.24	4.34	7.86
	NA	22.6	6.9	6.0	15.9	6.5	4.8	14.7	2.6	8.0	0.5	3.1	8.4
LU	HBS2015	8.70	1.30	5.30	34.90	6.30	2.40	14.10	2.50	6.90	0.80	8.30	8.50
	HICP	10.87	10.56	6.51	10.98	7.23	1.93	20.50	2.09	7.13	1.23	9.01	11.96
	NA	9.3	7.8	5.8	24.3	5.6	2.6	15.7	1.5	6.1	1.1	7.5	12.7
LV	HBS2015	24.00	3.00	5.50	23.70	4.30	5.80	11.90	4.00	7.10	1.20	4.40	5.20
	HICP	22.94	7.76	5.63	15.37	4.33	5.45	14.76	3.41	7.55	1.42	6.61	4.79
	NA	18.5	7.6	5.4	21.6	4.0	4.6	11.8	2.7	9.4	1.6	6.7	6.0
MT	HBS2015	19.80	2.30	7.90	8.40	7.40	5.60	14.20	4.30	8.00	2.80	8.30	10.80
	HICP	16.75	3.57	5.96	8.15	7.59	4.26	14.24	3.93	10.19	1.77	16.10	7.49
	NA	12.4	3.9	4.8	10.2	7.1	3.9	11.9	3.6	10.2	1.8	19.2	10.9
NL	HBS2015	10.60	2.90	4.50	30.40	5.10	1.30	12.50	3.20	8.40	1.30	5.70	14.00
	HICP	14.44	3.76	6.04	16.47	6.51	3.22	13.65	3.78	13.04	0.98	8.30	9.83
	NA	11.5	3.3	5.4	24.4	5.4	3.5	12.0	3.1	10.0	0.7	7.8	12.9
PL	HBS2015	21.10	2.20	4.80	34.00	4.40	4.60	7.70	4.40	5.90	0.90	3.60	6.40
	HICP	18.74	7.33	4.82	18.08	5.14	5.40	12.22	2.97	8.30	1.22	3.55	12.23
	NA	16.9	6.0	5.0	21.5	5.3	5.4	12.3	2.4	7.8	1.0	3.1	13.3
PT	HBS2015	14.30	1.60	3.50	31.90	4.00	5.50	14.10	3.20	4.20	2.30	8.80	6.70
	HICP	20.83	4.06	7.19	9.17	6.35	5.88	13.29	3.51	6.49	1.69	11.92	9.63
	NA	17.1	3.1	6.4	19.0	5.1	5.1	12.3	2.4	6.1	1.2	11.7	10.5
RO	HBS2015	30.20	6.10	4.50	35.40	3.30	3.80	4.90	4.00	3.10	0.30	1.10	3.20
	HICP	30.46	6.43	5.22	10.82	5.05	7.10	13.74	5.18	6.15	2.60	3.35	3.88
	NA	27.8	5.7	3.5	22.5	4.6	6.0	11.2	4.1	5.8	2.1	3.1	3.7
SE	HBS2015	11.70	1.80	4.30	32.10	5.60	2.10	13.70	3.20	14.30	0.20	3.70	6.50
	HICP	15.62	4.50	6.13	14.99	5.98	4.40	14.78	3.96	12.10	0.20	7.61	9.74
	NA	12.4	3.6	4.8	25.9	5.3	3.6	12.6	3.1	11.0	0.3	6.2	11.1
SI	HBS2015	14.50	1.80	5.70	26.40	4.20	2.10	17.60	4.80	7.20	0.90	4.80	10.10
	HICP	17.23	5.69	5.81	10.89	5.76	4.70	17.58	3.68	8.19	1.53	9.89	9.05
	NA	15.3	5.5	5.0	19.7	4.8	3.9	15.8	3.0	8.7	1.3	6.8	10.2
SK	HBS2015	19.50	2.70	4.70	31.60	4.70	2.80	10.80	4.80	6.00	0.70	4.60	7.20
	HICP	18.82	5.63	4.86	20.06	7.08	4.66	8.67	3.77	9.35	2.02	6.30	8.80
	NA	17.8	5.1	4.0	24.9	5.9	2.5	7.5	3.4	9.9	1.6	5.8	11.6
UK	HBS2015	12.10	2.40	5.00	18.80	7.50	1.50	15.40	3.40	14.40	1.50	9.60	8.40
	HICP	11.00	4.30	7.00	12.80	5.90	2.50	14.90	3.10	14.70	2.60	12.10	9.10
	NA	8.3	3.5	5.6	27.3	4.6	1.7	13.5	1.9	9.5	1.8	9.5	12.8
NO	HBS2015	11.80	2.70	5.40	31.20	5.60	2.60	18.80	1.90	9.90	0.20	3.60	6.20
	HICP	14.60	4.66	6.11	11.87	7.45	3.51	19.01	2.92	12.50	0.64	7.53	9.20
	NA	12.2	4.1	5.0	22.5	6.3	3.0	15.6	2.2	11.1	0.4	6.6	11.0
ME	HBS2015	28.50	3.10	7.10	29.30	3.20	3.50	8.80	4.80	2.90	2.10	2.50	4.20

	HICP												
	NA	26.4	5.5	4.5	13.1	8.2	2.5	8.8	4.4	4.1	1.3	16.0	5.2
MK	HBS2015	43.30	4.00	6.60	15.40	5.20	4.20	5.60	3.40	2.80	0.50	3.90	5.00
	HICP	39.81	6.47	5.44	10.29	4.21	2.04	9.95	4.72	3.92	1.71	5.43	6.02
	NA												
RS	HBS2015	29.60	3.80	4.20	30.80	3.80	3.50	8.00	4.50	3.90	1.00	2.30	4.60
	HICP	32.09	7.90	4.21	13.32	4.64	5.63	12.49	4.83	5.29	1.47	2.92	5.21
	NA	25.5	7.2	4.2	21.3	3.9	4.0	11.5	5.1	5.5	1.3	2.6	7.8
TR	HBS2015	19.70	4.30	5.10	25.50	6.40	2.00	17.60	3.70	2.90	2.30	6.20	4.20
	HICP	24.25	4.82	7.38	15.79	7.78	2.57	15.38	4.38	3.54	2.53	6.99	4.60
	NA	21.6	3.0	7.4	15.6	8.1	2.1	16.0	3.4	5.7	1.6	7.8	7.7
XK	HBS2015	42.70	4.10	4.20	29.60	3.50	2.70	4.40	2.80	0.50	0.50	2.30	2.70
	HICP												
	NA	34.2	5.1	3.6	16.2	8.4	2.0	13.7	3.7	4.2	1.0	1	5.7

In most of countries, HBS appears to collect more expenditure on Food and non-alcoholic beverages (CP01) than the National Accounts: this makes sense, given the mode of data collection in the HBS (diaries). On the other hand, the share of expenditure HBS reports on Alcoholic beverages, tobacco and narcotics (CP02) is generally lower than the value estimated by the NA: people seem to understate the amounts of their expenditures on these “sensitive” products. Finally, in most of the countries, the share of housing, water, electricity, gas and other fuels (CP04) is higher in the HBS: underreporting of these categories is not common in the HBS survey because they generally occur only once a month. The HICP shows differences in share of housing, water, electricity, gas and other fuels (CP04), food and non-alcoholic beverages (CP01) and restaurants and hotels CP11 (especially in those countries which have a large tourist industry).

8 COST AND BURDEN

8.1 Household costs

Taking part in the HBS places a significant burden on the household. Normally, when a household accepts to take part in this survey, it endeavours to comply with the instructions given by the organisation carrying out the survey. A household has to keep track of all the items consumed by all the household members during the recording period (See Table 14). Encouraging households to keep or photograph receipts instead of writing down all the items bought helps, however some countries record the quantities consumed as well. Not all receipts have this, even those from large supermarkets. Moreover, one may have difficulty to recall items bought infrequently even if they are for substantial amounts of money. The small incentives that these households are given in some countries for taking part in the survey is not normally enough to compensate fully for the effort involved. This may explain in part the low response rate associated with this survey.

8.2 NSI costs

NSI costs relate to:

- Interviewing: whether a small gift is given to the household
- How the enumerator is paid, either by the hour or per household
- Coding and checking of questionnaires
- Data entry
- Supervision
- Other costs (e.g. purchase of PCs; consultants; software development)
- Overtime (related to data collection)
- Any extra back up staff like clerks, etc.

8.3 Cost to Eurostat and other commission services

For the 2015 wave the Eurostat costs mainly comprised:

- a full-time Assistant-grade staff member for 5 years
- part of the time of a supervisory Administrator-grade staff member during this time,
- development of an IT System to process the data, which is usually out-sourced.

APPENDIX 1: COUNTRY CODES

Code	Name
AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom
NO	Norway
ME	Montenegro
MK	North Macedonia
RS	Serbia
TR	Turkey
XK	Kosovo

APPENDIX 2: VARIANCE ESTIMATION

Introduction We seek to work out accuracy measures, namely standard errors and confidence intervals, for the main statistics which are derived from the HBS micro-data, that is, the mean consumption expenditure (total and by ECOICOP groups) and the structure of consumption expenditure.

The basic assumption here is the HBS indicators are liable to sampling errors only. Sampling errors arise from estimating a population characteristic by looking at one portion of the population rather than the entire population. The other types of errors (e.g., coverage errors, measurement errors, processing errors...) will not be taken into account in our calculations.

The standard error of a survey estimate measures the variation of the statistic over all the possible samples that can be selected under the sampling design. Standard errors are actually used to calculate confidence intervals in which the target parameter falls with a high probability (usually set at 95%). The dissemination of confidence intervals together with survey estimates is a key step to assess survey data quality.

Mean Consumption Expenditure – Variance Estimation

Introduction

Let y_i denote the consumption expenditure of household i . The mean consumption expenditure is given by:

$$\bar{Y} = \frac{\sum_{i \in U} y_i}{N}$$

Where N is the size of the household population U

Since HBS data are collected over a sample s of the household population, the mean consumption expenditure is estimated by:

$$\hat{\bar{Y}} = \frac{\sum_{i \in S} \omega_i \cdot y_i}{\sum_{i \in S} \omega_i}$$

Where $\{\omega_i, i \in S\}$ are the sample weights¹⁹

¹⁹ HBS variable HA10

Estimation formulae for standard errors and confidence intervals

Under the above notations, the (absolute) standard error of the mean consumption expenditure $\hat{\bar{Y}}$ is estimated by the square root of the estimated variance $\hat{v}\hat{a}r(\hat{\bar{Y}})$, the latter being given by:

$$\hat{v}\hat{a}r(\hat{\bar{Y}}) = \frac{1}{\hat{N}^2} \frac{1}{n(n-1)} \sum_{i \in S} \left(n\omega_i y_i - \sum_{k \in S} \omega_k y_k \right)^2 \quad (1)$$

Where n is the achieved household sample size and $\hat{N}$ is the estimated size of the household population ($\hat{N} = \sum_{i \in S} \omega_i$)

The relative standard error (or Coefficient of Variation - CV) is estimated by:

$$CV(\hat{\bar{Y}}) = 100 \times \frac{\sqrt{\hat{v}\hat{a}r(\hat{\bar{Y}})}}{\hat{\bar{Y}}} \quad (2)$$

In order to obtain a confidence interval for the mean consumption expenditure, it is assumed the statistic follows a normal distribution. Under the same notations as above, a 95% confidence interval is given by:

$$CI(\bar{Y}) = \left[\hat{\bar{Y}} - 1.96 \cdot \sqrt{\hat{v}\hat{a}r(\hat{\bar{Y}})} ; \hat{\bar{Y}} + 1.96 \cdot \sqrt{\hat{v}\hat{a}r(\hat{\bar{Y}})} \right] \quad (3)$$

The main assumption underlying (1) is the sample households were drawn with replacement. Even though this assumption is not actually true, it is reasonable for most of the HBS countries given the sampling rates (i.e. ratio between the sample size and the population size) are pretty low.

Actually, (1) does not allow for the improvements which should be achieved in sample accuracy by stratifying the household population or by calibrating the sample weights to external sources. However, since these two techniques are designed to make the accuracy better, not taking them into account in variance calculations should only lead to conservative estimates.

Most of the HBS samples are clustered samples which were drawn using multistage sampling schemes. The level of accuracy of clustered samples is generally lower because units from the same cluster tend to be “similar” as regards certain survey characteristics. A major shortcoming of (1) is it does not take this factor into account, thereby downwardly biasing the variance estimates.

Structure of Consumption Expenditure – Variance Estimation

Another key HBS indicator is the structure of household consumption expenditure: this is the distribution of the total mean expenditure between the different ECOICOP divisions, expressed in thousands of the total mean expenditure. This indicator is essential to examine how households split their expenditures among the different ECOICOP categories, and to monitor how the structure can be affected over time by price changes.

In order to estimate the accuracy of such non-linear statistics, the latter have to be “linearized”. The linearization technique approximates a non-linear statistic by a linear one (using a Taylor-like expansion). Then, a variance estimate for the linear statistic is given to the initial non-linear statistic as an estimate for its variance.

Let $\hat{\bar{Y}}$ be the estimated mean expenditure in a given ECOICOP group and let $\hat{\bar{X}}$ be the total mean expenditure. Using the same notations as for the previous section, the variance of the estimated ratio $\frac{\hat{\bar{Y}}}{\hat{\bar{X}}}$ is estimated by:

$$v\hat{a}r\left(\frac{\hat{\bar{Y}}}{\hat{\bar{X}}}\right) = v\hat{a}r\left(\hat{\bar{Z}}\right) = \frac{1}{\hat{N}^2} \frac{1}{n(n-1)} \sum_i \left(n\omega_i z_i - \sum_k \omega_k z_k \right)^2 \quad (4)$$

Where for all household i : $z_i = \frac{1}{\hat{\bar{X}}} \left(y_i - \frac{\hat{\bar{Y}}}{\hat{\bar{X}}} x_i \right)$ (“linearized” variable)

Design Effect (Deff)

By definition, the Design Effect factor (Deff) for a given statistic is the ratio between the estimated variance of that statistic under the actual sampling design to the variance that would be obtained under Simple Random Sampling (SRS) of same size n .

A Deff value greater than 1 indicates the sampling design has deteriorated the accuracy (because of clustering, unequal weighting...). On the other hand, a Deff value lower than 1 means the sampling design has had a positive impact on the accuracy.

Under the same notations, the variance that would be obtained under Simple Random Sampling of same size n is estimated by:

$$v\hat{a}r_{SRS}\left(\hat{\bar{Y}}\right) \approx \frac{\frac{1}{\hat{N}-1} \sum_{k \in S} \omega_k \left(y_k - \hat{\bar{Y}} \right)^2}{n}$$

APPENDIX 3: MAIN SAMPLING CHARACTERISTICS

Country	Ultimate sampling unit	Probability sampling (Y/N)	Number of sampling stages	Description	Stratification criteria and allocation of the sample	Sampling frame	Over-sampling of special domains
AT	Household	Y	1		Four periods within one year, each stratified by interviewer unit	Central Register of Residence	
BE	Household	Y	3	Two stages for the Labour Force Survey sampling design and an additional 3rd stage for the Household Budget Survey. Stage 1: Stratified, systematic probability proportional to size sampling of sub-municipalities (PSUs); Stage 2: Stratified simple random sampling of HHs (USUs); Stage 3: stratified random cluster sample of households. Clusters are the LFS-groups of households as determined after the second stage; households within each group belong to only one PSU, and a PSU can contain more than one group.	Stage 1: NUTS2; Stage 2: in stage 1 selected PSUs; Stage 3: combination of the strata defined for stage 1 and the month to which each LFS-group of households is assigned.	National Population Register	BE10 (Brussels-Capital Region)
BG	Household	Y	2	Two-stage selection - Selection units in the first stage are enumeration areas. - In the second stage, a systematic sample of households is selected within each PSU according to household size.	Two levels of area stratification - District – stratification based on the partition of the total country area into 28 standard administrative regions corresponding to the European NUTS 3 level. - Type of area – district town, other urban area, rural area. The total number of strata of the survey is 83.	Census 2011	Smaller administrative regions are over-sampled. Non-proportional selection is applied in order to produce more accurate sample data in the small regions.
CY	Household	Y	1 (for urban areas) and 2 (for rural areas)	The households were stratified by district and urban/rural region. In total 9 strata were used. The five rural strata were formed by using two-stage sampling. Firstly, probability proportionate to size was used for selecting the rural areas and then systematic random sampling was used for selecting the households. For the four urban strata, systematic random sampling was used for		Census 2011	

				selecting the households.			
CZ	Household	N	1	Households were selected by quota sampling technique. Quotas were set for segments of population defined by certain variables. The groups of household were derived by the economic activity of the household's head and his/her economic status as the basic sampling attributes. For three most important groups of household, the following variables were also used for construction of quotas: 1) net money income per household member and number of dependent children - for household of employees and household of the self-employed; 2) pensions per household member and number of members (in one-member households also the sex of the person) - for households without economically active members. 3) municipality size and type of house - applies to all groups of household. When a household was dropped from the sample in the course of the year (for no longer having the prescribed sampling attributes or when it is no longer willing to report) it was substituted by another household with the same characteristics.	The households were recruited by regional units of the Czech Statistical Office according to a quota plan designed by the headquarters (HBS Department). In 2015, the sample was built by carrying out the detailed quota scheme constructed on the basis of EU-SILC. The quotas (numbers of households in population segments) were prescribed for each region in the Czechia and reflected in all cases by EU-SILC. The group of pensioners was under-sampled, because the group of households was more willing to participate in the survey and thus number of the households of the pensioners did not have to correspond to their actual share in population.	NA	

DE	Household	N	1	Quota sampling (see also DE HBS_ESQRS_A_DE_2015)	Type of household, income, main status of person with highest income in household	Households are recruited by common and special advertising in all areas of Germany according to a quota frame. Target figures of quota cells are derived from the German micro census (1%-household sample with compulsory response)	Slightly over-sampling of small population groups such as self-employed, officials, high income groups, single parents and smaller regions (Nuts-1)
DK	Address	Y	1	The sample is drawn randomly within specif geographic areas, under consideration of a reasonable geographic coverage.		Register of inhabited addresses	
EE	Household	Y	1	The population of the Household Budget Survey was made up of all permanent residents of the Republic of Estonia aged 15 or older as of 1 January 2010, who live in private households, excl. those residing in institutions on a long-term basis (at least for a year). Sampling frame is statistical population register which is based on administrative population register and updated with information from other administrative sources. (See more EE HBS_ESQRS_A_EE_2015)	Stratification into three strata by geographical regions: 1. 5 larger counties: Harju, Ida-Viru, Lääne-Viru, Pärnu, Tartu 2. 9 small counties: Jõgeva, Järva, Lääne, Põlva, Rapla, Saare, Valga, Viljandi, Võru 3. Hiiu county (the smallest county with population size times smaller of the next smallest one)	Population Register	Hiiu county is oversampled to guarantee reasonable precision of national regional estimates

EL	Household	Y	2	The two-stage area sampling was applied for the Household Budget Survey 2015. The sample of private households was selected in two stages. The Primary units are the areas (one or more unified building blocks) and the ultimate sampling units selected in each sampling area are the households.	• The first level is the geographical stratification based on the partition of the total country area into thirteen (13) Regions corresponding to the European NUTS 2 level. The two former major city agglomerations of Greater Athens and Greater Thessaloniki constitute separate major geographical strata. So, the number of geographical strata in the first level is 15. • The second level of stratification entails grouping municipal and local communities within each NUTS 2 Region by degree of urbanization, i.e., according to their population size. (see more EL HBS_ESQRS_A_EL_2015)	Population Census 2011	
ES	Private dwelling	Y	2	A two stage sample has been used with stratification of the primary sampling units. The Primary sampling units (PSUs) are the census sections in which the whole country is divided at the moment of the survey. The second stage units (SSUs) are main family dwellings. No subsample has been carried out at all and all households who reside in the dwelling are investigated. Sections were selected, within each stratum, with probability proportional to its population size and dwellings with equal probability in each section of the sample by means of systematic sample with random start.	An independent sample has been selected within each autonomous community (region). Strata are defined according to size of municipality of residence and substrata according to socio-economic status and other variables related to the activity situation and the age.	Use of an area frame and Register	In the scope of País Vasco, the survey has been conducted in partnership with the Basque Statistics Institute (Eustat), so in this region the sample size has been duplicated.

FI	Household	Y	2	The Finnish HBS complies with two-phase stratified sampling design. First a master sample of 100 000 individuals aged 16 and over was drawn from the population register. People living in the same household were included and dwelling units were formed. The master sample was stratified and sorted by age, size of the dwelling unit and domicile. Systematic sampling was used to draw the finale sample of 8 000 dwelling units from the master sample.	Region	Population information system (register)	Åland region and single person households under 65 years
FR	Household	Y	2	Stratified random sampling	Size of the household (1 person / 2 or 3 persons / 4 or more persons)	Census 2015 + social database (CNAF) for the single parent families	Overseas departments, single parent families
HR	Dwelling	Y	2	Two-stage sample selection. First, a sample of geographical areas (so colled segments) is selected with probabilities proportional to size. The second stage consists of the simple random selection of 10 inhabited dwellings, within each sample area. Segments (PSUs) are territorial units formed by grouping the neighbouring enumeration districts and were defined according to the results of the Census 2011. Segments consist of one or more enumeration districts near each other.	Stratification criteria are twenty one (21) counties	Census 2011	
HU	Household	Y	2	Two stage, first stage is a stratified sample of settlements, second consists of households, with selected unequal probability.	For settlements: county and size categories, for households: age and educational attainment of the head of the household	Census 2011	Over-sampling: households with higher educated members
IE	Household	Y	2	A sample of 1,430 blocks (i.e. Household Survey Collection Unit Small Areas, Census 2011) from the total population of 17,320 blocks was selected. Blocks were selected using probability proportional to size (PPS), where the size of the block is determined by the number of occupied households on Census night 2011	The household population was stratified by NUTS4 and quintiles derived from the Pobal HP (Haase and Pratschke) Deprivation Index.	All occupied households on Census night 2011	

IT	Household	Y	2	In each region (NUTS level 2), selected municipalities are stratified by typology and demographic size (in terms of resident population), so that they are divided into 2 groups: - auto-representative municipalities - not auto-representative municipalities Each auto-representative municipality represents a stratum and participates in the survey all months. Not auto-representative municipalities are first grouped in strata of the same demographic size and then 3 municipalities are randomly selected from each stratum to participate in the survey once a quarter (i.e., 4 months per year).	-	Municipality population registers	
LT	Household	Y	1	Resident population statistics data (number of persons by sex, age groups and in strata) were used for weighting and grossing-up. The resident population and its structure are determined using a cohort-component method (based on the results of the most recent population and housing census, statistical data on live births, deaths, individuals changing their usual place of residence, territorial-administrative changes).	The entire territory of Lithuania was divided into 25 non-overlapping groups – strata. The population of the 5 largest cities of Lithuania, towns and rural areas of the 10 counties were divided into separate strata.	Population Register	
LU	Individuals	Y	1	Stratified simple random sampling,	Geographical region ("canton")	Population Register	
LV	Household	Y	2	At the first stage, census counting areas are used as a sampling frame. The list contains information about the number of addresses in each counting area. At the second stage, sampling frame is built from the statistical register of dwellings. The sampling frame ensures information about citizens of Republic of Latvia legally registered at the dwelling as well as their gender, age and nationality. Sampling frame is made on a quarterly basis	Addresses are stratified by the degree of urbanisation: Riga – the capital; other largest towns (except for Riga); other towns and rural areas.	Sampling frame is built from the Demographic Statistics Data Processing System (DSDPS). DSDPS includes data from Population register, The National Real Estate.	

MT	Household	Y	1	Ultimate Sampling Unit: Private Households Sampling Method: Systematic Random Sampling	District, number of males and females living in households and number of persons within specific age groups		
NL	Household	Y	2	Stratified probability sampling with Neyman allocation.	Income deciles	Population register	According to the Neyman allocation, high incomes have to be oversampled because they have more variation in their expenditures than households with low incomes.
PL	Dwelling	Y	2	The adopted sampling scheme was a geographically stratified and two-stage one with different selection probability at the first stage. The sampling units for the first stage were the area survey points (asp) and those for the second stage were dwellings. The first stage sampling frame was based on the records of statistical areas (sets of areas) designed for the National Census purposes and updated annually by the changes resulting from the administrative division of the country as well as construction of new and dismantle of old houses. The sampling frame keeps in record information about every statistical area concerning address characteristics as well as the estimated numbers of inhabitants and dwellings.	In 2015 two subsamples, consisting of 783 asp each were used, i.e. • subsample 1 – selected in 2013 for the surveys in 2014–2015, • subsample 2 – selected in 2014 for the surveys in 2015–2016. Both the subsamples were selected according to the same sampling scheme, but with different number of strata. Prior to sample selection, the asp were stratified separately for every voivodship (NUTS2) by 6 class of locality (classes of locality are towns grouped according to the number of inhabitants and rural area).	TERYT, i.e. National Official Register of the Territorial Division of the Country	Additionally the sample of 108 rural asp was drawn and divided in proportion to the number of dwellings in rural strata.
PT	Dwelling	Y	2	The sampling frame was selected from the National Dwellings Register (NDR) which comprises all the private dwellings (and their buildings) registered in the Census	NUTS 2	National Dwellings	

				2011. In the first stage PSU's were selected systematically with probability proportional to their size (in private dwellings of usual residence); these PSU's are clusters constituted by one or more contiguous cells of the European GRID 1Km*1Km. For the sample selection the dwellings were selected (in a second stage) systematically in each PSU		Register	
RO	Household	Y	2	In the first step, 792 survey centres were selected (Primary Sampling Units) from the Population and Housing Census - October 2011 (PHC 2011) using the method of stratified and balanced extraction of Primary Units within each stratum, thus establishing the Master Sample EMZOT 2011 (multifunctional sample of territorial areas) as a sampling frame for households' sample surveys, during the inter-censuses period. The stratification criteria were the county and the residence area, which through intersection, resulted in 88 layers (in Bucharest Municipality the selection was carried out separately for each of the 6 administrative districts). EMZOT is a sample of 792 survey centres spread over all counties and all districts of Bucharest Municipality (450 in urban area and 342 in rural area). In the second step, 9504 permanent dwellings were selected per quarter, in three monthly waves of 3168 dwellings, according to a systematic selection algorithm. The dwellings extracted in the second step are treated as secondary sampling units. From each of the survey centres there were included in the sample 12 dwellings quarterly, respectively 4 dwellings monthly	The stratification criteria were the county (NUTS-3 level) and the residence area (urban/rural), 88 strata resulting from their intersection (in Bucharest Municipality each of the 6 administrative sectors is a stratum).	Population and Housing Census - October 2011	
SE	Individual (0-79)	Y	1	The Total Population Register (TPR) is kept at Statistics Sweden since 1968. TPR is an extract from the population register at the Tax Authorities and all individuals residing in Sweden shall be registered at the property unit in the parish where they live. Each individual in TPR has a unique personal identity number. TPR receives daily updates on births, deaths, changes in marital status, and changes in citizenship, national migration, immigration and emigration from the Tax Authorities. Received information is checked mechanically with respect to the validity of the codes and the logical	Household type according to administrative data	Total Population Register	Over-sampling of some household types because of the expected lower response rate for these types.

				contents of the information and quality tests comprises, among other things, regional codes, connections between age and marital status, etc.			
SI	Selected person on address	Y	2	In the first stage sampling units were selected (made up of one or more spatial districts). In the second stage six people were selected in each sampling unit.	The sample stratification was made with regard to 12 statistical regions and six types of settlements.	Central Population Register	Strata with lower survey rate in previous years than other strata (settlements with 10000 to 100000 inhabitants and Ljubljana, the capital of Slovenia).
SK	Household	Y	2	Two-stage stratified random sampling	Strata – NUTS3 (8 categories) by size of the municipality (7 categories), 48 strata altogether (since 8 are empty). Proportional - the number of residential households in strata.	Population and Housing Census 2011	
UK	Household	Y	2	The region is based on the Government Office Region (GOR) sub-divided into metropolitan and non-metropolitan areas. National Statistics Socio-Economic Classification (NS-SEC) Each major stratum is divided into four bands according to the proportion of households whose head was in a professional or managerial occupation (NS-SEC 1-3 or 14). Car ownership Within each band, PSUs are sorted in order of the proportion of households with no car.	Postcode sectors are drawn from a list stratified using area-level data	Postcode Address File	

NO	Household	Y	2	A sample of 7000 households, stratified after region and household type, with simple accidental sampling within each stratum. There are different sampling shares for each household type, but similar sampling shares for all regions, according to household type.	Region	Area Frame	
ME	Household	Y	2	The population and sample of EAs was divided in the 4 stratum. The second stage sample of households was taken as a simple random sample without replacement (SRS) of 5 households + 3 reserve households in each selected EA from the first stage, meaning a total of 1 560 (312EA) “primary” selected households. The sample of EAs was randomly split into 12 groups of equal sizes (26 EAs in each group), one per month. This means that the data for the first three months should be based on 78 EAs. However there was some non-response both among the EAs as well as among the households.	Most countries stratify the sample according to certain criteria, thus hoping to make it more accurate. Common stratification criteria are region, socio-economic status of reference person, household size or type	Census 2011	
MK	Household	Y	2	Primary sampling units are selected proportional to the number of households in strata. In first stage randomly are selected 210 enumeration districts (ED) using stratification criteria. The second stage quarterly consists of the simple random selection of 6 households/dwellings within each sampled ED.	The sample design strata were defined in terms of 8 geographic regions (NUTS 3), area types (such as urban and rural).	Census 2002	
RS	Household	Y	2	The sample is based on two-stage stratified random sampling design. Primary sampling units (PSUs) are enumeration areas and then the ultimate sampling units are households.	The sample is consisted of the 12 independent sub-samples for each month. Enumeration districts (PSUs) are stratified according to the type of settlement (urban and other) and to the territory of 14 regions.	Census 2011	

TR	Household	Y	2	Both primary and final sampling units are selected by taking into account the probability sampling principles. The blocks are selected based on probability proportional to size from the sampling frame of blocks each consists of approximately 100 household addresses. The sample of addresses from the selected blocks are determined by the systematic sampling selection. Hence the design weights are assigned to the sampled units based on their selection probabilities.	The survey provides estimates on turkey total annually and nuts2 level from three year cumulated data. Therefore in the design of the survey the nuts2 breakdown was taken into account. Besides, it is known that the urban rural breakdown is also an essential criteria while allocating the sample size.	Address Based Population Register System and National Address Database	
XK	Household	Y	2	The sampling frame was based on the data and cartography from the 2011 Kosovo Census. For the purposes of the census enumeration, Kosovo was subdivided into enumeration areas (EAs), which are relatively small operational segments defined for the census enumeration. A total of 4,626 EAs were defined for Kosovo, and these were used as the primary sampling units (PSUs) selected at the first sampling stage for the HBS. A total of 300 sample EAs were selected for HBS 2015 Kosovo. Within each sample EA 8 sample households were selected at the second stage, for a total sample size of 2,400 per year. The household budget survey is stratified by 7 regions and urban/rural area.	Region and Urban/Rural	Census 2011	

APPENDIX 4: Items covered in the diaries

Country	Items covered in the diary
AT	Expenditure and benefits in kind
BE	For expenditures: quantity, quantity measurement unit, type of expenditure, information on the product, amount paid (euro), amount remaining to pay, location of the purchase, and country of the purchase. For products from a self-employed or non-professional activity: information on the product, quantity, quantity measurement unit, professional or not, sales price (if professional).
BG	All monetary expenditure in detail; monetary income from all sources; receipts, savings and debts; benefits in kind and own production; use of food products and non-food goods; manufactured raw materials and products obtained from the processing.
CY	Everything that was purchased or produced by the household, during the fourteen day period, and is included in COICOP.
CZ	Monetary balances, household composition (changes in number of members, in employment, temporary absence of members, etc.), monetary income, monetary expenditure (expenditure included in COICOP, expenditure not included in COICOP, such as capital investment in construction or reconstruction of a house or dwelling, expenditure related to the care of a vegetable / fruit garden or domestic animals, etc.), personal consumption in kind and expenditure in kind.
DE	Revenues according to 7-digits of "Systematik der Einnahmen und Ausgaben" (SEA), consumption and non-consumption expenditure (mostly 4-digits of SEA), expenditure on food and beverage (20%-subsample of EVS): 7-digits of SEA
DK	Households have to register every single expense during the two weeks periode. Fixed epenses as eletricity, rent insrance etc. are collected by CAPI.
EE	Expenditure on food products and consumer goods, taxes paid and payments made; the consumption of self-produced food products, food products received as payment in kind and free food products.
EL	All types of expenditure
ES	Households registers every kind of expenditure along two weeks (14 days) except receipts (electricity, school, etc.) and other regular expenditures that are collected in a specific questionnaire ("last receipt") with complementary information (how often has been paid in last twelve months, etc.)
FI	Food and other daily consumer goods, clothes, fuel, outdoor meals, products for own consumption.
FR	Mainly food, beverages and tobacco. And also : small equipment for the house, restaurant and hotel, fuel, part of the recreational and cultural services, part of the miscellaneous services, and other goods or services
HR	Food, beverages, tobacco, products for personal hygiene, newspapers, consumption of agricultural food products from own production
HU	All types of expenditure
IE	Groceries, clothing and footwear, eating out and other every day expenditures
IT	Food and beverages, tobaccos, pharmaceutical products, newspapers and other almost daily expenditures
LT	Expenditure on food products, tobacco products and alcoholic beverages; outdoor meals; expenditure on non-food products and services; the consumption of self-produced food products, food products received as payment in kind and free food products
LU	Food, beverages, tobacco, restaurants, other "daily" expenses
LV	Expenditure on food products, tobacco products and alcoholic beverages; outdoor meals; expenditure on non-food products and services; food products obtained for the household consumption from the personal farm plot or received free of charge

MT	The main scope is to collect regular expenditure and main product information, such as physical quantities and places of purchase
NL	The households write down every single expense in a one-week period and every single expense > 20 euro in the 4-week period. In addition, households fill in a questionnaire concerning all their fixed costs
PL	Expenditures connected with routine maintenance of the household: purchase of goods and services, repayment of loans and credits (except for mortgage loans), cash remittances connected with purchase of goods on credit, deposits made, purchase of securities, gifts and alimonies, insurance premiums (except for dwelling insurance), paid taxes, granted loans, value of goods (services) received for free (gifts), incomes.
PT	All current private expenditures on goods and services are considered, namely food and beverages, tobacco, home equipment non durable, fuel or gas, gambling, restaurants and cafeterias. Any good or service likely to be consumed with a frequency of at least once in a fortnight, is assumed as current.
RO	Expenditures, household members' revenue and other cash income; incoming and outgoing agricultural products and foods;
SE	Small, frequent expenditures
SI	All daily expenses for products or services, mostly for food and beverages, purchased for private consumption, regardless of the mode of payment. Food and drink consumed outside the household or purchases in a foreign country are also included
SK	Diary was divided in several tables according to type of expenditure. All open tables were used there with columns for description and recording of payments of goods. Data on expenditure of food and beverages were supplemented by quantitative data (kilograms, litre and pieces)..
UK	Food and drink brought home (excluding takeaways); takeaway meals and snacks eaten at home; meals, snacks and drinks consumed away from the home; clothing and footwear; other payments and purchases; winnings from lottery, bingo, betting shops, football pools, raffles, etc
NO	All types of expenditure
ME	The diary contains identification of household, 30 pages from the first day to the end of 31th day, columns type of products/services; Quantity; Measurement unit; Paid in EUR, Purchased (supermarket, retailer shop, at counter, other abroad); Transaction (purchased, own production, own business, gifts/received/transfers, gifts/given/transfers, revenue); Purpose (personal, agriculture, business) and codes of products.
MK	All types of expenditure
RS	Income, all expenditures including consumption of own production
TR	All types of expenditure
XK	Food expenditure

APPENDIX 5: COLLECTION OF SUBSTANTIVE INFORMATION

Country	Collection of substantive information		
	Collection of substantive information: instrument	Recording unit	Items covered
AT	Face-to-Face Interviews & CAWI Interviews	Household and Individual	Information about the household and members; periodic expenditures for housing, insurance, education; expenditures for bigger purchases (retrospective 12 month) e.g. car, furniture, TV
BE	Household questionnaire	Household and Individual	Household questionnaire: composition of the household, current accommodation, periodic expenses related to main accommodation, durable goods (possession and purchase), insurance, benefits in kind, income, relationship, absences outside the home, and interview process).
BG	Introductory interview at the beginning of the recording year; Interview at the end of each surveyed month; Retrospective questionnaire.	Household and Individual	Introductory interview (household and individual): household characteristics, age, education, marital status of household members, housing, possession of durables. Interview at the end of each month (individual): activity status, occupation, status in employment, hours worked. Retrospective questionnaire (household): some irregular income and expenditure on durable goods during the previous two months.
CY	CAPI Questionnaire	Household	All expenditure of the household, which are included in COICOP for given periods of time, as well as background characteristics of the household and income questions. For each item the way of its acquisition was recorded.
CZ	Household reports all substantive information on entering the survey, subsequently only changes are reported.	Household	The required information about household as a whole and about its members (household composition and data on individual members, durables, property). Interview at the end of each month (individual): activity status, occupation, status in employment, hours worked.
DE	Paper questionnaire, CAWI	Household	Equipment of households with consumer durables, income, property and debts, consumption and non-consumption expenditure, characteristics of dwelling, socio-demographic and socio-economic characteristics of household members
DK	Face to face interviews (CAPI)	Household	The respondents have been asked about regular outlays a year back, major expenses, the stock of durable households, the use of service within the health system, education and child care and some incomes.
EE	Household Questionnaire, Personal Questionnaire	Household and Individual	Core variables (general data on the household and its members, relations in household, demographic data of household members, education of household members, working life of household members, health of household members, living conditions of household); income; goods and services.
EL	Household and individual questionnaire	Household and individual	Background characteristics are covered in the first interview and income questions in the second.

ES	Diaries and questionnaires	Household and Individual	Apart from diaries along 14 days several interviews are made in order to obtain more information on expenditures more than two weeks period. In the first interview before the recording period information about the household and its members (except income, asked in the final interview) and also monthly expenditures are collected. Following interviews collect last receipt, annual and quarterly information (in this order, a questionnaire for each reference period).
FI	CATI or CAPI questionnaire	Household	Durable goods, housing expenditure, insurance, education, health care, day care, social services, travel expenses etc.
FR	Two questionnaires	Household	All except food and beverages.
HR	PAPI Household questionnaire and PAPI individual questionnaire	Household and Individual	Questionnaire for household members: demographic characteristics, education, activity status, income. Household questionnaire: housing characteristics, housing status, possession of consumer durables, all expenditures except those covered by diary
HU	PAPI or CAWI questionnaire during the diary keeping period, CAPI and CAWI in case of the retrospective interview	Household	Housing conditions, personal characteristics, incomes, debts, durables.
IE	Household and individual questionnaire, CAPI	Household and individual	Regular expenditures (e.g. rent, electricity bills) and large infrequent expenditures (eg white goods)
IT	Initial and final CAPI questionnaires	Household	Socio-demographic characteristics at household member level; expenditure on clothing and footwear, housing, medical services, transport, communication, recreation and culture and other goods and services not included in the diary, at household level.
LT	Main Household Questionnaire	Household and Individual	The Household Questionnaire is completed by the interviewer. It consists of two interviews: an initial interview before the recording period and a final interview after the recording period. The first consists of general questions related to household composition, its living conditions, employment of household members, while the second involves questions regarding household cash income, income in kind received from the employer or social aid, recall questions (last 2 and 12 month) about expenditure on goods and services, that are more expensive than EUR 70.
LU	Questionnaire	Household and Individual	Personal information (age, gender, education, citizenship, activity status etc.), dwelling-related information (rent, size of the dwelling etc.) and less regular expenses not covered in the diary (clothing and footwear, transport, health, culture etc.)
LV	CAPI Questionnaire	Household	Preliminary interview consists of questions related to the background characteristics of household composition, employment of household members, household living conditions, possibility to use agricultural plot, while the final interview involves questions regarding household cash income (at household level), income in kind received from employer or as social aid, cultural and household facilities (at household level), as well as consumption of irregular purchases or services exceeding 70 euros per unit.
MT	PAPI Questionnaire	Household and Individual	Information on the household, information on the individuals such as demographics, education etc., employment information, information on income, individual expenditure, health information.

NL	WEB Questionnaire	Household	Household composition, characteristics of household members (age, sex), tenure status, characteristics of dwelling, possession of vehicles
PL	"Household Statistical Sheet" Questionnaire	Household	Household grid, income and expenditures connected with use of house (dwelling) and selected regular payments; income in kind from hired work(quarterly); durable goods and rare outgoings in household (quarterly), dwelling conditions
PT	CAPI Questionnaire	Household and Individual	1st visit: Demographic and economic (labour, income) information on households and individuals (Type of dwelling, living area, number of rooms, year of construction, sex, age, education, activity status, income by sources of income, possession of durables and access to facilities. 2nd visit (household interview): collection of expenditures on goods and services which are likely to be consumed monthly, quarterly or annually. During the fortnight other visits can occur to collect the diaries (to be registered, edited and coded) or to clarify any doubts about expenditure values declared by the household.
RO	PAPI Household Questionnaire	Household	Household composition, activity, agricultural products and foods and alcoholic beverages, non-food purchases, expenditures for services, revenues and other cash incomes, living conditions, endowment with durable goods.
SE	Computer-assisted telephone interviews + Administrative Register.	Household	Large, less frequent expenditures
SI	CAPI Household questionnaire	Household and Individual	In the questionnaire, some basic data are entered for all members of the household (e.g. name, gender, data of birth, relation to the head); then the survey is completed for members younger than 15 years. The survey is continued by posing questions to members of at least 15 years of age which refer to data on education, activity status. Questions intended for the household as a whole concern the dwelling and any other accommodations of the household (e.g. characteristics, tenure status, expenses, availability of consumer durables), expenses for motor vehicles, furnishing, household equipment and maintenance, clothing and footwear, costs related to children, education, transport and home help, other costs (e.g. taxes, insurance, hospital care), money transfers, the financial situation of the household, net household income and own production consumed in the household., transport and home help, other costs (e.g. taxes, insurance, hospital care), money transfers and gifts, the financial situation of the household, income of the household, and own production consumed in the household.
SK	Questionnaires	Household	All required items.
UK	CAPI Questionnaires	Household and Individual	All regular expenditures (e.g. utilities; mortgage expenses); large, one-off expenditures (e.g. vehicles); income and basic demographic data are collected using the questionnaire.
NO	CAWI, CATI Questionnaire	Household	Household characteristics; the most important are age, sex, region, income, labour status, characteristics of the dwelling.
ME	Questionnaires	Household	Information for demographic and economic characteristics of the household members (name and surname, age, marital status, activity status, etc.); information for dwelling and possession of durable and semi-durable goods, land and farm assets, expenditure of household for previous three month COICOP group 03- 12; information for income- previous month and expenditure of durable goods- previous twelve month;

MK	PAPI Household Questionnaire	Household	Information for household members: demographic characteristics, education, occupation, activity status, marital status, health, etc Data about the dwelling: housing characteristics, housing status, possession of consumer durables, etc. Household incomes
RS	Questionnaire	Household and Individual	For household member: demographic characteristics, education, activity status, income. For household: housing characteristics, possession of durables, consumption expenditures with different periods depend on the consumption function.
TR	CAPI Questionnaire	Household and Individual	Household characteristics, age, sex, marital status of household members, education, labour status
XK	PAPI Questionnaire	Household and Individual	Demographic characteristics; Basic demographic characteristics of the reference person and household members; household's consumption expenditures (food and non-food item); Main source of income; Individual Income