IV. Technical notes

IV. A. *Estimates of confidence intervals*

Sample surveys are usually connected with sampling and non-sampling errors. The latter are a result, for instance, of administrative drop-outs of dwellings out of the sample, intentional non-response or errors produced by filling in the questionnaire. With these errors, one cannot determine a deviation of estimate without rather wide knowledge of the basic sample. On the other hand, the sampling errors, which arise by applying characteristics of the sample to the basic sample, can be interpreted by means of confidence intervals. The confidence intervals are intervals determined around the estimate in such a way that the actual value of the estimated characteristic falls right within this interval. Constructed most frequently for estimates are the confidence intervals of 95 % (by multiplying the respective quantile of the standard normal distribution and the standard deviation) - i.e. an interval, in which the actual value of the estimated characteristic can be found with 95 % probability.

The theory of sample surveys distinguishes between the two most frequent type of aggregates: **basic aggregates** and **partial aggregates**. The former are some primary aggregates (employment, unemployment, ...) for a basic sample (men, women, persons at working age, men aged 20-24, ...). The latter includes some sub-aggregates in a basic aggregate. For instance, the breakdown of the CZ-NACE in the group of employed persons refers to sub-aggregates. The aggregates by age groups are not sub-aggregates - they are basic aggregates in the population aged 15-19, 20-24, etc.

The confidence intervals in **Annex Tables I** and **II** are calculated for the sample size in a given quarter. In order to calculate confidence intervals of aggregates for other quarters and partial aggregates for the Regions and Areas, the following formula and Table **III** should be used.

a) For the **basic aggregate**

$$95\%\ C.I.of\ estimate\, Y = y \pm 1.96 \cdot s_y\,, where\, s_y \cong N \cdot \sqrt{(1-f) \cdot \frac{\frac{y}{N} \cdot (1-\frac{y}{N})}{f \cdot N}}\quad ,$$

where N is the size of the basic sample
y is the estimate of aggregate Y in the basic sample
f is the respective relative size of sample

b) For the **partial aggregate**

where N is replaced by the estimate of basic aggregate y and
y is replaced by the estimate of partial aggregate y_A

the following formula is used:

$$95\%\ C.I.of\ partial\ estimate\, Y_A = y_A \pm 1.96 \cdot s_{yA}\,, where\, s_{yA} \cong y \cdot \sqrt{(1-f) \cdot \frac{\frac{y_A}{y} \cdot (1-\frac{y_A}{Y})}{f \cdot y}}\quad .$$

Making the calculations, we should bear in mind that although the aggregates are published in thousands, units should be used in the formula. Both formulas are simplified approximations of precise formulas, but the deviations between the approximations and the precise formulas are not statistically significant. However, the formula for partial aggregates may produce inaccurate results for small estimates of the basic aggregate.

Generally in the whole publication, sums lower than 4500 persons are considered as data with very low reliability. In real terms it means that their relative standard error (i.e. coefficient of variation) is higher than 20 %. Data lower than 750 persons are not published, as their relative standard error is higher than 50 %. Instead of them there is a dot in the tables and for cases where the existence was not identified at all there is a slash in the tables.

IV. B. *Use of Annex tables*

Table I Estimates of 95 % confidence interval of basic estimates for population aged 15+

(thousand)

Variants: Ia for basic aggregates in the 3rd quarter of 2005, total
Ib for basic aggregates in the 3rd quarter of 2005, for one sex

The table is designed to establish an approximate 95 % confidence interval of **basic estimates** for the basic sample of 15+ population in the whole country and all its regions. For instance, if we want to know the confidence of the estimated number of employed (4797.2 thousand in the 3rd quarter), we shall find a row next to the number 4797.2 in the column of the Czech Republic. This is 36.9 thousand for the estimate size 4500 thousand. The next neighbouring value - 36.6 thousand - corresponds to the estimate 5000 thousand. Since the difference between 4797.2 and 4500 makes up three-fifths of the difference between 5000 and 4500, we shall subtract three-fifths of the difference between 36.9 and 36.6 from 36.9 and get 36.7 in the end. This means the 95 % confidence interval for the estimate of the number of employed in the 3rd quarter of 2005 is approx. 4797.2 +/- 36.7 thousand, i.e. there is a 95 % probability that the actual number of employed in the Czech Republic was not lower than 4760.5 thousand and not higher than 4833.9 thousand.

For comparison: When substituting into mentioned formula we reach the interval from 4760.4 to 4834.0 (+/- 36.8).

Table II Estimates of 95 % confidence interval of partial estimates for population aged 15+ at the national level

Variants: IIa for partial aggregates in the 3rd quarter of 2005, total
IIb for partial aggregates in the 3rd quarter of 2005, for one sex

The table is designed to determine an approximate 95 % confidence interval of **partial estimates** for the basic sample of 15+ population **at the level of the Czech Republic only**. For instance, if we wish to establish the confidence of an estimate of the employed in manufacturing in the 3rd quarter of 2005, which stood at 1307.1 thousand out of the total of 4797.2 thousand employed persons (27.2 % of all of the employed), we use the Table to find the value in a row approximately corresponding to 4797.2 and in a column approximately corresponding to 27.2. We can also make the following correction by a simple linear interpolation:

	25	**27.2**	30
4 500	0.51		0.54
4 797.2	cca 0.492 =0.51-(4797.2-4500)/ (5000-4500)* (0.51-0.48)	**cca 0.505 =0.492+(27.2-25)/(30-25)* (0.522-0.492)**	cca 0.522 =0.54-(4797.2-4500)/ (5000-4500)* (0.54-0.51)
5 000	0.48		0.51

This implies that there is a 95 % probability that there were not fewer than 27.2 % - 0.505 % (1280.6 thousand) and more than 27.2 % + 0.505 % (1329.1 thousand) of the employed in manufacturing.

For comparison: When substituting into mentioned formula we reach the interval from 1280.4 to 1329.2

Table II can also be used for basic aggregates in the age groups and sex for the whole country, provided the basic aggregate is replaced with the size of the basic sample and partial aggregate with the respective estimate.

In this chapter, we intended to give the reader general instructions on how to roughly determine the error which arises from applying characteristics of the sample to the basic sample. This error depends on three variables (on four in the case of partial aggregates), namely the size of the sample and of the estimate and, to a lesser extent, on the size of the basic sample. Giving an objective overview on errors of all the estimates would require compiling a large annex of tables and it would be difficult for common readers of economic publications to find the necessary information there. This is why all of the methods used are considerably approximate but still fully sufficient for getting an idea of the accuracy of the estimates.

95 % confidence intervals to estimate the number of employed in the national economy, unemployed and unemployment rates (3rd quarter of 2005)

	Estimate	95 % confidence interval		Estimate	95 % confidence interval		Estimate	95 % con. interval
		Abs. -/+	Rel. -/+		Abs. -/+	Rel. -/+		Abs. -/+
	Employment (thousand)			Unemployment (thousand)			Unempl. rate (%)	
Czech Republic	4797.2	36.8	0.8%	404.6	15.6	3.9%	7.8%	0.3%
Regions:								
Hlavní město Praha	619.9	15.9	2.6%	21.6	4.7	21.7%	3.4%	0.7%
Středočeský	554.4	12.3	2.2%	32.3	4.5	13.8%	5.5%	0.8%
Jihočeský	302.2	7.8	2.6%	15.5	2.7	17.1%	4.9%	0.8%
Plzeňský	271.5	7.5	2.8%	13.2	2.5	18.9%	4.7%	0.9%
Karlovarský	144.5	4.9	3.4%	18.6	2.6	13.9%	11.4%	1.6%
Ústecký	359.1	11.7	3.3%	57.4	6.5	11.3%	13.8%	1.6%
Liberecký	201.3	6.9	3.5%	12.8	2.6	20.2%	6.0%	1.2%
Královéhradecký	261.2	8.7	3.3%	11.5	2.8	23.8%	4.2%	1.0%
Pardubický	238.7	7.5	3.1%	13.1	2.6	19.9%	5.2%	1.0%
Vysočina	238.1	7.6	3.2%	17.2	3.0	17.3%	6.7%	1.2%
Jihomoravský	517.1	12.2	2.4%	44.9	5.2	11.5%	8.0%	0.9%
Olomoucký	287.1	9.8	3.4%	29.9	4.5	15.0%	9.4%	1.4%
Zlínský	261.3	8.5	3.2%	30.3	4.0	13.3%	10.4%	1.4%
Moravskoslezský	540.9	13.6	2.5%	86.2	7.4	8.6%	13.7%	1.2%

IV. C. *Sources and classifications used*

CZ-NUTS Territorial structure is defined in compliance with CZ-NUTS effective since 1 January, 2000.

Population Demographic projection of quarterly middle states for Labour Force Sample Survey on the base of final data at 1.1.2005 regarding the changes in administrative division and the prediction of both development of natural movement and migration balance in 3rd quarter 2005.

ISCED 97 Data on the level and groups of fields, or fields of education in compliance with international standard ISCED 97, UNESCO, November 1997.

CZ-NACE Figures concerning on industries of activity are split by the categories of the national Industrial Classification of Economic Activities (*OKEC*), continuously updated. The classification is compatible with the international classification NACE Rev.1.1.

CZ-ISCO-88 Occupations are classified in compliance with the national Classification of Occupations (*KZAM*) (Volume 1, Rev.1) published by the CZSO in 1995. This classification is compatible with the international classification ISCO-88.

CZ-ICSE Status in employment is classified by the group of CZ-ICSE of 1998, which correspond to individual groups of the international classification ICSE-93.

IV. D. *Characteristic of classifications*

CZ-NUTS : NUTS (La Nomenclature des Unités Territoriales Statistiques) was implemented by the Statistical Office of the European Communities in co-operation with the other EU authorities to allow to classify the standard unified structure of territorial units. It has been used in EU legislation, particularly for subsidies from the EU Structural Funds, since 1988.

There are 6 NUTS levels (NUTS 0, NUTS 1, NUTS 2, NUTS 3, NUTS 4 and NUTS 5), which represent the territorial size groups. The definition of each level depends on population and area. CZ-NUTS describes the territorial structure of the Czech Republic, using units that comply with the criteria of the European Union and approved by Eurostat for statistical purposes. This publication uses the following levels: NUTS 1 for the Czech Republic, NUTS 2 for Areas and NUTS 3 for Regions.

ISCED 97 : Published data on the level and groups of fields, or fields of education are in compliance with international standard ISCED 97 (International Standard Classification of Education) issued by UNESCO in November 1997. Since 1 January 2003 the classification of field of study for 3 digits is fully implemented in LFSS, it was taken over from the Institute for information on education - Ministry of Education of the CR.

According to ISCED 97, the levels of education break down as follows:

0 ***preprimary education*** - educational programmes for preschool education. This level includes also persons without any educational attainment.
1 ***primary education*** - the 1st level of basic education, i.e. completed 5th form of the basic school.
2 ***lower secondary education*** - above all the 2nd level of basic education, completed usually by 9th form.
3 ***secondary education*** - technical and general secondary education at secondary technical, general and vocational schools, usually completed with the General Certificate of Secondary Education of final examination. Herein, there are included also graduates of lower practical school as it had character of upper secondary education in the cases of elderly who have been out of education long time.
4 ***postsecondary education*** - postsecondary qualifications, specialisation and innovation study not included into tertiary education.
5 ***first level of tertiary education*** - bachelor and master study programmes not leading directly to a scientific degree.
6 ***second level of tertiary education*** - tertiary educational programmes leading to a scientific degree.

A criterion of the "following education or purpose" is applied within individual levels. The present publication uses this for level 3 (e.g. school leavers of group 3A can continue to study for the bachelor or master degree, while programmes of group 3C directly channel school leavers into the labour market). Secondary education with GCE in the tables includes vocational and technical education.

CZ-NACE : With regard to the Czech Republic's information obligations towards the European Union, UN, IMF and other international organisations, this standard is fully based on NACE, used by the EU. Currently according to up-dating changes and amendments of European Standard NACE rev. 1.1 the up-date of NACE-CZ classification was executed (3rd edition valid from 1 January 2003).

CZ-ISCO-88 : The subject of this classification is occupation, i.e. activity executed by a person (even though it is not their profession) and which is their main source of income from work. The classification is based on ISCO-88 (International Standard Classification of Occupations) adopted by the 14th International Conference of Labour Statisticians in November 1987.

CZ-ICSE : CZ-ICSE is based on the revised International Classification of Status in Employment - ICSE-93, approved by the 15th International Conference of Labour Statisticians in January 1993. ICSE-93 is obligatory only at the one-digit level, more detailed breakdown is recommended. CZ-ISCE is obligatory down to the four-digit level. Only economically active persons are included.

IV. F. *List of tables*

In connection with the territorial structure of the Czech Republic effective since 1 January 2000, the structure of tables has been changed to cover not only factual, but also territorial insight into the labour market in the Czech Republic at the levels of NUTS 1 (Czech Republic), NUTS 2 (Areas) and NUTS 3 (Regions). In view of the fact that the differences between the size of individual regions and thus between the size of the samples deepened, compared with the former territorial structure, data published have been selected with regard to their reliability.

The tables are divided into five basic **Groups** characterising the sample and the categories of the employed and unemployed broken down always by sex. The numbers of tables comprise of three digits; the following overview gives information on the territorial detail of a table bihind the slash:

xxx / 1 NUTS1 - Czech Republic
xxx / 2 NUTS2 - Czech Republic and Areas
xxx / 3 NUTS3 - Czech Republic and Regions

IV. F. 1. Characteristic of population of the Czech Republic (Tables 101 to 108)

The block of tables shows basic demographic information on the population of the Czech Republic. The basis is provided by projected demographic data for the CR population relating to the middle of a reference period and characteristics of the population from the LFSS.

101 / 3 *Population of the Czech Republic by age*
Age structure of the whole population of the CR and Regions - projected demography of the LFSS.

102 / 3 *Population of the Czech Republic by education*
The highest educational attainment of respondents in the CR and Regions in absolute and relative figures.

103 / 3 *Selected fields of education - ISCED 97*
Selected fields of education by ISCED 97 in the CR and Regions.

104 / 3 *Activity status of population aged 15+*
The absolute and relative structure of population 15+ in the Czech Republic and Regions by professional status and by rough age groups.

105 / 1 *Levels and fields of education by age groups*
Educational attainment in rough age groups in the Czech Republic and groups of fields by ISCED 97. Groups of fields at various levels of education.

106 / 2 *Age and education of the population by activity status*
Rough age structure and educational attainment of population aged 15+ by the category of activity status in the Czech Republic and Areas.

107 / 3 *Main reasons for economic inactivity*
Main reasons for economic inactivity of population aged 15+ in the Czech Republic and Regions and main reasons for economic inactivity of population aged 20-59.

108 / 1 *Persons with disability*
Rough age structure and educational attainment of the employed, unemployed and economically inactive aged 15+ with disability, compared with the whole population 15+.

IV. F. 2. Employment in national economy (Tables 201 to 207)

The tables embrace all persons classified by ILO as employed in national economy, i.e. including regular members of the armed forces. However, persons on parental leave are excluded.

201 / 3 *Employment in national economy by Regions - part 1*
First job holders in the national economy of the Czech Republic and Regions by age groups of the employed, by educational attainment and by selected fields of education.

202 / 3 *Employment in national economy by regions - part 2*
First job holders in the national economy of the Czech Republic and Regions by basic classifications - CZ-ICSE, CZ-NACE and CZ-ISCO-88.

203 / 1 *Employment in national economy by age - part 1*
Age groups of first job holders in the national economy of the Czech Republic by educational attainment and by selected group of fields of education.

204 / 1 *Employment in national economy by age - part 2*
Age groups of first job holders in the national economy of the Czech Republic by basic classifications - CZ-ICSE, CZ-NACE and CZ-ISCO-88.

205 / 2 *Employment in national economy by areas*
First job holders in the national economy of the Czech Republic and Areas by basic classifications - CZ-ICSE, CZ-NACE and CZ-ISCO-88.

206 / 1 *Employment in national economy by education*
First job holders in the national economy of the Czech Republic by basic classifications - CZ-ICSE and CZ-ISCO-88 at individual levels of educational attainment.

207 / 1 *Classification of occupations by economic activity*
The representation of major groups of CZ-ISCO-88 in individual industries of the Czech national economy.

IV. F. 3. Employment in civil sector (Tables 301 to 310)

Employment in the civil sector (CS) of national economy includes all persons classified by ILO as employed in national economy, excluding regular members of the armed forces. Excluded are also persons on parental leave.

301 / 3 *Status in employment in sectors*
The representation of first job holders in CS, employees (incl. members of producers´ cooperatives), employers and own-account workers in sectors of the Czech Republic and Regions.

302 / 3 *Employees in civil sector by industry*
First job holders in industries of CS of the Czech Republic and Regions.

303 / 1 *First job holders: by selected economic activity*
First job holders in the CR in selected most frequent sections and divisions of CZ-NACE.

304 / 1 *Employment by professional status, type of contract and job duration*
The employed in CS of the CR and their status in first job by kind of working contract (with limited or unlimited job tenure, other) and by working hours and duration of present job.

305 / 3 *Hours usually and actually worked in the week*
The average number of hours usually and actually worked in a week (full-time jobs) by status in employment, and the average number of hours worked (part-time jobs) in the CR and Regions.

306 / 1 *Hours worked by industry and job distinction*
The average number of hours usually and actually worked in a week in individual industries of CS in total and in full-time and part-time jobs.

307 / 2 *Hours actually worked by status in employment*
The numbers of employed in CS by status in employment broken down by hours actually worked in first job in the CR and Areas.

308 / 1 *Hours actually worked by status in employment and age*
The numbers of employed in CS by status in employment broken down by hours actually worked in first job and by rough age groups.

309 / 1 *Part-time jobs and underemployment*
The employed in CS in part-time jobs in rough age groups by educational attainment and by main reasons for holding a part-time job. Underemployment.

310 / 2 *Work status and disability*
Main reasons why persons in the CR and Areas worked in the reference week fewer hours than contracted or why they did not work at all. The numbers of persons with disability in CS.

IV. F. 4. Unemployment (Tables 401-406)

Tables of this group include persons classified as unemployed by international definitions and recommendations of ILO - i.e. persons who were without work in reference period, were actively seeking job, and were ready to take up a job within 14 days. Included are also persons who have already found a job, but their commencement of work was fixed for 14 days at the latest.

401 / 3 *Age, education and specific groups of unemployed*
The unemployed in the Czech Republic and Regions by rough age groups and by educational attainment. Specific groups of the unemployed (persons who have already found work but its beginning is delayed for 14 days at the latest, those not registered by labour offices, the unemployed with disability).

402 / 1 *Basic characteristics of unemployed*
The unemployed in the Czech Republic with various educational attainment by their economic status before they started to seek work and by the time of seeking job.

403 / 1 *Education of unemployed in age group*s
Rough age groups of the unemployed in the Czech Republic by educational attainment and by selected groups of education fields.

404 / 1 *Last industry and occupation of unemployed by education*
Main reasons for the termination of last employment, selected industries and selected major groups of CZ-ISCO-88 of last job held by the unemployed in the Czech Republic by their educational attainment.

405 / 1 *Job seeking conditions*
The type of job sought, required hours worked and the most frequent ways of seeking jobs by the unemployed in the Czech Republic and by educational attainment.

406 / 2 *Unemployment in Areas of the Czech Republic*
Unemployment in the Areas of the CR by age groups and by educational attainment.

IV. F. 5. Time series of basic indicators (Tables 501 to 509)

The tables included in this group show some basic indicators which describe employment, unemployment, unemployment rate, participation rate and employment rate over a period of 1 year.

501 / 1 *First job - part 1*
First job holders in the national economy by Region and Area, by age structure and by educational attainment in a time series of last five quarters.

502 / 1 *First job - part 2*
First job holders in the national economy by status in employment (CZ-ICSE), by industry and sector (CZ-NACE) and by major group of CZ-ISCO-88 in a time series of last five quarters.

503 / 1 *Second job - part 1*
Second job holders in the national economy by Region in a time series of last five quarters.

504 / 1 *Second job - part 2*
Second job holders in the national economy by status in employment (CZ-ICSE) by industry and sector (CZ-NACE) and by major group of CZ-ISCO-88 in a time series of last five quarters.

505 / 1 *Unemployment - part 1*
The unemployed by Region and Area, by age structure and educational attainment in a time series of last five quarters.

506 / 1 *Unemployment - part 2*
The unemployed, previously employed, by industry of their last employment in a time series of last five quarters.

507 / 1 *Unemployment rate*
Unemployment rates in Regions and Areas of the Czech Republic by age group and by educational attainment in a time series of last five quarters.

508 / 1 *Economic activity rate*
Economic activity rates in Regions and Areas of the Czech Republic by age group and by educational attainment in a time series of last five quarters.

509 / 1 *Employment rate*
Employment rates in Regions and Areas of the Czech Republic by age group and by educational attainment in a time series of last five quarters.

IV. G. *Other notes*

Absolute values are in thousands. Differences between the total and individual items used to provide the total are due to rounding-off (it was the total that was rounded off and not the individual items). Absolute and relative data in all textual and annex tables and in text, are derived from non-rounded-off figures.

The following standard statistical symbols are used in the tables to show cases of **marginal values**:

— is used to indicate that the phenomenon given did not occur in the sample.
0 is used to indicate that the phenomenon occurred in the sample, but at values which are below "0.1" when rounded off in a standard manner.
x is used to indicate that the phenomenon is not applicable.
• shows that the figure is not available or cannot be relied on.

"Not identified" in the tables comprises refused answers, answers "do not know" and any other case of an unidentified answer of the respondent. Where more answers to the question asked are possible, the data are classified, in principle, according to the main variant of the answer.

It should be borne in mind in using the tables that sample methods were employed to acquire the information and, therefore, **the accuracy decreases as the sample diminishes** (e.g., the breakdown of the unemployed by various aspects of regions, etc.).

The LFSS provides **representative results on unemployment at quarterly periodicity only**. Monthly periodicity and data for smaller territorial units (districts) can only be provided by labour offices; this is why the two sources of information on the labour market should be used in parallel, but bearing in mind the differences in methodology.

IV. H. *Access to release*

This publication is issued every quarter in Czech and English versions in the following forms:

a) ***Print :***

Czech version	publication code :	3101 - 05
English version	publication code :	3102 - 05

b) ***Electronic form :*** Excel (*.xls), Adobe Acrobat (*.pdf), JPEG (*.jpg)

Czech version	310105q3.exe	ctimne.txt
English version	310205q3.exe	readme.txt

c) ***Internet :*** Excel (*.xls), Adobe Acrobat (*.pdf), JPEG (*.jpg)
both versions http://www.czso.cz