

LABOUR COST INDEX (LCI)

QUALITY REPORT 2018

Country
ROMANIA

Table of contents
1. Contact
2. Statistical presentation
3. Statistical processing
4. Quality management
5. Relevance
6. Accuracy and reliability
7. Timeliness and punctuality
8. Coherence and comparability
9. Accessibility and clarity
10. Cost and Burden
11. Confidentiality
12. Comment
Related Metadata
Annexes (including footnotes)

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2. Statistical presentation

2.1 Data description

The annual quality report for the labour cost index (LCI) presents the main quality criteria, as described by Annex 1 of the Commission Regulation No 1216/2003 of July 2003, implementing Regulation No 450/2003 of the European Parliament and of the Council concerning the labour cost index.

Also, according to the Regulation No 1893/2006 of the European Parliament and of the Council on NACE Rev. 2 classification adopted and published in December 2006, the labour cost index the entire time series 2000 – 2008 were recalculated by NACE Rev.2. Starting with the first quarter 2009 the LCIs are produced and disseminated, at EU and national level also, in accordance with the new classification.

Furthermore, in the same time the base year was changed from 2000 into 2008, as Eurostat requested.

In the first quarter of 2015, the base year was changed from 2008 into 2012, as Eurostat requested, the whole series of data (2000-2014) being recalculated with 2012 as reference year.

2.2. Classification system

The LCIs are provided in all labour cost categories:

- LCI_TOT (total labour costs)
- LCI_WAG (wages and salaries)

<ul style="list-style-type: none"> • LCI_OTH (other labour costs) • LCI_TXB (total labour costs excluding bonuses) <p>accompany with the annual weights used for the EU aggregates index calculation:</p> <ul style="list-style-type: none"> • WGT_TOT (weights for total labour costs) • WGT_WAG (weights for wages) • WGT_OTH (weights for other labour costs) • WGT_TXB (weights for total labour costs excluding bonuses)
<p>2.3. Coverage – sector</p> <p>The LCIs are calculated for all B to S NACE Rev.2 sections and requested aggregations (B-N, B-E, B-F, G-N, G-J, K-N, O-S, P-S, B-S).</p>
<p>2.4. Statistical concepts and definitions</p> <p>According to the Council Regulation No 450/2003 concerning the labour cost index</p>
<p>2.5. Statistical unit</p> <p>The unit of selection for the data sources was the enterprise defined according to the communitarian rules for enterprises statistics as: “the smallest combination of legal units that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations. An enterprise may be a sole legal unit”.</p> <p>The LCIs are produced exclusively based on the existing surveys, no specific survey has been organised:</p> <ul style="list-style-type: none"> • Wages Survey (WS) – carried out monthly in the enterprises and local units (establishments) from all economic activities (<i>A-O according to NACE Rev1.1 until 2008, A-S according to NACE Rev.2 from 2009</i>), irrespective of the ownership sectors. From 2001 onwards a threshold was introduced (i.e. the business units with less than 4 employees are no longer surveyed). • Labour Cost Survey (LCS) – carried out annually in the enterprises from all economic activities (<i>A-O according to NACE Rev1.1 until 2007, A-S according to NACE Rev.2 from 2008</i>), irrespective of the ownership sectors and the size class of the enterprise by number of employees.
<p>2.6. Statistical population</p> <p>The sampling frame used for the sample selection for the both surveys (Wages Survey and Labour Cost Survey) was drawn from the Romanian Business Register (REGIS), which contained all enterprises, authorities and organisations as well as their local units that carried out any economic activity irrespective of their size or if they belong to the private or public sector. The Business Register was updated, yearly, on the balance sheets and contains the latest information on each enterprise in the statistical population such as the identification items (unique identification code, address etc.), economic activity codes (NACE Rev.2), number of employees (giving the enterprise size class).</p>
<p>2.7. Reference area</p> <p>Data are available and published at the national level (NUTS0).</p>
<p>2.8. Coverage – Time</p> <p>Data according to NACE Rev.2 are available and published starting with the first quarter 2000.</p>
<p>2.9. Base period</p> <p>The LCI is calculated with 2012 as reference year.</p>

3. Statistical processing

3.1. Source data

The LCIs are produced exclusively based on the existing surveys, no specific survey has been organised. The data sources used for the labour cost index are:

- **Wages Survey (WS)** – carried out monthly in the enterprises and local units (establishments) from all economic activities (*A-O according to NACE Rev1.1 until 2008, A-S according to NACE Rev.2 from 2009*), irrespective of the ownership sectors. From 2001 onwards a threshold was introduced (i.e. the business units with less than 4 employees are no longer surveyed). Data are available and published at the national level (NUTS0). This monthly data source provides for LCIs the wages and salaries, the occasional bonuses, the number of employees, the hours worked (the hours worked are available monthly since January 2001) and the employment insurance contributions paid by the employers to the general consolidated budget (CAM) (it is available monthly since January 2018), which are compiled in order to obtain the on quarterly data.

The WS is carried out in accordance with the Commission Regulation no. 1503/2006 implementing and amending Council Regulation (EC) No 1165/98 concerning short-term statistics as regards definitions of variables, list of variables and frequency of data compilation.

- **Labour Cost Survey (LCS)** – carried out annually in the enterprises from all economic activities (*A-O according to NACE Rev1.1 until 2007, A-S according to NACE Rev.2 from 2008*), irrespective of the ownership sectors and the size class of the enterprise by number of employees. Data are available and published at the national and regional level (8 regions NUTS2). The figures for the main indicators such as number of employees, gross and net earnings are also produced at NUTS3 level. This latter data source provides for LCIs the annual proportion of the other labour costs in total wages and salaries.

LCS is carried out in accordance with the recommendations and standards of the European Union under the European Parliament and Council Regulation No 530/1999 concerning structural statistics on earnings and labour costs, Commission Regulation No 1726/1999 implementing Council Regulation No 530/1999 concerning structural statistics on earnings and on labour costs as regards the definition and transmission of information on labour costs and Commission Regulation no 1737/2005 amending Commission Regulation No 1726/1999 as regards the definitions and transmission of information on labour costs.

For the period 1996 – 2004 the Romanian LCIs were calculated and delivered in two ways:

- labour costs per employees (for the whole period) and
- labour costs per hours worked (for 1999-2004, according to the availability of the hours worked).

The old LCIs were calculated with year 2000 as base year.

Starting with year 2005, in accordance with the Council Regulation No 450/2003 requirements the LCIs are calculated as Laspeyres indices (labour costs per hours worked). The back series, starting with 1996 onwards were also, calculated as Laspeyres indices.

Also, from 1996 onwards, the scope of the LCIs was extended, including the activities L, M, N and O (NACE Rev.1.1).

In order to produce the LCIs by NACE Rev.2, in the reference year 2008, the surveys which make up the data sources double data collected, according to NACE Rev.1.1 and NACE Rev.2. The activities were carried out under the grant title of the “*Implementation of NACE Rev.2 in labour market statistics*” (with regard to the *labour cost indices – LCI*).

The macro approach was applied for the implementation of the NACE Rev.2 classification in the LCI back data (2000-2008), thus to calculate the absolute data provided by two statistical data sources.

The conversion matrices from the two surveys were separately built for variables “number of employees” and “wages and salaries”, at 2-digit of kind-of-activity unit (KAU).

Thus, starting with first quarter 2009, the LCIs are calculated by NACE Rev.2 sections B to S, having as base year 2008. Also, at this point the entire time series 2000 – 2008 were recalculated by NACE Rev.2 sections B to S and having as base year 2008.

All the data are quarterly transmitted to Eurostat: *Total Labour Cost* (LCI_TOT), *Wages and Salaries* (LCI_WAG), *Other Labour Costs* (LCI_OTH) and *Total Labour Cost excluding bonuses* (LCI_TXB), in all three forms: *Non-Adjusted* (NSA), *Working-Day Adjusted* (WDA) and *Working-Day and Seasonally Adjusted* (SA).

According to the Council Regulation No 450/2003 starting with 2008, the annual weights for computing the LCI index at EU level are provided, for all economic activities C to O (NACE Rev.1.1), and from 2009, for B to S (NACE Rev.2), as well.

Starting with year 2009 and for back data also, the weights are provided in absolute figures, in accordance with Eurostat requests and needs, and as a result of the Workshop on LCI (November 2008, Luxembourg).

3.2. Frequency of data collection

Wages and salaries, occasional bonuses and hours worked data are obtained from the Monthly Wages Survey. In 2018 the results were available 37 days after the end of the reference month.

Other labour costs data are obtained from the Annual Labour Cost Survey. The results for year Y are available 9 months after the end of the year Y (end of September year Y+1).

The quarterly aggregates needed for LCI calculation, and the LCIs are calculated in 65 days after the end of the reference quarter.

Data collection and release frequency

	Wages Survey		Labour Cost Survey		LCI	
	End of data collection	Release date	End of data collection	Release date	End of data aggregation	Release date
Month (M)	M + 25 days	M + 37 days	-	-	-	-
Quarter (Q)	-	-	-	-	Q + 63 days	Q + 65 days
Year (Y)	-	-	Y + 3 months	Y + 9 months	-	-

3.3. Data collection

Self-registration was the method used for both surveys. The variables were collected either on paper questionnaires (posted on the INS website) and transmitted by post or on-line, or by web based application (http://www.insse.ro/cms/files/Site_eSOP_v2/index.html).

3.4. Data validation

Data for the both surveys (Wages Survey and Labour Cost Survey) are validated at data entry, territorial statistical offices and INS headquarters level.

3.5. Data compilation

The LCIs are compiled as Laspeyres indices according to the following methodology:

Labour costs

The wages and salaries, the occasional bonuses, the hours worked and the employment insurance contributions paid by the employers to the general consolidated budget (CAM) (available monthly since January 2018) are obtained from the monthly survey Wages Survey (as described at point 3.1) and are aggregated, in order to obtain the quarterly data.

Until 2017, for the LCIs calculation the quarterly other labour costs are estimated, based on the annual

other labour costs and quarterly wages and salaries. Thus, in order to determine OTH_t (at quarterly level) it is necessary to:

- calculate an annual weight of the other labour costs into the wages and salaries (p)

$$p = \frac{OTH_{Y-1}}{WAG_{Y-1}}$$

where: p = annual weight of the labour costs into wages and salaries

OTH_{Y-1} = other labour costs for year Y-1

WAG_{Y-1} = wages and salaries for year Y-1

- estimate the quarterly other labour costs:

$$OTH_t = p * WAG_t$$

where: OTH_t = other labour costs for quarter t, year Y

WAG_t = wages and salaries for quarter t, year Y

By the time when final data from the Labour Cost Survey are available (month September), the weights corresponding to the previous available year (Y-1) are use. After, revisions are made, using the weights corresponding to the current year (Y).

Starting with year 2018, according to the national legislation provisions in force (GEO No. 79/2017, as subsequently amended and supplemented), the social security contribution and the social health insurance contribution paid by the employer were transferred to the employee; thus, starting with January 2018, these contributions are borne entirely by the employee, and reflected in the gross amount of the nominal earnings (direct labour cost). According to the same legal provisions, the tax obligations owed by the employers are the employment insurance contribution (CAM) (newly introduced) and the social insurance contributions, in the case of harder working conditions or special working conditions (see Annex 1 - Compulsory social contributions and tax - comparative table.doc).

Consequently, starting with year 2018, the OTH_t (at quarterly level) is determined according to the following steps:

- The employment insurance contributions paid by the employers to the general consolidated budget (CAM) for the quarters of the reference year Y are obtained from the monthly survey Wages Survey and are aggregated, in order to obtain the quarterly data. These contributions are provisional, being recalculated when the final data for the reference year Y from the "Labour Cost Survey in year Y" are available (September year Y+1).
- The annual weight of the other labour costs into the wages and salaries (p) for the year Y is estimated based on the results of the "Labour Cost Survey in year Y-1", by excluding the contributions that have passed from the employer to the employee from the other labour costs for the reference year Y-1 and their inclusion in the wages and salaries for the reference year Y-1:

$$p = \frac{OTH_{Y-1}}{WAG_{Y-1}}$$

where: p = provisional annual weight of the labour costs into wages and salaries

OTH_{Y-1} = other labour costs for the reference year Y-1

WAG_{Y-1} = wages and salaries for the reference year Y-1

Also, from OTH_{Y-1} are excluded the social contributions related to the employer which are replaced by the new CAM.

- Estimating the quarterly other labour costs (provisional data):

$$OTH_t = CAM_t + p * WAG_t$$

where: OTH_t = other labour costs for quarter t, reference year Y

WAG_t = wages and salaries for quarter t, reference year Y

CAM_t = the employment insurance contributions paid by the employers to the general consolidated budget for quarter t, reference year Y

When final data from the Labour Cost Survey in the reference year Y are available (month September year Y+1), the OTH_t will be recalculated using the weights corresponding to the reference year Y:

$$p = \frac{OTH_Y}{WAG_Y}$$

where: p = final annual weight of the labour costs into wages and salaries

OTH_Y = other labour costs for the reference year Y

WAG_Y = wages and salaries for the reference year Y

The quarterly total labour cost is obtained from the quarterly wages and salaries and other labour costs.

$$TOT_t = WAG_t + OTH_t$$

where: TOT_t = total labour cost for quarter t, year Y

The quarterly total labour cost excluding bonuses is obtained by deducting the corresponding occasional bonuses from the total labour cost.

$$TXB_t = TOT_t - OCC_t$$

where: TXB_t = total labour cost excluding bonuses for quarter t, year Y

OCC_t = occasional bonuses for quarter t, year Y

The recalculation of the final data, using the final annual weight of the labour costs into wages and salaries is done for the components OTH, TOT and TXB.

Hours worked

The indicator "hours worked" used of the LCIs calculation includes all hours actually worked by full-time and part-time employees, according to the working contract (excluding the week-ends, meal breaks, free days for official holidays, vacation, sick leave, technical stoppage non-imputed to the employee etc.), and the overtime.

The hours worked have been collected monthly, since 2001, through the Wages Survey (same source as for wages and salaries), and are computed for obtaining the quarterly data. The annual hours worked have been collected, since 1999, through the Labour Cost Survey.

For year 2000, it was needed to estimate the number of hours worked by quarters, since the indicator was available only as annual amount from Labour Cost Survey. Thus, the hours worked for each quarter of year 2000 were estimated for each economic activity (NACE Rev.1.1), based on:

- the distribution of the number of employees,
- the number of quarterly working days,
- the time series of hours worked collected monthly since 2001,
- the annual number of hours worked.

In 2009, due to the implementation of NACE Rev.2 classification in the LCI back data (2000-2008), the number of hours worked was calculated using the conversion matrices.

For the period 1996 – 1999 the hours worked were not available from any statistical survey. Thus, under the Programme Phare multi-beneficiary 2004 on the "Improvement of quality for labour and earnings statistics"

an estimation method of the hours worked, period 1996 – 1999, was developed, and described as follow:

- calculation of the number of working days for each quarter 1996-2006, by counting the days according to the back years calendars and subtracting the corresponding number of official non-working days (i.e. Christmas, Easter, national day etc.).
- calculation of the average number of working hours per day by economic activities of NACE Rev.1.1 for each quarter for years 2000-2006.

$$\bar{d}_{it} = \frac{h_{it}}{n_{ty} * \bar{N}_{it}}$$

where, \bar{d}_{it} = average number of working hour per day
 h_{it} = number of hours worked by all employees
 n_{ty} = number of working days of quarter t, year y
 \bar{N}_{it} = average number of employees
 i = economic activities of NACE Rev.1.1
 t = quarter; $t = \overline{1,4}$
 y = year

- estimation of the average number of working hours per day by economic activities of NACE Rev.1.1 for each quarter 1996-1999. For each economic activities of NACE Rev.1.1. and quarter, linear functions of estimation were built for years 1996-1999, depending on the number of working days calculated for 1996-1999 and following similar trend as the average number of working hours per day for quarters 2000-2006.

$$\bar{d}_{it96-99} = f(n_{t96-99}, \bar{d}_{it00-06})$$

where, $\bar{d}_{it96-99}$ = average number of working hours per day, by economic activities i of NACE Rev.1.1, for quarter t, years 1996-1999
 n_{t96-99} = number of working days, for quarter t, years 1996-1999
 $\bar{d}_{it00-06}$ = average number of working hours per day, by economic activities i of NACE Rev.1.1, for quarter t, years 1996-1999
 i = economic activities of NACE Rev.1.1
 t = quarter; $t = \overline{1,4}$

- calculation of the number of hours worked by all employees for each economic activity of NACE Rev.1.1 and quarters for years 1996-1999.

$$h_{it} = \bar{d}_{it} * n_t * \bar{N}_{it}$$

where, h_{it} = number of hours worked by all employees
 \bar{d}_{it} = average number of working hours per day
 n_t = number of working days of quarter t
 \bar{N}_{it} = average number of employees
 i = economic activities of NACE Rev.1.1
 t = quarter; $t = \overline{1,4}$

In the scope of the workshop on LCI (November 2008) the volatility of the LCI was detailed investigated. Thus, comparing the series for total labour costs and working time, with the resulting series of LCI, the conclusion was that in the Romanian LCIs case, *the higher part of the volatility is due to the influence of hours worked.*

Hourly labour costs

The hourly total labour costs (including and excluding occasional bonuses) and its components (wages and salaries and other labour costs) are obtained by dividing each cost element to the hours worked.

3.6. Adjustment

No adjustment is made on statistical data for both surveys (Wages Survey and Labour Cost Survey).

4. Quality management**4.1. Quality assurance**

The quality assurance of the LCI is related to the quality of the data sources used for the labour cost index (Wages Survey and Labour Cost Survey).

4.2. Quality management – assessment

The quality assessment of the LCI is related to the quality of the data sources used for the labour cost index (Wages Survey and Labour Cost Survey).

5. Relevance**5.1. Relevance - User Needs**At EU level:

The main users of the Romanian LCIs are Eurostat and European Central Bank.

Since 2000, the LCIs have been regularly released to Eurostat, in non-adjusted form (NSA). Starting with the end of 2007, the LCIs are produced and regularly transmitted to Eurostat in working-day (WDA) and working-day and seasonally (SA) adjusted forms (for the entire time series).

At national level:

The main user of the LCIs at national level is the Romanian National Bank.

From year 2002 onwards (with data for year 2001), the LCIs have been annually published in the Romanian Statistical Yearbook in non-adjusted form (NSA) and starting with 2008 (with data for year 2007) also in adjusted forms.

Also, from year 2007 (with data for the 4th quarter 2005 and all quarters of 2006 as provisional data), the LCIs have been quarterly published in the Monthly Statistical Bulletin in non-adjusted form (NSA) and starting with year 2008 also in adjusted forms.

Starting with year 2008 a quarterly press release is prepared. The LCIs are presented in all three forms: non-adjusted (NSA), working-day adjusted (WDA), working-day and seasonally adjusted (SA).

Starting with year 2010 the LCIs are quarterly released through the INS database (TEMPO), in all three forms: non-adjusted (NSA), working-day adjusted (WDA), working-day and seasonally adjusted (SA), since 2000.

All interested parties have access to the LCIs, either in electronic format (on the INS web-site: press release, TEMPO database, Monthly Statistical Bulletin or Statistical Yearbook www.insse.ro) or on paper (as publication – Monthly Statistical Bulletin or Statistical yearbook). In all three disseminating papers, Statistical Yearbook, Monthly Bulletin and press releases, alongside with the labour cost index a methodological notes and a short description of the data sources used are included.

5.2. Relevance - User Satisfaction

No information is available on the degree to which LCI satisfies user needs.

5.3. Completeness

The data series of LCIs, starting with the first quarter 2009 the labour cost index, are calculated and

provided in accordance with the Regulation No 1893/2006 of the European Parliament and of the Council, by NACE Rev. 2 sections and aggregates for all components of the index:

- total labour cost (LCI_TOT),
- wages and salaries (TOT_WAG),
- other labour costs (TOT_OTH),
- total labour costs excluding bonuses (TOT_TXB).

The index series are prepared and delivered in all three forms:

- i) non-adjusted,
- ii) working-day adjusted,
- iii) seasonally and working-day adjusted

5.3.1. Data completeness – rate

100%

6. Accuracy and reliability

6.1. Accuracy – overall

The accuracy of the LCI is related to the quality of the data sources used for the labour cost index (Wages Survey and Labour Cost Survey).

6.2. Sampling error

not the case

6.2.1. Sampling error – indicators

not the case

6.3. Non-sampling error

See below

6.3.1. Coverage error

Cover samples for the two data sources used for LCIs calculation:

- **Wages Survey** – about 23500 establishments (year 2018). From 2001 onwards a threshold was introduced (i.e. the business units with less than 4 employees are no longer surveyed). Data are available and published at the national level (NUTS0).
- **Labour Cost Survey** – about 27300 enterprises (year 2018). Data are available and published at the national and regional level (8 regions NUTS2). The figures for the main indicators such as number of employees, gross and net earnings are also produced at NUTS3 level. Starting with the reference year 2017, to improve the reliability of data at county level (NUTS3) and CAEN Rev.2 division level (2 digits), the survey sample was extended by economic agents belonging to the size class of less than 50 employees, for which estimation methods of the statistical indicators from administrative sources were applied ("Statement regarding the payment obligations of social contributions, tax on income and nominal record of insured persons (D112)") (as described at point 6.3.4.1).

Percentage of employees represented in the samples by NACE Rev.2 sections

NACE Rev.2 sections	Coverage ¹⁾ of the Monthly Wages Survey in year 2018	Coverage ²⁾ of the Annual Labour Cost Survey 2018 ⁴⁾	Coverage ³⁾ of the Annual Labour Cost Survey 2017 ⁴⁾
B	86.82	97.08	97.22
C	82.16	85.79	86.44

D	98.72	98.29	97.83
E	85.63	92.88	92.84
F	43.74	44.78	47.58
G	56.20	44.26	44.69
H	62.51	56.30	57.27
I	39.31	40.54	41.41
J	77.23	77.45	77.54
K	87.17	86.50	86.76
L	28.36	37.14	41.05
M	45.13	50.44	49.87
N	81.72	84.82	86.67
O	97.18	97.24	97.61
P	96.83	98.65	98.24
Q	97.30	98.87	98.53
R	69.34	78.10	80.82
S	26.14	35.68	40.13
TOTAL B_S (excluding O)	68.46	73.82	75.05
TOTAL B_S (including O)	68.79	73.28	74.83

¹⁾ Sample frame REGIS (Business Register) year 2016

²⁾ Sample frame REGIS (Business Register) year 2017

³⁾ Sample frame REGIS (Business Register) year 2016

⁴⁾ The survey sample extended by economic agents belonging to the size class of less than 50 employees

6.3.1.1. Over-coverage – rate

not the case

6.3.1.2. Common units – proportion

All units covered by the statistical surveys report information in the administrative sources in accordance with the scope of these sources.

6.3.2. Measurement error

The IT solutions for the two data sources used for LCIs calculation (Wages Survey and Labour Cost Survey) were developed to find out the measurement and processing errors occurred in different stages of the surveys.

The IT solutions allowed performing the data entry and validation at respondent unit level/territorial statistical offices level, as a first checking of the data integrity and correctness. The logical tests are designed to check:

- the primary data from the questionnaires,
- the logical flows and data consistency among the questionnaire chapters,

and have the scope to:

- follow and check the logical flows of the questionnaire,
- correlate data from related chapters of the questionnaire,
- define and check certain limits to which different indicators must belong,
- find out the outliers or non-logical values.

The tests for data integrity check the identification information from the sample of units with the information from respondent files.

Further activities for solving the errors or diminishing the number of errors were carried out at central level:

- data comparability with the previous survey for the main and common variables,
- data comparability between the two data sources (Wages Survey and Labour Cost Survey),
- data imputation from administrative sources in case of unit non-responses,
- data imputation from administrative sources in case of the units added to the survey sample of the Labour Cost Survey to improve the reliability of data at county level (NUTS3) and CAEN Rev.2 division level (2 digits).

6.3.3. Non response error

The stratified sampling technique is used as sampling method for both data source of LCIs (Monthly Wages Survey and Labour Cost Survey). Main economic activity, size class of the enterprise and region (NUTS2 level) define the sample strata.

In order to compensate the non-responses, the results are adjusted using the HORVITZ-THOMPSON estimator, weighted with the response probability.

The estimation method involves multiplying the value for each sampled business (y_i) by a combination of weights, one being outlier weight (w_{ih}), one resulting from the sample design (a_{ih}). An outlier weight is computed as a Windsor weight. The normal score, which determines the outlier units, is computed taking into account the stratification used in sample design.

In order to perform the adjustment of non-response is computed a weight resulting from the sample design, as the sample weight adjusted by the inverse of response probability:

$$a_{ih} = \pi_h \cdot v_h$$

$$\text{Where: } \pi_h = \frac{N_h}{n_h} ; v_h = \frac{n_h}{m_h}$$

N_h = sample frame size of stratum h

n_h = sample size of stratum h

m_h = number of responses in stratum h

So, for each response unit the final weight is: $weight_{ih} = w_i \cdot a_{ih} = w_{ih} \cdot \pi_h \cdot v_h$

6.3.3.1. Unit non-response – rate

Share units with data (%)

Source	Q1 ^{*)}	Q2 ^{*)}	Q3 ^{*)}	Q4 ^{*)}	Year
	2017 ^{**)}				2016 ^{**)}
Monthly Wages Survey	97.30	96.97	96.39	95.91	-
Labour Cost Survey	-	-	-	-	98.24
	2018 ^{**)}				2017 ^{**)}
Monthly Wages Survey	98.99	98.67	98.20	97.68	
Labour Cost Survey	-	-	-	-	97.82

^{*)} quarterly share units with data are calculated as simple averages of the monthly share units with data

^{**)} Including imputed units from administrative data

For the calculation of the share units with data the following types of responses are taken into account:

- response (after estimation by imputation procedures),
- other unit responding on behalf of the selected ones.

6.3.3.2. Item non-response – rate

not the case

6.3.4. Processing error

See below

6.3.4.1. Imputation – rate

Starting with year 2012, in order to improve the quality of the results and to increase the overall response rate on the monthly wages survey and annual labour cost survey, estimation methods were applied by imputing missing data units in statistical surveys which reported data in administrative sources for the reference month / year.

The administrative data sources used are provided by the Ministry of Finance (Unique Fiscal Form and Social Security Register). The selections were done for each legal unit (fiscal code), for the number of employees, the gross earnings paid to employees, the employees' working time, the indirect costs of the employers in accordance with the types of insured persons.

Imputation rate (%)

Source	Q1 ^{*)}	Q2 ^{*)}	Q3 ^{*)}	Q4 ^{*)}	Year
	2017				
Monthly Wages Survey	5.75	5.77	5.89	6.08	-
Labour Cost Survey	-	-	-	-	5.59
2018					2017
Monthly Wages Survey	6.77	6.86	6.98	7.06	-
Labour Cost Survey	-	-	-	-	5.53

^{*)} quarterly imputation rates are calculated as simple averages of the monthly imputation rates.

The imputation methods were applied to the units which had in the statistical surveys the following causes of non-response:

- refusal units;
- unidentified units,
- units whose the contact was not established;
- dormant/ceased units at the end of the reference period and reporting data in the administrative sources for the reference month/year.

In the reference year 2017, to improve the reliability of data at county level (NUTS3) and CAEN Rev.2 division level (2 digits), the survey sample was extended by about 18100 economic agents belonging to the size class of less than 50 employees, for which estimation methods of the statistical indicators from administrative sources were applied ("Statement regarding the payment obligations of social contributions, tax on income and nominal record of insured persons (D112)").

6.3.5. Model assumption error

not the case

6.4. Seasonal adjustment

The adjustment was done by the regression method, in accordance with the provisions of the European Parliament and Council Regulation no. 450/2003 concerning the labour cost index. For the adjustment, the DEMETRA software package (the TRAMO/SEATS method) was used, which estimates the effect of the working days differently from one quarter to another and the calendar effect (leap year and other national holidays) and identifies and corrects the outliers (occasional, transitory or permanent changes in level). Starting with the third quarter of 2016, for the adjustment, the JDEMETRA+ v2.1 software package (the TRAMO/SEATS method) was used.

The working days adjusted series were obtained by removing such effects from the non-adjusted series by using certain coefficients of correction, set-up according to the regression model used (additive or multiplicative). The adjustment was done by the indirect method, that is by applying the adjustment method

at lower levels (over the components of index), the adjusted index being calculated from adjusted components.

The estimation of the non-observed components: the trend-cycle, the seasonality and the irregular component is done by the SEATS programme on the basis of ARIMA models. The seasonally adjusted series were obtained by removing the seasonal component from the working days adjusted series.

6.5. Data revision – policy

The LCIs (non-adjusted data) are revised once per year in the 3rd quarter for the last six provisional quarters.

6.6 Data revision – practice

Generally, a revision of the LCIs is made annually (in the 3rd quarter), when the results of year Y from Labour Cost Survey become available (month September). By then, the quarterly LCI_OTH (other labour costs component) and LCI_TOT (total index) are calculated using the proportion of other labour costs in wages and salaries from the previous available year (Y-1). The revisions are made for all provisional quarters.

The LCIs for year (Y+1) still remains provisional, using the proportion of other labour costs in wages and salaries from the previous available year Y.

Because the LCI_WAG (wages and salaries component) contains only elements provided by the Monthly Wages Survey, they are not revised and are considered as final, from the first calculation.

6.6.1. Data revision - average size

The table below contains a comparison between the provisional and the final data of LCIs (in unadjusted form) for year 2017, expressed in growth rates:

NACE Rev.2	Growth rate revision for year 2017 (%)											
	LCI_TOT				LCI_OTH				LCI_TXB			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
B	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0
C	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0
D	0.9	0.9	0.9	0.9	4.3	4.3	4.3	4.3	1.0	1.0	0.9	1.0
E	0.3	0.3	0.3	0.3	1.4	1.4	1.4	1.4	0.3	0.3	0.3	0.3
F	0.3	0.3	0.3	0.3	1.4	1.4	1.4	1.4	0.3	0.3	0.3	0.3
G	0.1	0.1	0.1	0.1	0.7	0.7	0.7	0.7	0.1	0.1	0.1	0.1
H	0.1	0.1	0.1	0.1	0.6	0.6	0.6	0.6	0.1	0.1	0.1	0.1
I	0.5	0.5	0.5	0.5	2.6	2.6	2.6	2.6	0.5	0.5	0.5	0.5
J	0.3	0.3	0.3	0.3	1.5	1.5	1.5	1.5	0.3	0.3	0.3	0.3
K	-0.2	-0.2	-0.2	-0.2	-0.9	-0.9	-0.9	-0.9	-0.2	-0.2	-0.2	-0.2
L	0.2	0.2	0.2	0.2	1.0	1.0	1.0	1.0	0.2	0.2	0.2	0.2
M	0.4	0.4	0.4	0.4	2.0	2.0	2.0	2.0	0.4	0.4	0.4	0.4
N	0.2	0.2	0.2	0.2	1.0	1.0	1.0	1.0	0.2	0.2	0.2	0.2
O	-0.1	-0.1	-0.1	-0.1	-0.7	-0.7	-0.7	-0.7	-0.1	-0.1	-0.1	-0.1
P	-0.1	-0.1	-0.1	-0.1	-0.6	-0.6	-0.6	-0.6	-0.1	-0.1	-0.1	-0.1
Q	0.2	0.2	0.2	0.2	0.9	0.9	0.9	0.9	0.2	0.2	0.2	0.2
R	0.1	0.1	0.1	0.1	0.7	0.7	0.7	0.7	0.1	0.1	0.1	0.1
S	-0.1	-0.1	-0.1	-0.1	-0.6	-0.6	-0.6	-0.6	-0.1	-0.1	-0.1	-0.1
B_N	0.1	0.1	0.1	0.1	0.7	0.7	0.7	0.7	0.1	0.1	0.1	0.1

B_E	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
B_F	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1
G_N	0.2	0.2	0.2	0.2	0.9	0.9	0.9	0.9	0.2	0.2	0.2	0.2
G_J	0.2	0.2	0.2	0.2	1.0	1.0	1.0	1.0	0.2	0.2	0.2	0.2
K_N	0.1	0.1	0.1	0.1	0.7	0.7	0.7	0.7	0.1	0.1	0.1	0.1
O_S	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0
P_S	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.0
B_S	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1

7. Timeliness and punctuality

The quality assessment of the LCI is related to the quality of the data sources used for the labour cost index (Wages Survey and Labour Cost Survey).

7.1. Timeliness

Deadline and transmission of LCIs:

Quarter	Deadline according to the Regulation	Transmission date	Delay
Q1 2018	09.06.2018	04.06. 2018	-
Q2 2018	08.09. 2018	03.09. 2018	-
Q3 2018	09.12. 2018	04.12. 2018	-
Q4 2018	11.03.2019	06.03.2019	-

No changes in the data transmission are foreseen in the nearest future. All the deadlines, either for LCIs data sources results, or for LCIs will be kept as described above.

7.1.1. Time lag - first result

Transmission of LCIs – first results:

Quarter	Transmission date
Q1 2018	04.06. 2018
Q2 2018	03.09. 2018
Q3 2018	04.12. 2018
Q4 2018	06.03.2019

7.1.2. Time lag - final result

Transmission of LCIs – final results:

Quarter	Transmission date
Q1 2018	04.12. 2019
Q2 2018	04.12. 2019
Q3 2018	04.12. 2019
Q4 2018	04.12. 2019

Generally, a revision of the LCIs is made annually (in the 3rd quarter), when the results of year Y from Labour Cost Survey become available (month) and LCI_TOT (total index) are calculated using the proportion of other labour costs in wages and salaries from the previous available year (Y-1). The revisions are made for all provisional quarters.

The LCIs for year (Y+1) still remains provisional, using the proportion of other labour costs in wages and salaries from the previous available year Y.

Because the LCI_WAG (wages and salaries component) contains only elements provided by the Monthly

Wages Survey, they are not revised and are considered as final, from the first calculation.
7.2. Punctuality
No transmission delays were recorded since the first transmission of the new LCIs data.
7.2.1. Punctuality - delivery and publication
No transmission delays were recorded since the first transmission of the new LCIs data.

8. Coherence and comparability

The LCIs are calculated in accordance with the Council Regulation No 450/2003. The time series are in compliance with the regulation:

- Laspeyres indices,
- calculated as labour cost per hour worked,
- *for all B to S NACE Rev.2 sections and requested aggregations (B-N, B-E, B-F, G-N, G-J, K-N, O-S, P-S, B-S), starting with 2009 and back time series 2000 – 2008, with 2012 reference year,*
- provided in all labour cost categories:

- LCI_TOT (total labour costs)
- LCI_WAG (wages and salaries)
- LCI_OTH (other labour costs)
- LCI_TXB (total labour costs excluding bonuses)

accompany with the annual weights used for the EU aggregates index calculation:

- WGT_TOT (weights for total labour costs)
- WGT_WAG (weights for wages)
- WGT_OTH (weights for other labour costs)
- WGT_TXB (weights for total labour costs excluding bonuses)

- transmitted in the standard format, as Gesmes files, via eDAMIS. Starting with Q4 2014 data were sent using the new SDMX format, as XML files.

The data for LCI_TOT and LCI_TXB are comparable for the entire period (Q1 2000 – present by NACE Rev.2), using the same concepts.

The data for LCI_WAG and LCI_OTH are comparable for the period 2000-2017 (by NACE Rev.2), using the same concepts. Starting with the 1st quarter 2018, the LCI_WAG and LCI_OTH are no longer comparable to the data series prior to 2018.

According to the national legislation provisions in force (GEO No. 79/2017, as subsequently amended and supplemented), the social security contribution and the social health insurance contribution paid by the employer were transferred to the employee; thus, starting with January 2018, these contributions are borne entirely by the employee, and reflected in the gross amount of the nominal earnings (direct labour cost).

Consequently, the data series for the two components of the quarterly labour cost index: “direct costs (wages and salaries)” and “other costs (non-wages costs)”, are no longer comparable starting with the 1st quarter 2018 to the data series prior to 2018 (see Annex 1 - Compulsory social contributions and tax - comparative table.doc).

These legal provisions do not affect the data series comparability for the " Total labour cost index" (LCI_TOT și LCI_TXB).

For the calculation of the working-day (WDA) and working-day and seasonally (SA) adjusted forms of the LCIs the same parameters are kept during a year.

The seasonal decomposition is applied to the direct costs, indirect costs and hours worked and then the indices are aggregated (indirect approach). The re-evaluation of the adjusted time series are made once a

year, at the same time with the non-adjusted data revisions (3 rd quarter every year).
8.1. Comparability – geographical not the case
8.1.1. Asymmetry for mirror flow statistics – coefficient not the case
8.2. Comparability - over time See below
8.2.1. Length of comparable time series The data for LCI_TOT and LCI_TXB are comparable for the entire period (Q1 2000 – present by NACE Rev.2), using the same concepts. The data for LCI_WAG and LCI_OTH are comparable for the period 2000-2017 (by NACE Rev.2), using the same concepts. Starting with the 1st quarter 2018, the LCI_WAG and LCI_OTH are no longer comparable to the data series prior to 2018. According to the national legislation provisions in force (GEO No. 79/2017, as subsequently amended and supplemented), the social security contribution and the social health insurance contribution paid by the employer were transferred to the employee; thus, starting with January 2018, these contributions are borne entirely by the employee, and reflected in the gross amount of the nominal earnings (direct labour cost). Consequently, the data series for the two components of the quarterly labour cost index: “direct costs (wages and salaries)” and “other costs (non-wages costs)”, are no longer comparable starting with the 1 st quarter 2018 to the data series prior to 2018 (see Annex 1 - Compulsory social contributions and tax - comparative table.doc). These legal provisions do not affect the data series comparability for the " Total labour cost index" (LCI_TOT și LCI_TXB).
8.3. Coherence - cross domain The data are comparable for all NACE Rev.2 sections using the same concepts and calculation methods.
8.4 Coherence - sub annual and annual statistics The LCIs is calculated every quarter using the same concepts and calculation methods.
8.5. Coherence - National Accounts The comparison between the compensation of employees, expressed per hour worked, shows some differences between Labour Cost Survey and National Account, due to the different coverage. Main data sources for the National Accounts, by NACE sections are: - Accounting statements of financial units, - Accounting statements of non-profit institutions serving households, - Execution of state budget, - Structural Business Survey, - Labour Force Survey (for employment and hours worked data), - Declaration on global income of self-employed persons and family associations. Apart from the clear difference in terms of indicators definitions, coverage and the data collection procedures between LFS – <i>household survey</i> (data source for NA) and LCS and WS – <i>business surveys</i> (data sources for LCI), the main reasons for the discrepancies between the figures provided by the two data sources are: - the <i>proportion of informal sector and black market</i> in Romania, and self-employed persons that are covered only by LFS – and which are used in NA. - the business surveys do not cover employees of other categories of employers, such as private

organizations (trade unions, parties, professional unions/employers' associations, non-profit institutions, religious organisations, owners'/parents' associations), as well as private entrepreneurs (authorized persons, individual enterprises, family businesses, liberal professions).

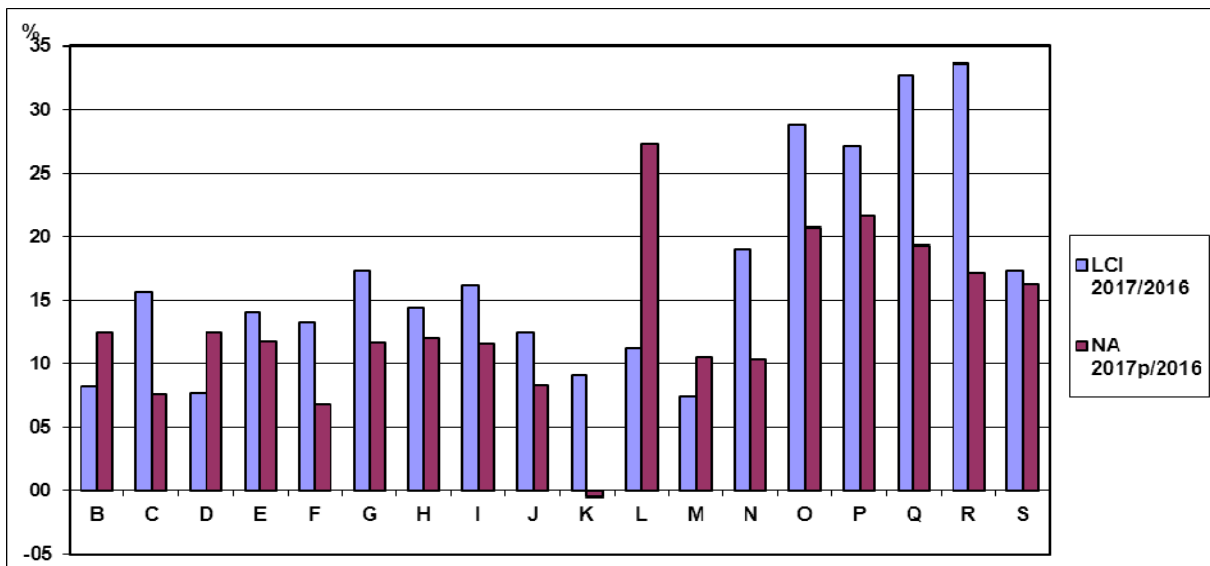
- the hours worked from LFS, based on the self declaration of the household members differ from the hours worked, collected through business surveys.
- specific *estimation methods* used in NA: for example, NA uses concept of actual working hours, in full and part time jobs in main and secondary jobs; moreover, total hours-worked from LFS (main and secondary activities) are adjusted for hours not worked by women in parental leave

Furthermore, compared with data sources of LCI, there are sections that include in NA persons with other kind of contracts (i.e. insurance agents, field agents), that are not paid from the salary budget.

The coverage of section O – public administration is different. In NA armed forces are included. In comparison with data sources of LCI, section S includes in NA data on trade unions, political parties, non-profit institutions serving households etc.

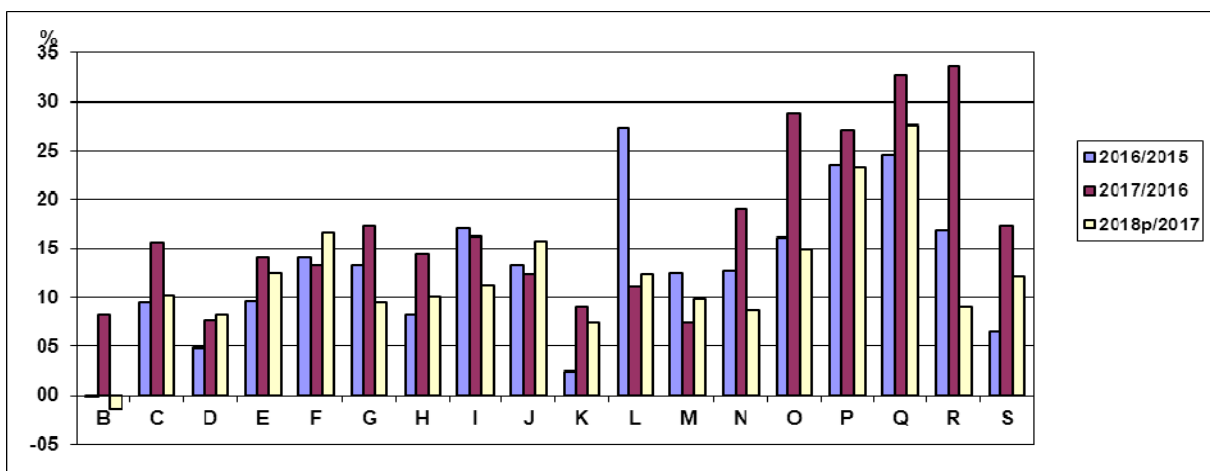
Data from National Accounts were revised for year 2016 and are now definitive, but for year 2017 are still provisional.

Comparison between the growth rates of the average annual hourly labour costs (LCI) and of the compensation of employees per hours worked (NA) by NACE Rev. 2:



p – provisional data

Growth rates of the average annual hourly labour costs by NACE Rev.2:



p – provisional data

In 2017, the increases of the hourly labour cost in all NACE Rev.2 sections were mainly due to the application of the legal provisions in force regarding the increase the minimum gross salary guaranteed in payment (with about 38% from 1050 RON in January 2016 to 1450 RON in 2017).

In 2018, the increases of the hourly labour cost in all NACE Rev.2 sections were mainly due to the application of the legal provisions in force regarding the increase the minimum gross salary guaranteed in payment (with about 31% from 1450 RON 2017 to 1900 RON in 2018).

In the budgetary sector (O, P, Q, and partly R) the increases of the hourly labour cost were also due to the application of the legal provisions in force (G.O. no.38/2017 for application of G.E.O. no.57/2015; Law No. 250/2016 approving the G.E.O. no.20/2016 concerning the modification and completion of the G.E.O. no.57/2015 regarding the personnel paid from public funds in 2016, the extension of certain time limits, some tax-budgetary measures as well the modification and completion of some legislative acts; G.E.O. no.9/2017 on certain measures in the 2017 budget, the extension of deadlines and amendment of some laws; G.E.O. no. 17/2017 regarding certain measures in education; Law no.152/2017 approving the G.E.O. no.99/2016 on certain measures concerning the personnel paid from public funds, extension of some time limits and other fiscal measures; Framework law no.153/2017 on remuneration of personnel paid from public funds).

8.6. Coherence - internal

not the case

9. Accessibility and clarity

The LCIs are sent on quarterly basis to Eurostat, in electronic format, as XML files, transmitted via eDAMIS. Starting with year 2007 all LCIs transmissions are followed by metadata in the standard format provided by Eurostat. Thus, all changes in the methodology or data trends are explained and the results can be interpreted in a clearer way. Starting with the transmission of the 3rd quarter 2007, LCIs are presented in all three forms (NSA, SA, WDA), according to the regulation requests. The metadata contain information on the adjustment methods applied.

Starting with Q4 2014 data were sent using the new SDMX format, as XML files.

At national level, the LCIs have been disseminated as follows:

- published annually in the Romanian Statistical Yearbook since 2002 (for year 2001), in NSA form and from 2008 (with data for year 2007) in SA and WDA forms also, including metadata;
- published monthly in the Monthly Statistical Bulletin since 2007 in NSA form (starting with 4th quarter 2005) and since 2008 in SA and WDA forms also, including metadata;
- quarterly press release (starting with 4th quarter 2007), including metadata, one day after data transmission to Eurostat;
- quarterly uploaded of the INS database (TEMPO), including metadata.

Presented below and in connection with the accessibility and clarity of the results of the two data sources, which compose the LCIs these are disseminated as:

- monthly press release for data concerning the average monthly gross and net earnings by economic activities (WS);
- monthly, for data concerning the number of employees, average monthly gross and net earnings, average hourly gross and net earnings, by economic activities which are published in the "Monthly Statistical Bulletin (WS)";
- annual press release for data concerning the labour costs by economic activities (LCS);
- annual, a detailed analysis of the data concerning the number of employees, average gross and net earnings, labour costs and the structure of labour costs, by various breakdowns: economic activities, regions, size classes, ownership types etc., data which are published in a publication called "Wages and

<p>Labour Cost in year (LCS)*.</p> <p>- annual, time series concerning the number of employees, average gross and net earnings, average labour costs, structure of labour costs and labour cost indices which are published in the Romanian Statistical Yearbook (LCS).</p>
<p>9.1. Dissemination format - News release</p> <p>Quarterly press release (starting with 4th quarter 2007), including metadata (T+65 days).</p> <p>http://www.insse.ro/cms/en/content/quarterly-labour-costs-index</p>
<p>9.2. Dissemination format – Publications</p> <p>- Published annually in the Romanian Statistical Yearbook since 2002 (for year 2001), in NSA form and from 2008 (with data for year 2007) in SA and WDA forms also, including metadata;</p> <p>- Published quarterly in the Monthly Statistical Bulletin since 2007 in NSA form (starting with 4th quarter 2005) and since 2008 in SA and WDA forms also, including metadata.</p>
<p>9.3. Dissemination format - online database</p> <p>- Quarterly uploaded of the INS database (TEMPO), including metadata.</p> <p>http://statistici.insse.ro/shop/?lang=en</p>
<p>9.3.1. Data tables – consultations</p> <p>not the case</p>
<p>9.4. Dissemination format - microdata access</p> <p>not the case</p>
<p>9.5. Dissemination format - other</p> <p>not the case</p>
<p>9.6. Documentation on methodology</p> <p>Metadata and methodological notes are included in all LCIs releases.</p>
<p>9.7. Quality management - documentation</p> <p>The quality indicators are calculated taking into account Eurostat defined methodology, in accordance with the following quality criteria: relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability, consistency, and completeness.</p>
<p>9.7.1. Metadata completeness – rate</p> <p>100%</p>
<p>9.7.2. Metadata – consultations</p> <p>No information is available</p>

10. Cost and Burden

Due to the fact that the LCI is not an independent survey it does not make any burden of respondents.

11. Confidentiality

11.1. Confidentiality - policy

All statistics collected and published by INS are governed by the statistical Law no. 226/2009 regarding the organisation of official statistics, published in Romania's Official Journal First part, no. 397/11.06.2009, with

further amendments. The Law specifies that: the official statistical services are authorised to ask for and receive free of charge statistical data and information from all natural and legal persons who are located, hold any kind of capital or carry out any type of activity on the Romanian territory.

Also under the provision of this law, INS cannot publish, or otherwise make available to one individual or organisation, statistics that could enable the identification of data for any individual person or entity.

INS has been repeatedly and publicly recognised by the government as fully intellectually independent: it decides by itself which data to collect, which methodology to use, and which results, methodological notes and commentaries are published.

The most important aspects on the organisation of the official statistics in Romanian are posted on the National Institute of Statistics Internet website (<http://www.insse.ro>). Copies of the statistical laws are available in Romanian from the library of the National Institute of Statistics, 16, Libertatii Avenue, Bucharest, District 5.

11.2. Confidentiality - data treatment

The level of aggregation for LCI does not require confidentiality treatment.

12. Comment

none

Related metadata

-

Annexes

Annex 1 - Compulsory social contributions and tax - comparative table.doc