Labour Cost Survey 2012
Quality report

(Implementation of Commission Regulation (EC) No 698/2006 of 5 May 2006 implementing Council Regulation (EC) No 530/1999 as regards quality evaluation of structural statistics on labour costs and earnings)

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List of Abbreviations

LCI: Labour Cost Index
LCS: Labour Cost Survey
LFS: Labour Force Survey
NA : National Accounts
SBS: Structural Business Statistics

Introduction

The Labour Cost Survey was carried out by the Hellenic Statistical Authority (ELSTAT) pursuant to the requirements of Council Regulation (EC) No 530/1999, Commission Regulation (EC) No 1726/1999 and Commission Regulation (EC) No 1737/2005.

The scope of the survey, at national level, is the production of statistical data regarding labour cost in enterprises. More specifically, the collected data pertain to the following variables: a) Number of employees, b) Hours actually worked, c) Paid hours and d) Labour costs. Additionally, at a macroeconomic level, the conduct of the labour cost survey will become the way to depict the allocation of labour cost to several branches of economic activity. Moreover, this allocation can be evaluated according to the special characteristics of persons employed broken down by branches of economic activity. Finally, at EU level, the survey aims at providing harmonized statistics, which will provide comparable quantity and quality information for all Member-States as regards labour cost.

The quality report is prepared in accordance with Commission Regulation No 698/2006 of 5 May 2006 implementing Council Regulation (EC) No. 530/1999 concerning quality evaluation of structural statistics on labour costs and earnings, providing information on the six dimensions of the European Statistical System quality definition, namely relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability and coherence.

1. Relevance

1.1 User needs

The labour cost survey meets national needs and the needs of European users. Generally, the survey provides statistical information necessary to improve the competitiveness and performance of the business community.

The main national users of the labour cost survey results are as follows:

- The government and other public agencies,
- The Bank of Greece and other Hellenic banks
- Scientific community (academics / researchers, students)
- Press and other Media
- Commercial Business
- Hellenic Chamber of Commerce
- Other sections of ELSTAT (National Accounts)

At international level, the survey results are used by Eurostat, the International Monetary Fund (IMF), the United Nations (UN), the European Central Bank (ECB), the Organisation for Economic Cooperation and Development (OECD), the International Labour Organization (ILO), etc.

1.2 User satisfaction

Since relevance is not an inherent characteristic of the statistical data, it can be measured only with the help of the user satisfaction survey. The Hellenic Statistical Authority conducts:

(a) the user satisfaction survey every six months the results of which are published in the "Library's Newsletter" a bilingual publication issued by the Library Section and the Statistical Data Dissemination Section, utilizing the user questionnaire. This publication presents half-yearly figures of the number of users, in combination with some other variables, such as the degree of coverage of requests, the type of the requested statistics, the dissemination of statistical information and

(b) "User Conference" since 2010, on an annual basis, with the participation of representatives of agencies of the private / public sector and educational / research institutions. The user conferences provide an important opportunity to ELSTAT to collect comments and suggestions from users about the dissemination format of statistics, the data access and the extent to which the required statistics are available. The user conferences significantly help the ELSTAT to draw useful conclusions on the areas where the statistical products and services can be improved in order to meet the evolving needs of users. These conclusions are incorporated in the annual and medium-term statistical work programmes of ELSTAT.

The results showed that the labour market statistics (employment and labour cost) are on high demand from the users and the majority of users were satisfied. The field of labour market statistics that did not meet users' needs was "regional statistics" (NUTS II and NUTS III).

As the questionnaire is the indispensable tool for data collection, the questionnaire of the labour cost survey was designed in accordance with European and national requirements. Community obligations represent 95% of the questionnaire, and the rest questions were elaborated, after consultation with the main national core users.

The main purposes for which the users need the labour cost statistics are:

- Analysis of current developments for short-term decision making
- Analysis of trends for longer-term decision making
- Forecasting
- Research purposes

2. Accuracy

Sampling methodology

The labour costs survey covers sections B to S (section O not included) of NACE Rev.2 and the enterprises with average annual employment equal to or greater than 10 employees. The single stratified random sampling method was applied; the surveyed unit is the enterprise and statistical information is obtained for each separate local unit of the enterprises included in the sample.

The sampling frame used for the sample design was based on the Business Register (BR) of ELSTAT. This BR is based on the VAT Register of the Ministry of Finance and it is updated through the statistical surveys of ELSTAT and the register of the Social Insurance Foundation.

Stratification

The enterprises with 10 or more employees included in the survey were stratified as follows:

a. By geographical region – NUTS I,
b. By Division (two-digit NACE Rev.2 code) within each geographical region (Geography x Economic activity = Major stratum), and
c. By size class of the enterprise. In each of the major strata, the enterprises were stratified into 5 size classes, according to their size, determined by their average annual number of employees in the business register, as follows.

Class 1	10-19	Employees
Class 2	20-49	"
Class 3	50-99	"
Class 4	100-249	"
Class 5	250 or more	"

The enterprises that belong to the 5th size class were surveyed exhaustively.

Sample size

The sample size amounts to 4.823 enterprises (sampling fraction is 14,5%) and the response rate is 52,9%. The sample size of the enterprises was defined so that the coefficient of variation (CV) of the variables “Annual Labour Costs” and “Hourly Labour Costs” at two-digit code of economic activity for the whole country does not exceed 5%. The sampling units (enterprises) were allocated to size strata applying the method of optimal (Neyman) allocation.

The population (N) and the sample size (n), broken down by section and by size class of enterprises, are presented in the following table:

Table 1. The population (N) and sample size (n) by section and by size class

Sample vs population size (initial design)												
	Total		E10_49		E50_249		E250_499		E500_999		E1000	
	N	n	N	n	N	n	N	n	N	n	N	n
Total	33.308	4.823	29.220	2.572	3.381	1.544	368	368	196	196	143	143
B	108	36	87	18	15	12	5	5	1	1		
C	3.919	854	3.095	373	689	346	85	85	31	31	19	19
D	41	19	32	10	5	5	3	3			1	1
E	195	80	142	41	50	36	1	1	1	1	1	1
F	2.121	276	1.820	124	267	118	22	22	9	9	3	3
G	8.179	876	7.342	469	720	290	69	69	26	26	22	22
H	1.488	232	1.274	111	172	79	16	16	11	11	15	15
I	4.458	442	4.061	262	356	139	27	27	13	13	1	1
J	913	198	742	97	137	67	13	13	14	14	7	7
K	194	75	114	24	53	24	5	5	7	7	15	15
L	179	36	154	18	23	16	2	2				
M	1.208	223	1.031	115	151	82	18	18	6	6	2	2
N	1.025	212	841	98	141	71	22	22	12	12	9	9
P	7.617	795	7.201	634	376	121	18	18	16	16	6	6
Q	541	277	259	57	143	81	55	55	46	46	38	38
R	422	100	371	59	41	31	5	5	1	1	4	4
S	700	92	654	62	42	26	2	2	2	2		

2.1 Sampling errors

The coefficients of variation of the variables "Annual Labour Costs" and "Hourly Labour Costs" are presented below:

Table 2. Coefficients of variation, Total.

Total	Coefficient of Variation
Annual Labour Cost	,014
Hourly Labour Cost	,013

Table 3. Coefficients of variation by economic activity (Sections)

NACE_1D		Coefficient of Variation
B	Annual Labour Cost	,127
	Hourly Labour Cost	,148
C	Annual Labour Cost	,019
	Hourly Labour Cost	,028
D	Annual Labour Cost	,003
	Hourly Labour Cost	,035
E	Annual Labour Cost	,037
	Hourly Labour Cost	,021
F	Annual Labour Cost	,067
	Hourly Labour Cost	,057
G	Annual Labour Cost	,031
	Hourly Labour Cost	,027
H	Annual Labour Cost	,045
	Hourly Labour Cost	,048
I	Annual Labour Cost	,065
	Hourly Labour Cost	,050
J	Annual Labour Cost	,054
	Hourly Labour Cost	,070
K	Annual Labour Cost	,011
	Hourly Labour Cost	,067
L	Annual Labour Cost	,038
	Hourly Labour Cost	,014
M	Annual Labour Cost	,072
	Hourly Labour Cost	,057
N	Annual Labour Cost	,050
	Hourly Labour Cost	,063
P	Annual Labour Cost	,078
	Hourly Labour Cost	,029
Q	Annual Labour Cost	,018
	Hourly Labour Cost	,022
R	Annual Labour Cost	,049
	Hourly Labour Cost	,039
S	Annual Labour Cost	,083
	Hourly Labour Cost	,056

Table 4. Coefficients of variation by NUTS I

NUTS I		Coefficient of Variation
1-North Greece	Annual Labour Cost	,038
	Hourly Labour Cost	,016
2-Central Greece	Annual Labour Cost	,029
	Hourly Labour Cost	,026
3-Attica	Annual Labour Cost	,017
	Hourly Labour Cost	,021
4-Islands Aegean Crete	Annual Labour Cost	,044
	Hourly Labour Cost	,029

Table 5. Coefficients of variation by class size of enterprises

SIZE_CLASS		Coefficient of Variation
E10_49	Annual Labour Cost	,028
	Hourly Labour Cost	,015
E50_249	Annual Labour Cost	,033
	Hourly Labour Cost	,024
E250_499	Annual Labour Cost	,050
	Hourly Labour Cost	,064
E500_999	Annual Labour Cost	,041
	Hourly Labour Cost	,035
E1000	Annual Labour Cost	0,000
	Hourly Labour Cost	0,000

2.2 Non-sampling errors

2.2.1. Coverage errors

The enterprises with 10 or more employees are included in the survey.

Due to misclassification problems of the register, some sampling units changed strata after data collection. These units were allocated to the new strata (due to the change of economic activity or class size), maintaining their initial probabilities of selection. This result in changes in the initial variance, it distorts the initial allocation of the enterprises of the sample and as a result it inflates the variance of the estimations. Consequently, the coefficient of variation of the produced statistics is higher than the coefficient of variation based on the initial sample design.

In some cases, enterprises which were in the register, were included in the sample, but ceased to be active during the data collection (closed, companies out of scope of the survey, less than 10 employees, etc.). These enterprises reduced the original size of the sample of enterprises. It is also possible that some enterprises, not included in the 2010 register, started their activities on a later stage. This fact results in under coverage errors and underestimation of the statistics produced. During the delivery of the questionnaires the feedback by the interviewers is presented below

Table 6. Number of enterprises included in the sample but ceased to be active during data collection

STATUS OF ENTERPRISE	No of enterprises
Enterprises closed	148
Enterprises not located	47
Enterprises merged	13
Enterprises out of scope	170
Enterprises (insolvency, bankruptcy)	49
Total	**427**

2.2.2 Measurement and processing errors.

The data collection method which was used was the "face-to-face interview'' by filling in of paper questionnaires. The collection method applied ensured the high quality of the collected information, since the statistical interviewers assisted the respondents, and carefully checked the filled in questionnaires, before leaving the enterprise.
The statistical interviewers who participated in the survey are mainly external survey workers and secondarily, if necessary, experienced officials of the Hellenic Statistical Authority. Before the conduct of the survey, the interviewers attended a one-day training seminar. The purpose of the seminar was to enable the interviewers to: a) fully understand the definitions of the survey characteristics (b) correctly fill in the questionnaire, and (c) efficiently check for errors by applying logical checks.
The structure and the size of the questionnaire were designed so as to be user-friendly for the interviewers. Additionally, useful instructions were included, analyzing all the variables of the questionnaire. This action was aimed at collecting fully completed questionnaires, with no missing variables and at minimizing processing errors.

The support and supervision of the collection of questionnaires were decentralized in the Regional Statistical Offices (RSO) of ELSTAT. The checking for the detection of measurement errors was carried out in the RSO. Then, a second round of validation checks was carried out, after the data processing in ELSTAT Central Office including coding, checks for the correct filling in of all relevant variables and checks for ensuring that labour cost variables fall within a reasonable range for the division.

After conducting all final checks for identifying non-sampling errors, the database was ready for the extrapolation process and the plausibility checks after tabulation.

These checks included comparisons of data with relevant data of previous survey and other surveys.

During the period of data collection and the data validation process, the variables which were more difficult for respondents were the calculation of the number "Hours Worked" and "Hours Paid" and the number of part-time employees converted into full-time equivalents.

2.2.3 Non-response errors

In case the enterprises did not respond, they were contacted by phone or were sent reminders via fax or electronic mail (email) or even the statistical interviewers paid personal visits to the enterprises in order to collect the required data .The response rate for the employment size classes and for all the variables was quite satisfactory. In the case that the size class was surveyed exhaustively the enterprises' response rate was quite high in many cases, but not 100% in all combinations of sectors and size classes, because no response of enterprises increases the sampling error of the survey characteristics.

The following table shows response rate (%), total and broken down by section of economic activity and size classes of enterprises

Table 7. Response rate (%) by section and class size

Response rate (%)						
NACE	Total	E10_49	E50_249	E250_499	E500_999	E1000
Total	52,9	50,3	49,8	65,2	69	76,6
B	55,6	44,4	66,7	60	100	-
C	68,9	67,3	65,9	80	100	52,6
D	57,9	40	80	66,7	-	100
E	67,5	73,2	50	100	-	100
F	36,6	37,9	32,2	45,5	44,4	66,7
G	49	45	50,3	58	53,8	81,8
H	51,7	52,3	38	100	54,5	66,7
I	40	37,8	41	48,1	53,8	100
J	48	46,4	37,3	69,2	78,6	71,4
K	58,7	37,5	50	80	71,4	93,3
L	27,8	22,2	25	100	-	-
M	46,6	35,7	51,2	77,8	83,3	100
N	50,5	43,9	42,3	81,8	91,7	55,6
P	57,9	57,7	50,4	77,8	81,3	100
Q	57	61,4	51,9	36,4	60,9	86,8
R	59	47,5	74,2	100	100	50
S	46,7	40,3	57,7	100	50	-

The above response rate (52,9 %) was calculated as the ratio of the number of the collected questionnaires to the designed sample.
If we take into account the questionnaires which were not collected, as presented in Table 6, the actual response rate was 58 %.

2.2.4 Model assumption errors

No applicable.

3. Punctuality and Timeliness

3.1 Punctuality

The numerous statistical works of the Labour Cost Survey were carried out in four phases, as detailed below:

Phase 1: Organisation and preparation of the survey

The first phase was carried out from 05/02/2013 to 31/12/2013, and includes the organisation activities and the preparatory work for the survey. More specifically, the following actions were carried out:

- Decision of the President of ELSTAT, setting out the time schedule, the organisation and the cost of the survey,
- Sample design,
- Design and printing of the questionnaire with instructions for data collection,
- Delivery to the regions (prefectures) of the questionnaires and the questionnaires' instructions

Phase 2: Data collection

The second phase was carried out from 10/01/2014 to 30/09/2014. During this phase the following works were carried out:

- Selection and appointment of the statistical interviewers for the conduct of the survey
- Training seminar of the statistical interviewers for the effective data collection
- Distribution to the interviewers of the questionnaires and the lists with the sample units and other necessary documents
- Collection of the statistical data
- Monitoring and supervision of the operation from the beginning to the end by the supervisors (heads of the regional offices and the head of the competent department of the Central Office)
- Delivery by the interviewers of the questionnaires to their supervisors

Phase 3: Data processing

The third phase was carried out from 07/04/2014 to 12/12/2014

- Creation of a software application for data entry and automatic checks
- Completeness checks of the questionnaire
- Logical and consistency checks of the data
- Coding
- Data entry and automatic data editing
- Creation of a database with the survey data
- Qualitative checks of the data in the database
- Calculation of the extrapolation factors
- Estimation of the survey characteristics
- Tabulation of the estimated statistics for qualitative analysis

Phase 4: Evaluation of the results-Publication and Dissemination

This phase was conducted from 15/12/2015 to 19/01/2015 and the following works were carried out:

- Qualitative analysis and documentation of the results
- Production of national tables with the final results
- First transmission to Eurostat of tabulated data through the appropriate technical format for the transmission of the results
- Second transmission to Eurostat of tabulated revised data.

3.2 Timeliness

The final results of the 2012 LCS were released by Eurostat in January 2015, thus the time lag between the release date and the reference period of the data is t+24 months.

4. Accessibility and clarity

Users can be provided with tabulated-aggregated data, after submitting an application to the Statistical Dissemination Section – ELSTAT. For confidential reasons, users can have access to micro-data, only under a confidentiality contract and with respect to the valid process.

Tables that contain data from 2000 and onwards are posted on the website of ELSTAT: www.statistics.gr.

5. Comparability

5.1 Spatial comparability

The definition of the statistical units, the reference population, the classifications and definitions of the surveyed variables in the results transmitted to Eurostat were determined in compliance with Council Regulation (EC) No 530/1999. Thus, the produced statistics are comparable among the Member States of the European Union.

5.2 Comparability over time

The 2008 and 2012 Labour Cost Surveys were based on the same methodology. For reference year 2012, NACE Rev.2 sector O was not included (optional sector) due to the under-coverage of the sector of the General Government in the Business Register of ELSTAT.

6. Coherence

6.1. Coherence with statistics from the Labour Force Survey (LFS)

The number of hours actually worked per employee of the Labour Cost Survey (B1/A1) and the Labour Force Survey (LFS) are presented in the following table.

Table 8. Hours actually worked per employee

NACE Rev.2	LCS	LFS	LCS/LFS
B	1.779	2.112	0,84
C	1.791	2.035	0,88
D	1.918	2.027	0,95
E	1.824	2.008	0,91
F	1.601	1.912	0,84
G	1.696	2.006	0,85
H	1.852	2.161	0,86
I	1.458	2.157	0,68
J	1.822	2.077	0,88
K	1.789	2.018	0,89
L	1.853		
M	1.730	2.011	0,86
N	1.506	1.999	0,75
P	1.239	1.213	1,02
Q	1.912	2.046	0,93
R	1.366	1.968	0,69
S	1.524	2.021	0,75
B_S(1)	1.643		
B_S(2)	1.642	1.900	0,86

(1) *Section O excluded,*
(2) *Section O and L excluded (for comparatability reasons)*

LFS: Data are final, not available data for the section L, enterprises with 11+ employees.

Some significant differences between the above surveys are observed due to the fact that in LCS the variable 'hours worked' derive from the information given by the accounting office of the enterprise, on the other hand, in LFS it is an estimation of the respondent employee that, in some cases, is overestimated.

6.2. Coherence with structural business statistics (SBS)

The variable "wages and salaries" per employee of the Labour Cost Survey (D11/A1) and the Structural Business Statistics (SBS) are presented in the following table.

Table 9. Wages and salaries per employee

NACE Rev.2	LCS	SBS	LCS/SBS
B	26.008	28.264	0,92
C	20.987	22.326	0,94
D	38.022	32.048	1,19
E	22.394	26.415	0,85
F	16.262	13.950	1,17
G	18.860	*	
H	26.633	26.100	1,02
I	11.938	14.856	0,80
J	26.876	28.234	0,95
K	35.586	*	
L	27.161	**	
M	21.320	25.171	0,85
N	12.262	13.443	0,91
P	17.904	*	
Q	22.548	*	
R	16.106	*	
S	15.502	**	
B_S[(1)]	20.073	*	

(1) Section O excluded
(2) SBS: data are final
** Data are not available.*
*** Data not available for confidential reasons for sections L and S (for S, only S95 surveyed)*

Generally, the difference observed between the two surveys is due to the inconsistency in the definition of 'Wages and Salaries'. In the SBS survey, the variable 'Wages and Salaries' includes the values of the variable "Payments to employees leaving the enterprise''.

6.3 Coherence with Labour Cost Index

The average annual growth rates of the variable 'Hourly Labour Costs' **((D1+D2+D3+D4-D5) / B1)** and the average annual growth rate of the unadjusted LCI are presented in the following table

Table 10. Average annual growth rates of hourly labour costs of the LCI and the LCS by economic activity

NACE Rev.2	Growth Rates		LCS-LCI
	LCS	LCI	
B	2,8%	1,0%	1,9%
C	-0,5%	-1,4%	0,9%
D	-3,4%	-6,4%	3,0%
E	-7,1%	-6,6%	-0,4%
F	-3,0%	-2,1%	-0,9%
G	1,3%	1,9%	-0,6%
H	-1,5%	-2,4%	0,9%
I	-1,6%	-5,6%	4,0%
J	-0,8%	-0,5%	-0,3%
K	1,6%	-1,9%	3,4%
L	8,6%	-4,4%	13,0%
M	0,8%	0,5%	0,3%
N	-1,4%	-1,7%	0,3%
P	-6,0%	-7,7%	1,7%
Q	-0,8%	-7,0%	6,2%
R	3,4%	-5,8%	9,2%
S	-2,0%	-5,1%	3,1%
B_S(1)	-1,6%	*	

(1) Section O excluded
** Data are not available*

The reason for differences between the two sets of statistics (growth rates from LCI and LCS) is due to the different frequency of the conduct of the surveys. Annual statistics are collected after the end of the reference year, whilst short-term statistics are collected during the year. The surveyed population changes during the year (births and deaths, mergers and bankruptcies, etc). Such changes are better known when producing the annual than the short-term statistics.

Specifically, for section L there is a significant difference in the average annual growth rates between the two surveys which is due to the fact that the specific section is characterized by a high enterprises' mobility and even if the target population is the same, the frames may be different for the two surveys.

Generally, sections with large number of enterprises present better results on coherence analysis.

6.4 Coherence with National Accounts (NA)

The variable "Compensation of Employees" expressed per employee **(D1/A1)** and the same variable of the NA are presented by section and source.

Table 11. "Compensation of employees" per employee

NACE Rev.2	LCS	NA	LCS/NA
B	35.504	40.171	0,88
C	27.502	24.591	1,12
D	50.931	29.089	1,75
E	28.234	36.566	0,77
F	21.743	17.368	1,25
G	24.766	20.937	1,18
H	35.194	28.248	1,25
I	15.425	15.472	1,00
J	34.269	36.013	0,95
K	48.480	52.075	0,93
L	34.860	19.928	1,75
M	27.210	23.193	1,17
N	15.753	19.341	0,81
P	21.002	28.854	0,73
Q	26.737	21.465	1,25
R	21.926	21.116	1,04
S	19.856	20.912	0,95
B_S[(1)]	**25.731**	**24.217**	1,06

(1) Section O excluded

The National Accounts are compiled firstly on the basis of short-term statistics and in a later stage on annual statistics, when the annual statistics are available. The data coming from NA are provisional data and cover the enterprises with one or more employees.