SAVOIR POUR AGIR

statec

SERVICE CENTRAL DE LA STATISTIQUE
ET DES ETUDES ECONOMIQUES

Quality Report on the Labour Cost Survey 2008 in Luxembourg

This report has been prepared according to the provisions of the Commission Regulation (EC) No 698/2006 implementing Council Regulation (EC) No 530/1999 as regards quality evaluation on labour costs and earnings.

1. Relevance

Summary of national core users

The most important national core user is STATEC. The other national core users include ministries, administrations, foreign embassies, researchers, media, employers' federations, trade unions, companies from the private sector, as well as students from high-schools and universities.

Description of their main needs including an assessment of their level of satisfaction with the data offered

The users are mainly interested in breakdowns of labour cost along several variables, e.g. economic activity and size of the enterprise. Another focus of interest is the disaggregation of the labour cost in its components, such as direct vs. indirect cost, contractual wages vs. bonuses, wages and salaries vs. social contributions, etc.

There is no systematic and formal assessment of the users' satisfaction. Nevertheless, the small size of the national user community enables STATEC to have a direct contact with the users. As a result, STATEC can be very responsive to the users' needs. The informal feedback suggests that the users' needs are generally satisfied. As of today, there is no information regarding redundancy or lack of completeness.

2. Accuracy

2.1 Sampling Errors

Table 1 shows the coefficients of variation (CV) for the annual and hourly labour costs. The highest coefficients are obtained in the sections B, D, E, L, P, R and S. The sample sizes are rather low in these sections. For the sections B, D, E, L, P and R, the sample sizes are below 40 units.

Table 1: Coefficients of variation for annual and hourly labour costs (%)

	Annual Labour Costs (D)	Hourly Labour Costs (D/B1)
Total	1.1	0.7
NACE rev2 section		
B Mining and quarrying	32.2	2.9
C Manufacturing	5.0	1.7
D Rlectricity, gas, steam and air conditioning supply	18.6	3.0
E Water supply; sewerage, waste management and remediation activities	16.5	4.8
F Construction	3.2	0.9
G Wholesale and retail trade; repair of motor vehicles and motorcycles	3.8	2.1
H Transportation and storage	5.8	2.3
I Accommodation and food service activities	6.1	0.9
J Information and communication	7.0	1.9
K Financial and insurance activities	3.3	1.2
L Real estate activities	25.0	13.2
M Professional, scientific and technical activities	4.7	1.8
N Administrative and support service activities	6.7	1.5
P Education	12.4	3.5
Q Human health and social work activities	4.9	1.6
R Arts, entertainment and recreation	19.8	6.6
S Other Service Activities	13.8	7.2
Size class		
10 - 49 employees	1.5	1.4
50 - 249 employees	1.9	1.4
250 - 499 employees	2.2	1.2
500 - 999 employees	3.3	2.7
1000+ employees	4.4	1.5

2.2 Non-sampling Errors

2.2.1. Coverage errors

No problem of under-coverage is known. However, there has been some over-coverage. The reasons for this over-coverage stem from a discrepancy between the administrative files used for the sampling and the real world, and can be put into 2 categories:

1. The local unit has less than 10 employees in practice.
2. The local unit does not exist. The reasons for this non-existence can be bankruptcy, merger, liquidation or discontinuance of business.

Table 2 gives an estimate of the over-coverage rate expressed in terms of local units and in terms of employees. Furthermore, the table distinguishes the 2 above mentioned causes for over-coverage.

Table 2: Under-coverage rates by type (%)

	Units	Employees
< 10 employees	5	0.6
Unit does not exist	1.8	0.6
Total	6.8	1.2

Of all sampled local units, 5 % were out of the scope that had been defined for the survey because their actual number of employees appeared to be less than 10. 1.8% of the units sampled did dot exist anymore at the time of the survey.

As these units consisted mainly of very small enterprises, it has to be pointed out that even if they represent 6.8 % of the sampled units, they only stand for 1.2 % of the total employees in the sampled units.

2.2.2. Measurement and processing errors

A non-negligible amount of measurement errors was noticed for the following working time and labour cost variables, as shown in table 3.

Table 3: Variables affected by substantial measurement errors

Variable	Description
A12	Part-time employees (excluding apprentices)
B11	Hours actually worked by full-time employees (excl. appr.)
B12	Hours actually worked by part-time employees (excl. appr.)
D1113	Payments for days not worked

Internal quality and plausibility tests have detected incoherencies between these variables and other linked variables. These incoherencies stem from a misunderstanding of the questionnaire and from typos.

The errors were corrected via direct follow-up with the local units or automatically.

For part-time employees, about 32 % of the indicated totals of worked hours were out of scope if compared with the number of part-time workers indicated. This led to an adjustment of the annual average of part-time employees (A12), assuming the total number of hours actually worked was correct.

Ambiguity in the questionnaire led to erroneous responses and so values had to be corrected (or imputed, when missing, cf. 2.2.3) for hours worked per week and annual holiday leave, based on legal norms or minima. As a result, the values of the variables B11 and B12 calculated on the basis of this information are likely to be overestimated.

Payments for days not worked had to be re-estimated based on average hourly direct remuneration paid for regular working hours, as the indicated remunerations for annual holiday leave were in most cases incoherent with the corresponding hours. The same problems occurred on a smaller scale for payments during sickness leave, partly because of differing interpretations of the questionnaire.

Checks between related variables also showed that many hourly wages were less than the legal minimum wage. These errors have been checked and the corresponding data have been corrected on a case-by-case basis.

Social contributions had also to be checked on a case-by-case basis as their relation to wages and salaries frequently did not match the legal contribution rate.

Data from education-related local units (division 85 of NACE rev.2) should be considered with caution because variables such as “hours actually worked” and “annual holiday leave” have been interpreted very differently from one respondent to another, which obviously affects hourly wages.

Temporary work agencies (NACE rev.2, division 78) expressed difficulties in answering the questionnaire correctly due to their high rotation of employees and the fact that their permanent staff only consists of a few percent of the total personnel. The notion of part-time employees is also very difficult to define in their case. Most units needed extensive assistance in order to adapt their data to the needs of the present survey.

2.2.3. Non-response errors

Unit Response Rate

The unit response rate is defined as the ratio between the exploitable units and the sampled eligible units:

Exploitable Units / (Sampled Units – Ineligible Units)

The "ineligible units" are those mentioned in section 2.2.1. The "exploitable units" are those for which there was a response and who have passed the quality and plausibility checks.

The unit response rate as well as its calculation is displayed in table 4. The rate is expressed with respect to the local units and the employees. 89.6% of the in-scope questionnaires have been exploited. These exploitable questionnaires represent 89.3% of the employees covered by the in-scope sample.

Table 4: Calculation of the Unit Response Rate

		Units	Employees
(a)	Sampled	2 559	218 494
(b)	Ineligible	173	2 553
(c) = (a) - (b)	In scope	2 386	215 941
(d)	No response / not exploitable	248	23 143
(e) = (c) - (d)	Exploitable	2 138	192 798
(f) = (e) / (c)	Unite response rate (%)	89.6	89.3

Imputation Rates

An extensive follow-up allowed reducing the problems of item non-response and missing values for the most important variables. Nevertheless, there has been imputation of missing values for several following variables. These variables are shown in table 5, together with the respective imputation rates. An imputation rate is defined as the proportion of values of a given variable that have been imputed.

Table 5: Imputation rates (%)

Variable		Imputation Rate (%)
A12	Part-time employees (excluding apprentices)	1
A13	Apprentices	1
B11	Hours actually worked by full-time employees (excl. appr.)	40
B12	Hours actually worked by part-time employees (excl. appr.)	4
B13	Hours actually worked by apprentices	3
C11	Paid hours for full-time employees (excl. appr.)	37
C12	Paid hours for part-time employees (excl. appr.)	4
C13	Paid hours for apprentices	6
D112	Wages and salaries of apprentices	4
D121	Employers' actual social contributions	1
D122	Employers' imputed social contributions (excl. appr.)	19
D123	Employers' social contributions for apprentices	5

There has been imputation in order to complete missing data of respectively hours worked (B12), hours paid (C12) and number (A12) of part-time employees, if only one or two out of these three data had been indicated. The imputation was based on the given data and average interrelation of these three variables. Imputation has been done for apprentices along the same lines.

The high percentages of imputation in the list above (variables B11 and C11) stem from the fact that hours actually worked by full-time employees had not been asked for directly in the national questionnaire but had to be computed from several variables, of which the number of hours worked per week and the number of days of annual holiday leave. As more than 36% of the local units did not answer these two questions at all, data has been completed based on the legal norm of 40 working hours per week and the legal minimum of 25 days of annual holiday leave, which seems to be acceptable since the averages over the units that actually did response on these two questions are 39.98 and 26.56 respectively.

The data on labour cost has been completed by imputation for the D-variables listed above based on available data on hours paid, salaries and social contributions and their average interrelation.

The overall imputation rate has also been calculated according to the following definition:

$$\frac{\text{Total number of imputed values}}{\text{Total number of values}} = \frac{\text{Total number of imputed values}}{\text{Exploitable units * number of variables}}$$

The overall imputation rate is 3.6%.

Annual labour cost is affected only by imputation of data for the D-variables in the above list. Over these four variables, imputations account for 7.33 % of all values. These four variables account for only 14.85% of total labour cost. Furthermore, the one variable for which most of the imputation has been done (D122) concerns guaranteed remuneration in the event of sickness (because many firms do not trace this remuneration separately) and has been calculated on the basis of the average hourly remuneration of the concerned local unit and the given days of sickness leave. The effect of these imputations on the accuracy of the estimations of the variable “Annual labour costs” should therefore be rather limited.

2.2.4 Model assumption errors

Does not apply.

3. Punctuality and timeliness

3.1 Punctuality

Table 6 shows the dates at which the questionnaire and the recalls were dispatched, as well as the deadlines that have been imposed.

Table 6: Dispatch of questionnaires and recalls and deadlines imposed to the respondents

	Dispatch	Deadline
Launch	22/04/2009	29/05/2009
1st Recall	10/06/2009	15/07/2009
2nd Recall	20/07/2009	30/09/2009
3rd Recall	12/10/2009	13/11/2009
Last Recall	20/11/2009	15/12/2009

The fieldwork started on the 22nd of April 2009 with the launch of the questionnaires, and stopped on the 29th of April 2010, the day where the last questionnaire was received and validated.

The data processing started on the 27th of April 2009, the day where the first questionnaires were received, and ended on the 25th of June 2010.

The first results have been published on the 22nd of November 2010.

3.2 Timeliness

The reference year for the Labour Cost Survey is 2008.

The final data have been available on the 28th of June 2010.

The first results have been disseminated during a seminar on the 28th of October 2010 and have been published through the usual channels on the 22nd of November 2010.

4. Accessibility and clarity

4.1 Accessibility

References for core results publications, including those with commentary in the form of text, graphs, maps, etc.

- A complete set of results with commentary has been released in November 2010 as a "Bulletin du Statec" (N° 7-2010).
  http://www.statistiques.public.lu/fr/publications/series/bulletin-statec/index.html

- At the same time, a news release ("Statnews") has been dispatched (N° 54-2010).
  http://www.statistiques.public.lu/fr/actualites/index.html

- Different aspects of the results will be analyzed in a series called "Regards".
  http://www.statistiques.public.lu/fr/publications/series/regards/index.html

- Several tables will be published on the "Portail des Statistiques du Grand-Duché de Luxembourg", under the following section:
  http://www.statistiques.public.lu/stat/ReportFolders/ReportFolder.aspx?IF_Language=fra&MainTheme=4&FldrName=1&RFPath=41

- These tables will also be included in Luxembourg's statistical yearbook (Annuaire statistique du Luxembourg).
  http://www.statistiques.public.lu/fr/publications/series/annuaire-stat-lux/index.html

Information on what results, if any, are sent to reporting units included in the sample.

A letter has been sent to all the reporting units to inform them about the publication of the "Bulletin" and the "Statnews".

4.2 Clarity

Description of and references for metadata provided

Metadata will be published on the “Portail des statistiques”, together with the tables extracted from the survey.

References for core methodological documents relating to the statistics provided

The “Bulletin du STATEC” published on this survey (see above) contains illustrations and a methodological section.

Description of main actions carried out by the national statistical services to inform users about links to the data

The public will be informed through different channels:

- A news release (“Statnews”) dedicated to the Labour Cost Survey 2008 : http://www.statistiques.public.lu/fr/actualites/index.html

- The RSS feeds and electronic newsletters of the “Portail des Statistiques” : http://www.statistiques.public.lu/fr/functions/newsletter/index.php

- The subscribers of the “Bulletin du STATEC” have received the above mentioned publication on the Labour Cost Survey 2008.

5. Comparability

5.1 Geographical comparability

In Luxembourg, the European concepts on the definition of statistical units, populations, reference times, classifications and definitions of variables have been used.

5.2 Comparability over Time

Coverage

The Labour Cost Survey of 2008 has been the third survey (after 2000 and 2004) to be conducted under the harmonized rules of Council Regulation (EC) N° 530/1999 and Commission Regulation (EC) N° 1726/1999 (amended by N° 1737/2005).

The 2000 survey covered the sections C to K of the NACE rev.1 classification.
In 2004, sections M to O of the NACE rev.1 classification were added.
The 2008 Survey was based on the NACE rev. 2 classification and covered sections B to N and P to S. However, the results are also available in a separate table based on NACE rev.1.

Survey Design

For the Labour Cost Survey of 2008, stratified sampling has been applied, as had been done for the previous Surveys.

The population of local units has been stratified on the basis of the size of enterprise in terms of employees. The sampling rates applied to the different strata are shown in table 7.

Table 7: Sampling Rates

Size Class	Sampling Rate (%)
10 -19 employees	50
20 - 49 employees	60
50 - 249 employees	70
250 - 499 employees	80
500+ employees	100

6. Coherence

This sections compares the results from the Labour Cost Survey (LCS) 2008 to results obtained from the Labour Force Survey (LFS), the Structural Business Statistics (SBS) and the National Accounts (NA). Moreover, the average annual growth rates of the LCS are compared to those from the Labour Cost Index (LCI).

Labour Force Survey (LFS)

Table 8 compares the hours worked per employee in 2008 (= B1 / A1) to the average actual hours worked in the main job. The latter variable stems from the LFS.

Table 8: Hours worked per employee in 2008 (LCS) compared to the average actual hours in the main job in 2008 (LFS).

		LCS	LFS	Difference (%)
B	Mining and quarrying	c		
C	Manufacturing	1 757	1 753	-0.2
D	Rlectricity, gas, steam and air conditioning supply	c		
E	Water supply; sewerage, waste management and remediation activities	1 793	1 839	2.6
F	Construction	1 758	1 609	-8.5
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	1 728	1 639	-5.2
H	Transportation and storage	1 816	1 744	-4.0
I	Accommodation and food service activities	1 623	1 560	-3.9
J	Information and communication	1 704	1 624	-4.7
K	Financial and insurance activities	1 660	1 611	-3.0
L	Real estate activities	c		
M	Professional, scientific and technical activities	1 728	1 731	0.2
N	Administrative and support service activities	c		
P	Education	1 446	1 231	-14.9
Q	Human health and social work activities	1 411	1 426	1.1
R	Arts, entertainment and recreation	1 650	1 737	5.3
S	Other Service Activities	1 492	1 502	0.7
	Total	1 678	1 580	-5.8

c: confidential

There are a couple of general points to be kept in mind when comparing these two sources:

- The LCS is based on declarations made by the employers, whereas the LFS is based on declarations made by the employees.
- The LCS only covers employers with 10 or more employees, whereas the LFS does not operate that selection.

- The LCS covers employees residing in Luxembourg, as well as employees residing abroad and working in Luxembourg. The latter group made up 44% of Luxembourg's workforce in 2008.

However, it is not clear to which extent these points are likely to explain divergences between the LCS and the LFS, and into which direction these divergences might point.

According to table 8, in most of the sectors covered, the hours declared in the LFS are lower than the hours obtained from the LCS. The biggest divergence is noticed in the education sector (section P). The divergence comes from a different perception that employees (mostly teachers) and their employers have on working time.

Structural Business Statistics (SBS)

Table 9 compares wages and salaries per employee from the LCS (= D11 / A1) to wages and salaries per employee from the SBS (= 13320 / 16130). The SBS does not cover all the activities that are covered by the LCS. Hence, the comparison can only be made with a limited number of sectors. The totals, over all the sectors, of the wages and salaries per employee are very similar. There is only a gap of 1.6% between the two sources. In manufacturing (section C), the two surveys nearly yield the same results. On the other hand, for some sectors, there are quite large discrepancies. These large discrepancies can be explained by the different statistical units used by the two surveys. The LCS is based on the legal units, whereas the SBS is based on the kind of activity units.

Table 9: Wages and salaries per employee in 2008: LCS vs. SBS.

		LCS	SBS	Difference (%)
B	Mining and quarrying	c	c	
C	Manufacturing	42 785	42 826	0.1
D	Rlectricity, gas, steam and air conditioning supply	c	c	
E	Water supply; sewerage, waste management and remediation activities	43 168	38 348	-11.2
F	Construction	31 776	33 818	6.4
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	31 206	34 822	11.6
H	Transportation and storage	41 949	43 126	2.8
I	Accommodation and food service activities	23 090	24 029	4.1
J	Information and communication	56 303	58 782	4.4
K	Financial and insurance activities		na	
L	Real estate activities	c	c	
M	Professional, scientific and technical activities	58 975	65 155	10.5
N	Administrative and support service activities	c	c	
P	Education		na	
Q	Human health and social work activities		na	
R	Arts, entertainment and recreation		na	
S	Other Service Activities		na	
	Total (B-J;L-N)	38 586	39 219	1.6

c: confidential
na: not available

National Accounts (NA)

Table 10 compares compensation per employee from the LCS (= D1 / A1) to the same variable from the NA. This table proposes a breakdown based on NACE rev1 sections, as the national accounts for 2008 are not yet available with NACE rev2 breakdowns. Globally, i.e. considering the total over all the sectors considered the LCS and the NA yield nearly identical values for the compensation per employee.

The huge difference in the education sector (M) is due to a difference in coverage between the LCS and the NA. Indeed, LCS does only consider private sector education units (which are very few), whereas NA consider all education units, including public ones (i.e. most). As the compensation of employees in public education sector is higher than in the private education sector, the NA obtain a much higher compensation per employee.

Table 10: Compensation per employee per employee in 2008: LCS vs. NA.

		LCS	NA	Difference (%)
C	Mining and quarrying	c		
D	Manufacturing	49 156	49 584	0.9
E	Electricity, gas and water supply	79 026	76 353	-3.4
F	Construction	36 808	36 749	-0.2
G	Wholesale and retail trade; repair	35 642	37 788	6.0
H	Hotels and restaurants	26 315	28 147	7.0
I	Transport, storage and communication	50 383	51 986	3.2
J	Financial intermediation	87 891	89 115	1.4
K	Real estate, renting and business activities	49 612	47 795	-3.7
M	Education	54 352	78 093	43.7
N	Health and social work	47 499	46 643	-1.8
O	Other community, social and personal service activities	47 485	45 869	-3.4
	Total	51 388	51 882	1.0

c: confidential

Labour Cost Index (LCI)

Table 11 shows the evolution of hourly labour costs between 2004 and 2008. The results from the LCS are compared to those of the LCI. The comparison is done on the level of NACE rev1 sections. The quarterly indices from the LCI have been aggregated into yearly indices. Then, the average annual growth rates between 2004 and 2008 have been calculated.

There is a huge difference between these two sources. According to the LCS, the hourly labour cost has on average by 0.4% each year. The growth rate obtained from the LCI has been much higher: on average by 3.3% each year. The results for the different sectors are similar. They show divergences between the two sources.

These results mean that either the 2004 LCS overestimates the costs or that the 2008 LCS underestimates them. The first option is retained here. Indeed, according to tables 9 and 10 the LCS data from 2008 are coherent with the data from the SBS and the national accounts. As a result the hourly labour costs from 2004 have been overestimated.

Table 11: Average Annual Growth Rates of Hourly Labour Costs from 2004 to 2008 – LCS vs. LCI (%)

		LCS	LCI
C	Mining and quarrying	0.5	2.7
D	Manufacturing	0.3	3.1
E	Electricity, gas and water supply	-1.2	2.2
F	Construction	2.6	2.7
G	Wholesale and retail trade; repair	1.3	3.3
H	Hotels and restaurants	1.6	3.6
I	Transport, storage and communication	-0.2	1.5
J	Financial intermediation	0.0	3.4
K	Real estate, renting and business activities	6.4	3.7
M	Education	2.0	3.0
N	Health and social work	-0.5	2.7
O	Other community, social and personal service activities	0.4	3.8
	Total	0.4	3.3

Table 12 seems to confirm this finding. The table shows the average annual growth of the hourly labour costs between 2000 and 2008, according to the LCS and the LCI. It turns out that the average annual growth from the LCS is similar to that of the LCI.

Table 12: Average Annual Growth Rates of Hourly Labour Costs from 2000 to 2008 – LCS vs. LCI (%)

		LCS	LCI
C	Mining and quarrying	1.7	3.3
D	Manufacturing	2.8	3.1
E	Electricity, gas and water supply	2.5	3.3
F	Construction	2.9	3.2
G	Wholesale and retail trade; repair	2.5	3.4
H	Hotels and restaurants	2.5	3.9
I	Transport, storage and communication	1.7	2.5
J	Financial intermediation	3.1	3.8
K	Real estate, renting and business activities	4.3	3.7
	Total	2.9	3.4