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National Reference Metadata in ESS Standard for Quality Reports Structure (ESQRS)

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2 Introduction

The production of quality reports is part of the implementation of the HBS instrument. In order to assess the quality of data at national level and to make a comparison among countries, the National Statistics Institutes give detailed information mainly on: the entire statistical process, sampling and non-sampling errors, and potential deviations from standard definition and concepts.
This document follows the ESS standard for quality reports structure (ESQRS), which is the main report structure for reference metadata related to data quality in the European Statistical System. It is a metadata template, based on 13 main concepts, which can be used across several statistical domains with the purpose of a better harmonization of the quality reporting requirements in the ESS.
In general we mention that the Household Budget Survey (HBS) is a national survey collecting information from a representative sample of households, on households' composition, members' employment status, living conditions and, mainly, focusing on their members' expenditure on goods and services as well as on their income. The expenditure information collected from households is very detailed. That is, information is not collected on the basis of total expenditure categories like "food", ‘'clothing - footwear', "health ", etc., but separately for each expenditure, for example, white bread, fresh whole milk, fresh beef etc, footwear for men, footwear for women etc., services of medical analysis laboratories, pharmaceutical products etc.

3 Quality management - assessment

In order to improve the comparability of the survey results among all the Member-states of the EU, the data quality of the Household Budget Survey is ensured and achieved on one hand because it is in compliance with the Statistical principles in the European Statistics Code of Practice and on the other hand by using a common standard questionnaire.
Quality assessment of the survey is accomplished by EL.STAT and Eurostat.
The sample size corresponds to high accuracy results. Consequently, the sample size was representative of the reference population for the survey while also all the appropriate measures were taken into account in order to minimise the errors during the survey conduct. On the basis of the all the pre-mentioned above, ELSTAT achieved total high quality for the statistical products of the survey.

4 Relevance

4.1 Relevance - User Needs

The main purpose of the HBS is to determine in detail the household expenditure pattern in order to revise the Consumer Price Index. Moreover, the HBS is the most appropriate source in order to:

- Complete the available statistical data for the estimation of the total private consumption,
- Study the households' expenditures and their structure in relation to income and other economic, social and demographic characteristics of the households,
- Analyze the changes in the living conditions of the households as compared to previous surveys,
- Study the relation between households' purchases and receipts in kind,
- Study low income limits in the different socio-economic categories and population groups,
- Study the changes in the nutritional habits of the households in the country.

The main user of the survey is Eurostat as well users coming from:

- Ministries and public administrations, that use the data for economic and social policy planning purposes
- Universities (teachers/graduate and post graduate students), research organizations, e.t.c.
- Private firms
- The public that often gets the information via mass media in publications made by the statistical officesThe public that often gets the information via mass media in publications made by the statistical offices

4.2 Relevance - User Satisfaction

In general, there are steps taken to promote data use. These are:

- Consultation from data users
- ELSTAT is collecting formal and informal feedback from HBS' data main users.
- Dissemination of aggregated HBS data accomplished in several ways:
    - Electronic publication of tables
    - Print-out tables
    - Dissemination of tables and metadata (statistical and methodological contents, questionnaires, etc.) via internet ("www.statistics.gr")
    - Press releases in different topics
- Promotion of users' microdata base

A users' microdata base has been constructed, using the anonymisation criteria adopted also in the EU-SILC project. This base is available to anyone interested for free.
The database includes all existing in the questionnaires variables while the expenditure and

income have been transformed on a monthly basis.
Another microdata base has also been constructed containing the list of all Eurostat proposed variables, according to doc.HBS/153E_2012_EN

4.2 Relevance - User Satisfaction

4.3 Completeness

The variables and data coming from the survey have been judged as having completeness and analysis in a high quality grade.

4.3.1 Data completeness - rate

5 Accuracy and reliability

The concept of accuracy refers to the precision of estimates computed from a sample rather than from the entire population. Accuracy depends on sample size, sampling design effects and structure of the population under study. In addition to that, sampling errors and non-sampling errors need to be taken into account. Sampling error refers to the variability that occurs at random because of the use of a sample rather than a census and non-sampling errors are errors that occur in all phases of the data collection and production process.

5.1 Accuracy - overall

Because of the fact that the Household Budget Survey is a sampling survey, we have sampling and non-sampling errors. During the previous years, the overall accuracy of the survey was good enough.
For 2013 the initial sample size was 3.735 households (sampling fraction 0,09%) equally distributed within the year, so as to have four (4) equally dependent samples, corresponding to the four quarters of the year. The total number of Prefectures and Communes selected amounted to 337 and the number of settlements to 360, while the number of sampling areas to 619. The achieved sample size was 3.468 households. More details are presented in the following tables.

Table 1. Response rate

HBS 2013	Achieved net sample (n)	Response rate (R%)
EL	3,468	63.2

Table 2. Dwelling and Households sample

Dwelling sample

1. Total	3,735
a) Inhabited dwellings no replacement	2,362
b) Inhabited dwellings with replacement due to:	1,106
i) Temporary absence of the household, incapacity, etc.	570
ii) Refusal for cooperation	536
2. Excluded for several reasons	267
Total sample of dwellings	3,735

Households' sample

Dwellings with 1 household	3,468	Households	3,468
Dwellings with 2 or more households	0	Households	0

Total households to be surveyed	3,468
Subtracting:	
Unsuitable households	_
Households which interrupted the survey before end	_
Total households not being surveyed	_
Households finally surveyed	**3,468**

Table 3. Number of households for which an interview is accepted for the database. Quarter breakdown and total

Quarter	Households	%
1	864	24.9
2	905	26.1
3	868	25.0
4	831	24.0
Total	**3,468**	**100.0**

Table 4. Number of persons who are members of the households for which the interview is accepted for the database. Quarter group breakdown and total

Quarter group	Households' members	%
1	2,104	25.1
2	2,179	25.9
3	2,103	25.0
4	2,013	24.0
Total	**8,399**	**100.0**

Table 5. Response, by quarter group and total (on the achieved net sample)

Quarter group	%
1	71.4
2	73,8
3	71.2
4	55.4
Total	**68.1**

5.2 Sampling error

In order to measure the sampling errors we calculated coefficients of variation for the main survey variables. Their values are within the acceptance limits.

The relevant calculations are presented in Annex 1, attached to this report. There are the standard errors and coefficients of variation of mean household consumption expenditure for certain expenditure categories and population subsets. We also mention that for an estimate $\widehat{R}$, the coefficient of variation is defined as:

$$CV\left(\hat{R}\right) = \frac{\sqrt{V\left(\hat{R}\right)}}{\hat{R}} *100$$

Detailed Information on the sample design and the estimation process is described in section 12, while in Table 6 below we present the coefficients of variation for the 12 main categories of goods and services.

Table 6. Coefficients of Variation for the 12 main categories of goods and services

Goods and services	Coefficient of variation %
Total	2.4
Food	1.8
Alcoholic beverages and tobacco	3.4
Clothing and footwear	4.3
Housing	1.8
Durables	4.6
Health	4.3
Transport	4.0
Communications	1.9
Recreation and culture	6.6
Education	6.1
Hotels, cafes and restaurants	4.1
Miscellaneous goods and services	3.6

The non-sampling errors can be divided into the following categories:

- Non response errors
- Elaboration errors
- Measurement errors

Non-response errors

In order to decrease the percentage of non-response, the following were implemented:

- An introductory / informative letter was sent almost one month before the survey launch in order to inform the households that they had been selected for the survey and asking for their cooperation and reliable information provision as well.
- Whenever the interviewer couldn't find, during the visit, the surveyed household, he/she left the particular letter with the date of the next visit or his/her telephone number for contact (at least three visits at the surveyed household).

Elaboration errors

Quality and quantity checks were made on the data base for the elaboration errors correction

Measurement errors

These errors were faced with the following ways:

- Provision of appropriate guidelines
- Training
- Checks made by ELSTAT and by EUROSTAT as well (logical/completeness/flow etc)

5.3.1 Coverage error

HBS is a household survey carried out by applying the two-stage stratified sampling with Primary Sampling Unit (PSU) the area (one or more building blocks) and final unit the household. Thus, there are two frames used, which are:

- the frame containing the PSUs (areas) and
- the frame of households within the selected PSUs.

The frame of PSUs is updated every ten (10) years through the general population census. Concerning the frame of households, within each selected PSU this is updated before the selection of the sampling households used for data collection.

So, any coverage problems that may arise is more possible to be related with the frame of the PSUs. However, any such problems are corrected with the use of the calibration procedure used in the weights calculation as described in the respective paragraph.

5.3.1.1 Over-coverage - rate

5.3.2 Measurement error

1-The questionnaire

For building up the questionnaires we consulted the questionnaires of previous HBS Surveys. The structure of the questionnaires is almost similar to these ones.

Also, in order to finalize the questionnaires, we took into account any observations having been made on the questionnaires of the previous years, together with the experience from other projects and the suggestions of data main users.

2-The interviewers and their training

All the interviewers attended a five-day training course before starting the fieldwork.

A manual was distributed and presented during the training. A “general guidelines’ manual” containing information about the objectives of the survey, the organization of it, legal and administrative aspects related with it, fieldwork aspects (how to contact the household, how to introduce oneself, who answers which questions, time delays, e.t.c.) and the content and correct completion of the questionnaires.

It seems though that some interviewers don’t use the exact wording of the questions. Others skip questions, especially subjective ones. Also, when the respondents didn’t provide the figures the interviewers completed/imputed the figures themselves.

3-The respondents

Household respondents didn’t update the diaries of daily expenditure daily. This problem was solved by having almost everyday communication (by phone or visit) with the households.

Also, the household respondents provided the expenditure made mostly for goods and not the quantities of the specific items. In these cases the missing quantities were imputed by the staff in the office.

For purchases with reference period more than a quarter of a year, often a reminder, from the interviewee, of all the services applicable in this period, has been proved to be useful.

The respondents hesitated to provide income figures and in general denied to consult their tax return, in order to provide exact / correct amounts.

Income from interests and dividends from unincorporated businesses were in general not provided from the households, resulting thus in a significant underestimation of it.

4-Errors in routing

No errors in the routing were made.

5-Skills tested before starting the fieldwork

Interviewers were both personnel of the Hellenic Statistical Authority and external collaborators, all experienced with other household surveys carried out by our Institute. More specifically 80% of interviewers were external collaborators and the other 20% permanent personnel.

5.3.3 Non response error

Non-response errors are errors due to an unsuccessful attempt to obtain the desired information from an eligible unit. Two main types of non-response errors are considered, unit non-response and item non-response.

5.3.3.1 Unit non-response - rate

In paragraph 5.1 above unit response rates are presented, so the respective non-response rates are depicted here.

Households non-response rate was 36,8% initially, while after the substitutions it was 7,1% (connected with par. 12.5.2)

The household non-response rate (before substitutions per quarter on the achieved sample size was the following.

Table 7. Initial household non-response rate per quarter and total
(on the achieved sample size, before substitutions)

Quarter group	% non-response
1	28.6
2	26.2
3	28.8
4	44.6
Total	**31.9**

5.3.3.2 Item non-response - rate

5.3.3.2.1 Item non-response rate by indicator

5.3.4 Processing error

Concerning Data Processing we mention the following:

1- Checking errors

The questionnaires were checked in two stages, for their completeness and logical consistency of data collected, and for their correct data entry.

More specifically, the officials in charge of the checks, in accordance with the interviewers' guidelines and taking into account other objective facts, checked the data among the different questionnaires and also correlated them with data of households living in the same region, in order to verify the correctness of the answers. Mistakes were corrected and any unclear answers were clarified in cooperation with the interviewer or the interviewee.

After that, data entry was done and massive computer checks were made, while using appropriate computer programs tables with survey's data were drawn up.

During all stages of fieldwork the interviewers were under the continuous supervision of skilled employees of the Unit in charge of ELSTAT

2- Codification

The nomenclature used for the survey was the more detailed COICOP-HBS

The codification of questions relating to occupation (ISCO), economic activity of the local unit (NACE) and nationality was done by experienced personnel, according to ISCO-88, ISCO-08 (double codification) and NACE rev.2.

3- Other checks and problems

Several plausibility checks have been made. During the data processing of raw data ACCESS-2000, SPSS and Oracle (golden 32) were used.

5.3.4.1 Imputation - rate

5.3.4.2 Common units - proportion

5.3.5 Model assumption error

5.3.6 Data revision

5.3.6.1 Data revision - policy

The revision policy concerns either the survey data or the survey itself (i.e. the questionnaire, the sample etc), and takes place having into consideration the users' needs for any further statistical information.

5.3.6.2 Data revision - practice

Since all current users' needs have been recognized, in order to achieve longitudinal comparability for the survey among the Member- States, all the national questionnaires are being re-designed carefully.

In conclusion, the data revision takes place after implementing checks materialized either by Eurostat or by EL.STAT and after correcting data inconsistencies within either the same period or longitudinal as well.

5.3.6.3 Data revision - average size

5.3.7 Seasonal adjustment

6 Timeliness and punctuality

6.1 Timeliness

HBS cross-sectional data are available in the form of tables, usually, 180 days after the end of the data collection period.

6.1.1 Time lag - first result

6.1.2 Time lag - final result

6.2 Punctuality

The time lag between the actual date of data provision and the initial defined as target-date (date in which the data should have been produced) is 72 days.

6.2.1 Punctuality - delivery and publication

7 Accessibility and clarity

7.1 Dissemination format - News release

The respective deadline was 19/6/2014 and the press release was finally published on 12/09/2014.

The release calendar can be found on

http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/General/release_calendar_en.pdf

and the press release on

http://www.statistics.gr/portal/page/portal/ESYE/PAGE-themes?p_param=A0801&r_param=SFA05&y_param=2013_00&mytabs=0

7.2 Dissemination format - Publications None

7.3 Dissemination format - online database None

7.3.1 Data tables - consultations

7.4 Dissemination format - microdata access

The micro data files are provided to the users after submitting their application form in the competent section. In particular, they must be addressed to the Statistical Information and Publications Division in the following e-mail
data.dissem@statistics.gr

We mention also that the users are being informed for survey data announcement through the EL.STAT website. Statistics must be developed, produced and disseminated in a neutral manner so that all users are given equal treatment, in conformity with the statistical principles as set out and further elaborated in the European statistics Code of Practice.

7.5 Documentation on methodology

The present ESQRS is uploaded on ELSTAT's official website together with all relevant information. Also technical documentation on HBS is available on ELSTAT's web site. More specifically:

- A short methodological report oriented to the users
- A metadata report in Euro-SDMX metadata structure requested by Eurostat.
- Document with Classifications on Codes of Goods, Services, Incomes, Prefectures and Countries, Characteristics of Households and Dwellings

7.5.1 Metadata completeness - rate

7.5.2 Metadata - consultations

7.6 Quality management - documentation Everything relevant is included in the present report

7.7 Dissemination format - other

8 Comparability

8.1 Comparability - geographical

Since common variables definitions and data production methods have been implemented not only in all geographical regions of the country but also among all EU countries, no geographical comparability problems have been caused.

8.1.1 Asymmetry for mirror flow statistics - coefficient

8.1.2 Reference population

Reference population	The reference population is all citizens officially living in Greek territory (population de facto). The source of our sample is the Population Census. This Census includes all private households and their current members residing in the territory independently of any socio-economic characteristics they may have. Persons living in collective households and in institutions are excluded from the target population as well as households with diplomatic missioners as members.
Private household definition	The recommended by Eurostat household definition is used. Household is defined as a person living alone or a group of people who live together in the same dwelling and share expenditures including the joint provision of the essentials of living.
Household membership	All household members at the time of the interview are selected for a personal interview. Subject to the further and specific conditions shown below, the following persons must, if they share household expenses, be regarded as household members: 1. Persons usually resident. Related to other members 2. Persons usually resident. Not related to other members

	3. Persons usually resident. Related to other members 4. Persons usually resident. Not related to other members 5. Resident boarders, lodgers, Tenants 6. Visitors 7. Live-in domestic servants. au-pairs 8. Persons usually resident but temporarily absent (because of holidays, work, studies, e.t.c.) 9. Children of the household being educated away from home 10. Persons absent for long periods. but having household ties like persons working away from home 11. Persons temporarily absent but having household ties like persons in hospital or other institutions Further conditions for inclusion as household members are as follows: (a) Categories 3, 4 and 5: Such persons must currently have no private address elsewhere; or their actual or intended duration of stay must be six months or more. (b) Category 6: Such persons must currently have no private address elsewhere and the actual or intended duration of their absence from the household must be less than six months. (c) Category 7 and 8: Irrespective of the actual or intended duration of absence, such persons must currently have no private address elsewhere, be the partner or child of a household member, continue to retain close ties with the household and consider this address as their main residence. (d) Category 9: Such persons must have clear financial ties to the household and be actually or prospectively absent from the household for less than six months.

8.1.3 Reference Period

As **R*eference periods*** *are* considered the time intervals having a specific starting and ending date, to which expenditure and income of the household referred. In order to reduce sampling errors and difficulties in recalling the relevant details, various reference periods were used in the survey, according to the frequency of the types of expenditure incurred by the households or the received income.

Reference periods are considered (a) **the *fourteen (14) days of the survey*** *for* the daily expenditure on cleaning products (detergents, soaps, toilet paper, etc.), pharmaceutical products (drags, alcohol, etc.), household members' personal expenditure (cigarettes, newspapers, magazines, tickets, tissues, etc.), restaurants, taverns, cafés, etc. (*b)* ***One Month, two months, three months, four months, six months or year,*** for payments made at regular intervals for services e.g.: electricity, water, phone bills, communal charges, etc. circulation fees and car insurance, rent for main or secondary or countryside dwelling, (*c)* ***The last 30 days, last 3, 6 or 12 months,*** etc, prior to the end of the household survey (including the 14 days of the survey) for expenditure on furniture, electric devices, etc., expenditure on clothes and footwear, medical appliances, etc., expenditure on health and education, on holidays, income from salaries, self- employment, farming, pensions, social benefits, etc.

8.1.4 Statistical concepts and definitions

As dwellings were considered:

- A detached, semi-detached or terraced dwelling, an apartment or flat in a block of flats,
- An occupied room or number of rooms inhabited by the household.
- A warehouse, shanty, trailer or any other covered place, which was used for habitation (as main dwelling) during the survey.

As dwellings were not considered:

The places intended for habitation but during the survey were used exclusively for other purposes (professional residences, etc.), i.e. apartments used as laboratories, infirmaries, etc.

Regular room

As regular room was considered any private place within the dwelling having at least an area of 4 squared meters and 2 meters height, shape such as for a normal bed to fit in and having direct day-light through a window or glass door.

As regular rooms were considered:

The dining rooms, drawing rooms, living rooms, bedrooms, domestic servants' rooms and attics, kitchens, domestic warehouses, corridors and halls complying with the regular room's definition.

As regular rooms were not considered:

Bathrooms, toilets, laundry rooms, balconies and garages, kitchens of any size, storage rooms, corridors and anterooms when they didn't fulfill the conditions of the regular room.

Household

Household is the unit of survey and analysis. As a household is considered one person living alone (single-person household) in a dwelling, or a group of persons, related or not (multi-person household) occupying the same dwelling, providing from common budget their feeding and all things being necessary for living (common housekeeping).

Persons living in the same dwelling but with no common housekeeping and not eating together were deemed to be separate households, provided that each person had the exclusive use of one room. In the opposite case they consisted one household. More specifically:

Single-person households were considered:

One person living in the dwelling or in a room of a dwelling, obtaining alone all needed for living (e.g. student, unmarried man/woman, etc.), two or more persons, related or not, residing in a dwelling but not obtaining from common budget all needed for living, each one having the exclusive use of one room and not sharing any common place (sitting room, office, excluding hall, etc.).

Multi-person households were considered:

A couple alone or parents with their children or one parent with his/her children, a couple with or without children, the couple's parents and the domestic servant (living in the dwelling) if she/he plans to stay for more than 6 months, two or more persons –not necessarily related, residing in a dwelling and providing from common budget all needed for living, a family with one to five lodgers.

Household Members

As members of the household were considered all persons constituting it. They were persons, usually residing in the dwelling or being temporarily absent.

Persons, usually residing in the dwelling, were considered those having spent, during the last 6 months, most hours of the day and night in the specific dwelling.

Persons, temporarily absent, being in another private household or in a collective one (e.g. hospital, elderly home, etc.), were considered and registered as household members, according to the following conditions:

- **Persons usually resident, related to other members** (unmarried / married children, parents of household's head, grandchildren, other relatives, etc.) sharing expenditure or benefiting from them as not having income (children, persons with no income, etc.).
- **Persons usually resident, not related to other members** (partners, etc.) sharing expenditure or benefiting from them as not having income (children, persons with no income, etc.).
- **Resident boarders, lodgers, tenants** (up to 5) sharing expenditure or benefiting from them as not having income (children, persons with no income, etc.) and either didn't have during the survey conduction any other private address elsewhere or intended to stay in the household for more than six months.
- **Visitors**, related or not, sharing expenditure or benefiting from them as not having income (children, persons with no income, etc.). and either didn't have during the survey conduction any other private address elsewhere or intended to stay in the household for more than six months. Visitors not intended to stay for more than six months having another private address elsewhere as main dwelling, were not considered household members and haven't been interviewed.
- **Live-in domestic servants,** residing and sharing expenditure or benefiting from them and either didn't have during the survey conduction any other private address elsewhere or intended to stay in the household for more than six months. External domestic servants were not considered household members and haven't been interviewed.
- **Persons temporarily absent** from the dwelling (for reasons of holiday travel, work, education or similar) sharing expenditure or benefiting from them as not having income (children, persons with no income, etc.) that didn't have during the survey conduction private address elsewhere and their actual or intended duration of absence from the household was less than six months.
- **Children** of the household **being educated away from home,** residing in dormitories and **children in military service** sharing expenditure or benefiting from them as not having income, irrespective of the actual or intended duration of absence, not having during the survey conduction private address elsewhere, being partner or child of a household member and should continue to retain close ties with the household and consider this address to be their main residence. Students being educated away from home residing in another private dwelling irrespective of their intention to retain close ties with the household, considering this other address to be their main residence, were not considered as household members
- **Relatives absent for long periods** (sailors, employees in railways, intercity buses, public servants working away from office, etc.) sharing expenditure or benefiting from them as not having income, irrespective of the actual or intended duration of absence, not having private address elsewhere, being partner or child of a household member and should continue to retain close ties with the household and consider this address to be their main residence.
- **Persons temporarily absent but having household ties,** in hospital, elderly home, etc. sharing expenditure or benefiting from them as not having income, having financial ties to the household being expected to return to the household in less than 6 months.

Head of household

As head of the household was considered the person being approved by the other household members, in the sense that this person has the responsibility for the decision making concerning the household's management, in general.

As head of the household were considered:

- The father, in most of the cases of households consisting from parents and children (either married or unmarried).
- For households consisted from related or not persons, the older working member (man or woman) or, in case nobody was working, the oldest member.

Economically active members

As economically active members were considered:

The members 14 years old and over, which during the week before the survey conduction had a job or didn't have but were seeking for one (working and unemployed).

Reference person

As reference person was considered:

- The head of the household, if he/she was economically active (having or searching for a job). When the head of the household was neither working nor searching for a job, in order him/her to be considered as reference person, there shouldn't be any other economically active person in the household.
- The spouse or partner of the head if he/she was working or searching for a job in case that the person declared as head was not economically active.
- The oldest member of the household, being economically active, if the head/s spouse/partner was not economically active.
- The head of the household if no one else in the household was economically active.

Households' expenditure

As *household expenditure* was considered the value in cash, of the goods and services the household bought or received in kind (from own production, own store or from elsewhere) in order to cover family and social needs.

As expenditure were **not** considered:

- Payments increasing households' assets or reducing debts to third parties, such as purchase or extension of the house, bank deposits, loan payments, direct taxes, etc.
- Money transfers to household and non-household members.
- Occupational expenditure on tools necessary for member's job / business, fuel for professional cars, professional trips, seeds, pharmaceutical products for cultivating land, food for animals of domestic livestock, etc.
- Expenditure on medical and pharmaceutical care paid by the insurance organizations.

It should be noted that when occupational and family expenditure were common, like sharing lodgings of the family enterprise with the household, using a professional car for vacations, etc. effort has been made to separate and calculate the part of the expenditure corresponding to the household, e.g. part of expenditure for rent, electricity, water supply, fuels, circulation fees, insurance, etc.

Ways of goods' and services' acquisition

The survey also collected information on the ways households obtained goods and services in order to cover their needs.

Goods' and services' can be acquired by the two following ways:

a) PURCHASES

- *Purchases – «P»*

As purchases were recorded the expenditure on goods the households acquired by paying their value "in cash or with installments", irrespectively whether these goods were meant to cover household's needs or to be offered as gifts to other households. Also, as purchases were recorded expenditure on services the households used by paying their value in cash or with installments.

Was not recorded under «P» expenditure on services paid by other households, the state or the employer. The specific amounts were recorded for the households that used the services with other ways «OW» or from the employer «E».

b) RECEIPTS IN KIND

- *From own production – «OP»*

Recorded were <u>goods consumed from the households</u> coming from own agricultural and livestock production, fishery or hunting (oil, wine, vegetables, fruits, milk, eggs, meat, cheese, wool, fish, etc.) Here were also included products collected by the households as being free goods (e.g. wild seeds, mushrooms, firewood, etc.)

Was not recorded under «OP» expenditure for the goods of the pre-mentioned cases, when those goods were offered to other households. The specific expenditure was recorded for the households that received them at consuming stage with «OW» or with «Employer», in case the household that provided the goods was also employer.

- *From own enterprise – «OE»*

Recorded were goods obtained for free from households' own store, either to cover its needs or to be offered "as gifts" to third parties (bread from own bakery, furniture made in own workshop, etc.). It should be noted that imputed rent for owners or for households providing main or second dwelling for free, was recorded as from «OE».

Was not recorded as «OE» expenditure for foodstuffs coming from household's enterprise, but were offered as "gifts" to other households. The specific expenditures were recorded to the households that consumed them as «OW» or as «OE» from the employer in case some member was working in the enterprise. Also, were not recorded as *«OE»* services used from own stores or enterprises (surgeries, law offices, tuition centers, athletic halls, kindergarten, private schools, barber shops, cleaner's shop, clothes repair shop, clothes and footwear shops, car workshops, etc.)

- *Other ways – «OW»*

There were recorded goods and services received "in kind" for free:

a. From other households (only services, such as rent of main or secondary dwelling provided for free or paid by third parties, electricity, water, telephone bills paid by others, etc. as well as food and beverages).
b. From state, municipal, church authorities, insurance organizations, etc. as receipts in kind, e.g. meals, food for households with more than 3 children, toy offers from municipalities, clothes from churches, etc.
c. From abroad, e.g. food stuffs, clothes, furniture, etc.

- *From the employer – «Employer»:*

There *were recorded* goods and services received "in kind" for free or in reduced price from their employer as payment "in kind", under the condition that it constitutes net profit for the employees, meaning that the households would certainly purchase them.

Were not considered as receipt in kind goods coming from the employer for practicing their profession (uniforms, helmets, etc.) or in order to compensate for job's disadvantages (milk, refreshments, etc.). It should be noted that if those goods were transferred at home and were consumed by the household for its needs, they were recorded under «Employer».

Finally, it should be noted that when the household received goods or services for free, the whole current value (for the good or service) was recorded, while in cases where the household received goods or services at reduced price, the amount paid by the employer was recorded under «employer» and the amount paid by the interviewee under «P».

Conditions for expenditure record

For expenditure record the following conditions should be fulfilled:

a) The realization of the expenditure within the reference period specified for the corresponding goods or services, e.g. 14 days for food stuffs, month for clothing, 12 months for the consumption of durables, etc.

b) The good corresponding to the expenditure should have already been possessed by the household and the service should have been offered within the reference period mentioned, irrespectively whether it was meant to cover its own needs or to be offered to other households. The way of possession of goods and services could have been «P» (in cash or by credit), from own enterprise «OE», from others «OW» or from the employer «Employer», e.g. expenditure on clothing was recorded if the household "possessed" them within the last 30 days (including the 14 days of survey conduction) before the survey end, even if their value would be paid in the future with installments, the expenditure on tuition fees was recorded if the service was offered in the last 12 months before the survey end, etc.

c) Goods from households' agricultural – livestock own production, fishery, woodland or hunting, should have been consumed during the reference period, e.g. the quantity of oil consumed by the household from own production, during the last 12 months, was recorded and not that having been stored. The same applies for vegetables from own vegetable garden or agricultural enterprise, meaning that only those consumed during the 14 days were recorded.

It should be noted that all the pre-mentioned criteria didn't entirely apply for regular expenditure, e.g. electricity, water, drainage, telephone bills, circulation fees, insurances, etc. In these cases, the last bill was recorded with reference period the one mentioned on it (month, 2 months, 3 *months, 4 months, 6 months, year), e.g. electricity bill was, usually, recorded with reference the 4 month period, car's insurance 6 or 12 months period and usually refer to future services, circulation fees are usually recorded at 12 months period, etc.*

Estimation of goods and services value

- For the purchases: In the value of goods and services obtained by the households it has also been included any other expenditure necessary for them to be consumed/used, e.g. transportation, setting of electric devices, etc. When goods or services had been obtained by paying in installments or with credit card, the total value was recorded and not only the part of installments paid within the reference period.
- For the receipts in kind: The value of goods and services obtained by the households for free was self-estimated from the households or from the interviewer, based on retail prices of the closest local market.

IMPUTED RENT

Self-assessment is made by the interviewee and 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 the quality of the building/dwelling.

Data are collected both for main and secondary residence.

8.2 Comparability - over time

In the HBS longitudinal comparability exists since the years 1974, 1981/82, 1987/88, 1993/94, 1998/99, 2004/05, 2008, 2009, 2010, 2011, 2012 and finally 2013.

8.2.1 Length of comparable time series

8.3 Comparability - domain

9 Coherence

The coherence of two or more statistical outputs refers to the degree to which the statistical processes, by which they were generated, used the same concepts and harmonized methods. A comparison with external sources for all income target variables and the number of persons who receive income from each 'income component' will be provided, where the Member States concerned consider such external data to be sufficiently reliable.

9.1 Coherence - cross domain

The risk-of-poverty indicator produced from HBS 2013, as well other important measures, was compared with the respective measures produced from EU-SILC 2013. Also comparisons were made with LFS results. No significant differences were observed in the results as one can see in the next paragraphs and tables.

We also note that comparing HBS with EU-SILC survey for example one should keep in mind the differences between the concepts and methodologies since discrepancies may arise by the fact that they serve different purposes. HBS targets household expenditure whereas EU-SILC targets household income.

9.1.1 Coherence - sub annual and annual statistics (EU-SILC: at risk of poverty)

Table 8: At-risk-of-poverty threshold: 2013 EU-SILC –HBS

2013 EU-SILC	2013 HBS
5,023.00	5,253.77

Table 9: At-risk-of-poverty rate: 2013 EU-SILC –HBS %

2013 EU-SILC	2013 HBS
23.1	21.0

Table 10: Income quintile share ratio S80/S20

2013 EU-SILC	2013 HBS
6,6	5,7

9.1.2 Coherence – EU-SILC

The next tables present the coherence between 2013 HBS and 2013 EU-SILC.

Table 11: HH021: "Tenure status". %

Tenure status	2013 HBS	2013 EU-SILC
Owner	81.4	78.3
Tenant	18.6	21.7

Table 12: HH081: "Bath or shower in dwelling".%

Bath or shower in dwelling	2013 HBS	2013 EU-SILC
No	2.2	0.9
Yes	97.8	99.1

Table 13: HH091: "Indoor flushing toilet for sole use of household".%

Indoor flushing toilet for sole use of household	2013 HBS	2013 EU-SILC
No	2.5	0.7
Yes	97.5	99.3

Table 14: HH010: "Dwelling type". %

Dwelling type	2013 HBS	2013 EU-SILC
Detached house	33.7	32.3
Semidetached house	9.9	8.9
Apartment or flat	55.5	58.8
Some other kind of accommodation	0.9	0.1

9.1.2 Coherence – Labour Force Survey

The following tables prove that the most quality target variables are in coherence with variables collected from LFS – 2nd quarter of 2013 making thus the survey robust.

Table 15: Variable PL031: "Self-defined current activity status" % n

Self-defined current activity status	2013 HBS	2013 EU-SILC	2013 LFS
At work (Full + Part time)	38.3	37.0	37.6
Unemployed	14.5	15.7	15.5
Non economically active	47.2	47.3	46.9

Table 16: Variable PL060: "Number of hours usually worked per week in main job" %

Number of hours usually worked per week in main job	2013 HBS	2013 EU-SILC	2013 LFS
	41.2	41.3	42.0

Table 17: PL040: “Status in employment” % n

Status in employment	2013 HBS	2013 EU-SILC	2013 LFS
Self employed with employees	4.9	5.1	6.6
Self employed without employees	23.0	23.6	25.3
Employee	69.1	65.3	63.1
Family worker	3.0	5.9	4.9

Table 18: PE040: “Highest ISCED level attained”.% n

Highest ISCED level attained	2013 HBS	2013 EU-SILC	2013 LFS
Never attended any level of education	6.0	5.9	5.0
Primary education	24.0	21.8	25.3
Lower secondary education	12.4	11.7	11.6
Upper secondary education	32.8	32.4	31.3
Post secondary non tertiary education	7.0	6.2	6.4
First stage of tertiary education	23.5	21.6	20.1
Second stage of tertiary education	0.3	0.5	0.4

Table 19: Household by size % n

Households type	2013 HBS	2013 EU-SILC	2013 LFS
One person household	25.7	25.7	28.6
Two persons household	29.5	29.5	30.2
Three persons household	19.8	19.8	18.5
Four persons household	15.5	15.5	16.9
Five persons household	5.4	6.9	4.3
More than six persons household	4.2	2.7	1.1

Table 20: Variable PL120: “Number of persons working less than 30 hours per week” % n

Number of persons working less than 30 hours per week	2013 HBS	2013 EU-SILC	2013 LFS
	11.4	12.9	10.2

Table 21: Variable PL140: “Type of contract” % n

Type of contract	2013 HBS	2013 EU-SILC	2013 LFS
Permanent job / work contract of unlimited duration	90.4	78.0	90.1
Temporary job/work contract of limited duration	9.6	22.0	9.9

9.2 Coherence - internal

The following tables are presented in Annex 2 regarding the internal coherence of the HBS

Average monthly household expenditure (purchases, current prices) on goods and services: 2013 and 2012 HBS

Average monthly household expenditure (purchases, constant prices 2013) on goods and services: 2013 – 2012 HBS

Average monthly household expenditure (purchases, current prices) on goods and services: 2013 – 2009 HBS

Examining the tables one can see that regarding the results on the average monthly household expenditure on goods and services for the 12 main categories:

- Between 2013 and 2012 in current prices there is generally a reduction (apart from alcoholic beverages and tobacco where there is an increase of 0,1%) in the value of expenditures, ranging from –5,6% for Recreation and Culture to –11,6% for Durables.
- Similar (reduction) is the picture in constant prices between 2013 and 2012 with somewhat smaller percentages and the greatest reduction –9,5% in Miscellaneous Goods and Services.
- For current prices in the period 2009-2013 the relative importance of the 12 main categories in the years is similar with constantly in the first place (important difference from the second category) Food, second and third category varying between Housing and Transport and constant in the last position Education.

10 Cost and Burden

The burden concerns the required time, which must be spent for data provision on behalf of interviewer. Nevertheless, there is not possibility for any further time relief.

11 Confidentiality

11.1 Confidentiality - policy

The issues concerning the observance of statistical confidentiality by the Hellenic Statistical Authority (ELSTAT) are arranged by articles 6, 7 and 8 of the Law 3832/2010, as amended by article 90 paragraph 8 of Law 3842/2010 and by article 10 of Law 3899/2010, as well as by article 8 of Law 2392/1996, which was brought back into force, in accordance with article 90 paragraph 8 of Law 3842/2010.
Furthermore, ELSTAT disseminates the statistics in compliance with the statistical principles of the European Statistics Code of Practice and in particular with the principle of statistical confidentiality.

11.2 Confidentiality - data treatment

– ELSTAT protects and does not disseminate data it has obtained or it has access to that could enable the direct or indirect identification of the statistical units that have provided them by the disclosure of individual information directly received for statistical purposes or indirectly supplied from administrative or other sources. ELSTAT takes all appropriate preventive measures so as to render impossible the identification of individual statistical units by technical or other means that might reasonably be used by a third party. Statistical data that could potentially enable the identification of the statistical unit are disseminated by ELSTAT if and only if:
a) These data have been treated, as it is specifically set out in the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System (ELSS), in such a way that their dissemination does not prejudice statistical confidentiality or
b) The statistical unit has given its consent, without any reservations, for the disclosure of

data.

- The confidential data that are transmitted by ELSS agencies to ELSTAT are used exclusively for statistical purposes and the only persons who have the right to have access to these data are the personnel engaged in this task and appointed by an act of the President of ELSTAT.
- The Statistical Confidentiality Committee (SCC) operating in ELSTAT, examines issues referring to the observance of statistical confidentiality. Within its competence is to recommend on:
  - The level of detail at which statistical data can be disseminated, so as the identification, either directly or indirectly, of the surveyed statistical unit is not possible;
  - The anonymization criteria for the micro data provided to users;
  - The granting to researchers access to confidential data for scientific purposes.

12 Statistical processing

Detailed information concerning sampling frame, sampling design, sampling units, sampling size, weights and mode of data collection can be found in this section. Such information is mainly used for the computation of the accuracy measures.

12.1 Source data

The survey covers all the private households throughout the country, irrespective of their size or socio-economic characteristics. The following were excluded from the survey:

- Institutional households of all types (boarding houses, elderly homes, hospitals, prisons, rehabilitation centers, camps, etc.)
- Households with more than five lodgers and
- Households with foreigners serving in diplomatic missions.

12.1.1 Sampling design and procedure

Type of sampling design

The two - stage area stratified sampling was adopted for the HBS survey based on the rotational integrated design method and on the Population Census of 2011 as well. This method was judged as the most appropriate for cross –sectional and longitudinal comparisons as well.

Stratification and sub stratification criteria

The primary sampling units (PSUs) are the areas (one or more unified city blocks), the secondary sampling units selected in each primary unit are the households and their members. In each Region (NUTS 2), the stratification of primary units was conducted by allocating the Municipalities and Communes according to the degree of urbanization (urban, semi-urban, and rural regions). Except for the two former Major City Agglomerations (Athens and Thessaloniki), the produced strata according to the degree of urbanization are:

Table 22: Strata – degree of urbanization

Areas	Stratum	Urbanization
Urban	1	Municipal communities with 10,000 inhabitants or more
Semi-urban	2	Municipal or local Communities with 2,000 to 9,999 inhabitants
Rural	3	Local Communities up to 1,999 inhabitants

The Greater Athens Area was divided into 31 strata of about equal size (equal number of households) on the basis of the lists of city blocks of the Municipalities that constitute it and taking into consideration socio-economic criteria. Similarly, the Greater Thessaloniki Area was divided into 9 equally sized strata. The two former Major City Agglomerations account for 40% of the total population and for even larger percentages in certain socio-economic variables.

The total number of strata coming from the survey design was amounted to 79.

The total initial sample size of households was amounted to 3.735 (sampling fraction 0,09%) and was equally divided within the reference year, so as to have four (4) different equivalent indepented samples which correspond to four quarters of the year.

Sample selection schemes

<u>1st stage of sampling</u>

In this stage, from any stratum (crossing of Region with the degree of urbanisation), primary units were drawn. The number of draws is approximately proportional to the population size of the stratum (number of households in the last population census of the

year 2011).
In each final stratum attention was paid so as the primary units drawn, to be a multiple of four. Thus, the sample of primary units can be divided in 4 sub-samples of equal size. The reference period for the household data of each one of the 4 sub-samples corresponds to each one of the 4 quarters of the year, in order to allow for full representativeness of the household consumption expenditures.
Each area unit (primary unit) of the stratum had a selection probability proportional to its size. So, if X_{hi} was the number of households, according to the 2001 population census, of the unit in the sample of order i, then the probability of the unit being drawn was:

$$P_{hi} = \frac{X_{hi}}{X_h}$$

The total number of the primary sampling units was 619.

Additionally, as in each year the 25% of the sample households is replaced, the new households belong to different primary sampling units.

2nd stage of sampling

In this stage from each primary sampling unit (selected area) the sample of secondary units (households) was selected. Actually, in the second stage we drew a systematic sample of dwellings. However, in most cases, one household corresponds to each dwelling. If in the selected dwelling live more than one household, all of them were interviewed. The sampling frame containing the secondary units (households) in the selected sampling primary units was ***updated*** before the selection of households.
Finally, the total number of selected prefectures and communes amounted to 337 while and the total number of selected settlements to 360. In particular, the total number of the sampling units was 619.

Let M_{hi} be the number of households during the survey period in the i_{th} selected area of the stratum h. Out of them a systematic sample of m_{hi} households is selected with equal probabilities. Each of the m_{hi} households has the same chance to be included in the survey, equal to: $\frac{m_{hi}}{M_{hi}}$

In every selected primary unit, remains the determination of the sample size m_{hi}. The total number of households to be interviewed of the n_h selected primary sampling units will be

$$m_h = \sum_{i=1}^{n_h} m_{hi}$$

Finally by applying the two stage sampling procedure, from the stratum h the percentage of households $\frac{m_h}{M_h}$ is drawn.

In repeated sampling, the numerator of this fraction will vary from sample to sample; to be more specific the fraction $\frac{m_h}{M_h}$ is a random variable. Within each primary sampling unit the calculation of the sampling interval $\delta_{hi} = \frac{M_{hi}}{m_{hi}}$ is carried out, so that the following two desired conditions are satisfied:

a) The expected result $\frac{m_h}{M_h}$ is the predetermined over sampling fraction $\frac{1}{\lambda}$ in each geographical region (NUTS 2): $E\left(\frac{m_h}{M_h}\right) = \frac{1}{\lambda}$

b) The estimator of the stratum total Y_h (for any characteristic) should be self-weighted. In other words, the calculated estimator is the result derived from the sum of the values of the characteristic over the m_h sample of households by the overall raising factor λ, which is the same in each Region.

The conditions (a) and (b) are satisfied when:

$$\frac{1}{n_h} \cdot \frac{1}{P_{hi}} \cdot \frac{M_{hi}}{m_{hi}} = \lambda \Rightarrow$$

$$\frac{1}{n_h} \cdot \frac{1}{P_{hi}} \cdot \delta_{hi} = \lambda \Rightarrow$$

$$\delta_{hi} = \frac{M_{hi}}{m_{hi}} = \lambda \cdot n_h \cdot P_{hi}$$

Renewal of the sample: rotational groups

The survey is under the simple rotational design scheme. The sample for any year consists of 4 replications, which have been in the survey for 1-4 years. With the exception of the first three years of survey, any particular replication remains in the survey for 4 years. Each year, one of the 4 replications from the previous year is dropped and a new one is added. Between year T and T+1 the sample overlap is 75%; the overlap between year T and year T+2 is 50%; and it is reduced to 25% from year T to year T+3, and to zero for longer intervals.

12.1.2 Sampling unit

Households and household members

12.1.3 Sampling rate and sampling size

All relevant information has already been presented in the previous paragraphs of this chapter as well in paragraph 5.1 related with overall accuracy of the sampling design.

12.2 Frequency of data collection

From 2008 onwards the HBS has been conducted annually.

12.3 Data collection

The method of data collection is the Paper-Assisted Personal Interview (PAPI).

Questionnaires

The following separate questionnaires were used:

a) Household Questionnaire (register, dwelling information, expenditure) - «HBS:1»

b) Personal questionnaire for members aged 14 and more (personal expenditure, employment, income) - «HBS:2».

c) Personal questionnaire for members aged less than 14 years old (personal expenditure) - «HBS:3»

d) In order to conduct the survey as properly as possible, auxiliary documents were used, i.e. Map of the sampling areas and the Sampling Frames (constructed and updated), Diary where the goods and services bought from the surveyed household within the concrete reference period were written down (quantities and prices), Introductory letter signed by the Central Service, informing the household that has been selected for the survey and asking for its cooperation and the provision of reliable information as well, Comments of interviewer concerning the quality of cooperation with the surveyed household, Document with codes concerning: goods and services, dwelling and household characteristics, income, Regional Offices, countries etc.

Way of Questionnaires' Completion

a) Duration of the survey Conduct period: The total duration of the survey is 14 continuous days (working and not working)

b) Timetable for the questionnaires' completion: In order to complete the survey questionnaires the following procedure should be followed by the interviewer:

1. During the **first day** the interviewer must 1) ensure the approach and reliable cooperation of the household 2) complete Part A of the HBS.1 which concerns the Household Synthesis (demographic data, nationality and main economic activity) and data concerning education and health of household members, 3) complete Part B of the HBS.2 which concerns the employment status of the household members, 4) Provide the Diary to the households in order to write down the daily purchases for goods and services during the next 13 days (the first day is included as well) and explain to the household members aged 7+ how this should be filled-in.
2. In order to facilitate the daily cooperation with the household members, during the next 12 days there should be gradually completed both Parts B and JB of the HBS.1 (they concern the main dwelling's data and the income sources of the household respectively) and the expenditures of the Parts C- JA of the HBS.1 by allocating them within the next 2 weeks. In addition, the expenditures written down by the household members in the Diaries should be checked and transferred to HBS.1 or to HBS.2 (part A: personal expenditure) or to the HBS .3.
3. During the last day (14th day) all the expenditure of the 13th day should be written down and completed in Part C of the HBS.2 (concerns: the income of the household members) as well. Finally all mistakes should be corrected and all cases in abeyance should be settled.

12.4 Data validation

Data validation is done by conducting qualitative and quantitative tests based on:

- Longitudinal checks on raw data (checks with data of previous years)
- Comparisons of key variables with variables / data of other statistical sources
- Calculation of sampling errors is also used as a criterion for the final validation of data.

12.5 Data compilation

Please find below a description of the weighting, estimation and imputation process.

12.5.1 Weighting procedure

Design Weight

The household design weights, DW_{hi}, were calculated using the formula below (inverse of probabilities of selection):

$$\frac{1}{n_h} \cdot \frac{1}{P_{hi}} \cdot \frac{M_{hi}}{m_{hi}} = DW_{hi}$$

where

M_{hi} = the number of households in the updated sampling frame in the h_i area (primary unit).
m_{hi} = the number of selected households in the h_i area (primary unit).
n_h = the sample size of primary units in stratum h
P_{hi} = the selection probability of the h_i primary unit.

Non-response adjustments

Within each final stratum non-response adjustment of the responding households was carried out by the inverse of the response rate, so as to "make up" for non-responding cases in that stratum.

Adjustments to external data

There was adjustment to external data that involved the calibration of the household weights in conjunction with external sources. This enables entails the distribution of auxiliary variables on both household and individual level. The auxiliary variables used at household level were the household size and at personal level the distribution of population by age (five years age groups) and sex.

Applying calibration a) the estimated households by size conform to the number of households of the reference period resulting from projection of the trend observed between the population censuses of 2001 and 2011 and b) the estimated population by sex and age conforms to the population calculated by projecting data of the reference period coming from vital statistics (population census, births, deaths, migration).

12.5.2 Estimation and imputation

Estimation of survey characteristics

The general procedure applied in order to estimate the survey characteristics (mean household final consumption expenditures), as well as their standard errors and coefficients of variation is presented below.

Let y_{hij} be the value of the characteristic **y** of the sampling household of order j, in the hi area. Moreover, Y_h stands for the stratum total, which results when adding the characteristic y for all households or household members included in the stratum h.

The form of the estimator on the basis of the two-stage design is:

$$\hat{Y}_h = \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij} \cdot y_{hij}$$

where

w_{hij} is the final (adjusted) weight of the household.

For estimating the characteristic **y** in country level, all stratum estimates $\hat{Y}_h$ should be added, as follows

$$\hat{Y} = \sum_h \hat{Y}_h$$

The estimation of the number of households X_h in stratum h is calculated using the formula

$$\hat{X}_h = \sum_{i=1}^{n_h} \sum_{j=1}^{m_{hi}} w_{hij}$$

while the estimation of the relevant characteristic in country level is calculated by adding all strata estimations, that is

$$\hat{X}_h = \sum_h \widehat{\mathrm{X}}_{\mathrm{h}}$$

In order to estimate the variances of the required characteristics (mean household consumption expenditure for the various categories of expenditures), the following steps should be implemented.

a. For every selected PSU i of the stratum h, we calculate the quantities T_{hi} and F_{hi} using the following formulas:

$$T_{hi} = n_h \cdot \sum_{j=1}^{mhi} w_{hij} \cdot y_{hij}$$

$$F_{hi} = n_h \cdot \sum_{j=1}^{mhi} w_{hij}$$

b. Since T_{hi} and F_{hi} have been calculated for every PSU i ($i = 1,2,..., n_h$) of the stratum h, then

$V\left(\hat{Y}_h\right)$ is calculated as

$$V\left(\hat{Y}_h\right) = \frac{1}{n_h \cdot (n_h - 1)} \cdot \left[\sum_{i=1}^{n_h} T_{hi}^2 - \frac{1}{n_h} \cdot \left(\sum_{i=1}^{n_h} T_{hi} \right)^2 \right]$$

and

$V\left(\hat{Y}\right)$ (country level) is calculated by adding $V\left(\hat{Y}_h\right)$ for all strata h, that is

$$V\left(\hat{Y}\right) = \sum_h V\left(\hat{Y}_h\right)$$

Correspondingly, $V\left(\hat{X}_h\right)$ is given by

$$V\left(\hat{X}_h\right) = \frac{1}{n_h \cdot (n_h - 1)} \cdot \left[\sum_{i=1}^{n_h} F_{hi}^2 - \frac{1}{n_h} \cdot \left(\sum_{i=1}^{n_h} F_{hi} \right)^2 \right]$$

and

$V\left(\hat{X}\right)$ (country level) is calculated by adding $V\left(\hat{X}_h\right)$ for all strata h, that is

$$V\left(\hat{X}\right) = \sum_h V\left(\hat{X}_h\right)$$

The mean household consumption expenditure is defined as

$$\hat{R} = \frac{\hat{Y}}{\hat{X}}$$

The variance of $\hat{R}$ can be calculated using the formula below

$$V\left(\hat{R}\right) = \frac{V\left(\hat{Y}\right) + \hat{R}^2 \cdot V\left(\hat{X}\right) - 2 \cdot \hat{R} \cdot Cov\left(\hat{Y}, \hat{X}\right)}{\hat{X}^2}$$

where

$$Cov\left(\hat{Y}_h, \hat{X}_h\right) = \frac{1}{n_h \cdot (n_h - 1)} \cdot \left[\sum_{i=1}^{n_h} T_{hi} \cdot F_{hi} - \frac{1}{n_h} \cdot \left(\sum_{i=1}^{n_h} T_{hi}\right)\left(\sum_{i=1}^{nh} F_{hi}\right)\right]$$

and

$$Cov(\hat{Y}, \hat{X}) = \sum_h Cov\left(\hat{Y}_h, \hat{X}_h\right)$$

Also in order to estimate the variances for mean household consumption expenditure for certain population subsets, the procedure described above is used. For that case, we also defined domain indicator variables in order to represent the specific population subsets (domains) required, e.g. (employment status of the household reference persons = manual worker in industry and services, non manual worker in industry and services, e.t.c.)

Let,

- the specific population subset (the domain) be denoted U_d, where $U_d \subset U$ (whole population)
- the size of U_d be denoted N_d

then the value for the j_{th} element (household or household reference person) in the selected area i of the final stratum h of the domain indicator variable is denoted as:

$$y_{hij} = \begin{cases} y_{hij} & if \quad i \in U_d \\ 0 & otherwise \end{cases}$$

$$w_{hij} = \begin{cases} w_{hij} & if \quad i \in U_d \\ 0 & otherwise \end{cases}$$

With the use of the domain indicators above and the procedure and formulas already described, we estimated the characteristics and the sampling errors of the mean household final consumption expenditure of the specific subpopulations.

Concerning **Substitution** we can mention the following

- ***Dwellings being substituted***

Main dwellings being occupied were substituted if the cooperation with the household became impossible due to any of the following reasons:

- Incapacity of the interviewee
- Refusal
- Temporary absence
- Other reasons

Dwellings with which contact was not possible due to objective incapacity (ill, deaf-mute, etc.) or due to temporary absence were substituted. In the cases of refusal any possible effort should be made in order to persuade the household to cooperate. In case the interviewers did not succeed in this, the dwelling was substituted. Finally in the cases of temporary absence the interviewee should visit the households at least three times.

- ***Dwellings not being substituted***

The dwellings that have been selected for the survey and have not substituted, are:

- Empty dwellings
- Secondary or country dwellings, whether occupied or not
- Dwellings with members in diplomatic missions (e.g. ambassadors, other countries' armed forces personnel, etc.)

- ***Way of substitution***

The substitution of households not co-operating should be as less arbitrary as possible. The interviewee should substitute the non-responding households with other having similar basic characteristics, e.g. similar synthesis, same type of ownership, same household's head profession. That is, each non-responding household should be substituted with the next household, from the list, having as much as possible, similar characteristics, except for the last household in the list. The way of substitution was checked by "HBS:5".

The response rate after substitutions was 92.9% while substitutions by quarter group are presented in the following table.

Table 23. Substitutions, by quarter group and total

Quarter group	%
1	28.6
2	26.2
3	28.8
4	44.6
Total	*100.0*

12.6 Adjustment

13 Comment

Annexes

Annex 1. Standard Errors and Coefficients of Variation
http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0801/Other/A0801_SFA05_MT_AN_00_2013_00_2013_05_F_EN.pdf
Annex 2. HBS 2009-2013 Tables on average monthly household expenditure
http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0801/Other/A0801_SFA05_MT_AN_00_2013_00_2013_06_F_EN.pdf
Annex 3. Survey Questionnaires (3)
http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0801/Other/A0801_SFA05_QS_AN_00_2013_00_2013_01_F_EN.pdf
http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0801/Other/A0801_SFA05_QS_AN_00_2013_00_2013_02_F_EN.pdf
http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0801/Other/A0801_SFA05_QS_AN_00_2013_00_2013_03_F_EN.pdf
Annex 4. SDMX Metadata Structure
http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0801/Other/A0801_SFA05_MT_AN_00_2013_00_2013_01_F_EN.pdf
Annex 5. HBS 2013 Classifications - Codes of Goods, Services, Incomes, Prefectures and Countries, Characteristics of Households and Dwellings
http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0801/Other/A0801_SFA05_MT_AN_00_2013_00_2013_03_F_EN.pdf