

## **Eurostat/OECD 2018 questionnaire on the methodology underlying labour input data in national accounts**

Country: Croatia  
Date: March 2018

### ***Part II: Methods***

#### **1. Employment in persons**

***Question 1.1:*** Please describe the architecture of your estimation method for employment in persons. Please include details of differences in methods and data sources that may exist at different points in the time series (e.g. a break in the series) or due to the timing of the estimate (e.g. flash estimate, regular estimate or annual data). Please also provide links to articles that may be relevant.

The methods of our estimation method for employment in persons in national accounts are based on data obtained from the Labor Force Survey. It's mostly about monthly and annual data. The data we receive each quarter started to be collected from the first quarter 2008 until the last quarter 2017. Since we are required to submit data for employees for the period 1995q1-2007q4 as a basis method we have used our own estimation of data for that period. For every quarter, starting as I have already said, since 2008q1 we added 10,000 employees, (non-observed economy). Based on the quarterly data, at the end of each year, we have also formed annual data that we are also sending.

***Question 1.2:*** What is the main original source for employment in the national accounts (e.g. administrative source, labour force survey, business survey, other)? Briefly describe this source, its coverage (including over time, range of businesses/households covered, etc.), its availability and whether it is in terms of jobs and/or persons. Please specify the sources used for different parts of employment (in particular if sources differ between employees and self-employed, and/or between industries, firms of different size, etc.). If sources differ, please provide a clear distinction when answering the questions that follow.

The main original source for employment data is the Labor Force Survey (LFS). The data obtained from the LFS are the number of persons employed at the 2-digit level of NKD (employed and self-employed). The Labor Force Survey measures the economic activity of the total population in a short period of one week's survey. The reference week, for research that has been conducted continuously since 1998, is defined as the last week of each month, which does not include either holidays or non-working days, while for 2007 every week during the year is considered as reference week. Data on registered employment were collected by interviewing private households. The LFS results are estimated on the basis of a representative statistical sample.

***Question 1.3:*** Please describe how estimates of annual figures based on higher frequency data (e.g. weekly, monthly, quarterly) are derived. Please also specify, if relevant, how annual figures are derived if survey information is less periodic (e.g. every 5 years)?

The dynamics of conducting the survey are as follows: Households are surveyed in two consecutive quarters, they are excluded from the sample of the next two quarters and they are re-examined in two consecutive quarters. This enables time tracking of people's flows in the labor market, in the quarterly and annual dynamics.

**Question 1.4: Please describe the adjustments made to pass from jobs to the concept of persons (if the original source is in terms of jobs).**

In this moment we don't have evidenced any jobs in national accounts, they are marked as voluntary.

**Question 1.5: Please describe the adjustments made to correct for coverage of the economic territory (see ESA §11.17-11.19)? This refers specifically to residents working for non-resident units abroad non-residents working in resident units. If relevant, please also describe adjustments for military (including conscripts, where applicable) and other collective households not covered by your main source.**

The tables in national accounts have two different concepts of NC-national and DC-domestic concepts. Currently we are sending data exclusively based on the national concept because we still do not have a detailed domestic concept, but we emphasised on sending data in tables a different definition of employment (D-definition differs) and that should be in line with the domestic concept of employment definition.

**Question 1.6: Which adjustments are made for the unobserved economy (e.g. producers that deliberately do not register, individuals providing their labour that are not required to register, illegal workers, etc.)?**

For every quarter starting as I have already said from 2008q1 to 2017q4 we added about 10,000 people (illegal workers).

**Question 1.7: Which, if any, other adjustments are made (e.g. inclusion of resident workers below the age threshold, prisoners, adjustments made to account for statistical deficiencies in the source data, etc.)?**

We have not done this kind of adjustments because we have had no research.

**Question 1.8: In cases where Labour Force Survey data have not been used as the main source (even if only for some activities or groups of workers), please explain why. Are LFS data used for adjustments or cross-checking? Are differences monitored?**

The data from Labour force survey have always been used as the main source in national accounts.

## **2. Hours worked**

**Question 2.1: Please describe the architecture of your estimation method for hours worked. Please include details of differences in methods and data sources that may exist at different points in the time series (e.g. a break in the series). Please also provide links to articles that may be relevant.**

The hours of work are also obtained from the LFS but on a weekly basis, and in fact, as such, they are divided only with employees in a specific reference week, which by definition should not be correct and because of that fact we share them with the total number of employees. Depending on the quarterly or annual transmission tables, in national accounts we convert them from weekly to quarterly or annual levels, of course adding the hours of the above-mentioned illegal workers.

**Question 2.2: What is the main original source for hours worked in the national accounts (e.g. administrative source, Labour Force Survey, Business survey)? Briefly describe this source, its coverage and its ability to reflect the definition of hours worked (see ESA §11.27-11.31). In particular, does it capture a ‘usual’ hours, ‘actual’ hours, or some other concept?**

The main source of data for working hours in national accounts is the Labour Force Survey. The Labour Force Survey conducted by the Labor Market Statistics Department provides data on hours worked at the 2-digit level of the NKD with the definition corresponding to the definition defined in ESA 2010 (11.28). The Croatian LFS includes daily breaks for meal estimated for years prior to 2015, which should be corrected when using LFS data for years before 2015. Total number of working hours represents the total number of hours actually employed as an employee or self-employed person during the accounting period when their production is within the production boundary.

**Please specify the sources used for different parts of the employed population (in particular if sources differ between employees and self-employed, and/or between industries, firms of different size, etc.). If sources differ, please provide a clear distinction when answering the questions that follow.**

**Question 2.3: Please describe the adjustments made to transform the original source to adapt it to the concept of working hours as defined in national accounts? Please, describe each adjustment separately. These adjustments might include:**

- Accounting for holidays and annual leave
- Accounting for sickness leave
- Accounting for strikes and temporary lay-offs
- Accounting for paid but unreported overtime
- Accounting for unpaid overtime

The Croatian LFS includes daily breaks for meal estimated for years prior to 2015, which should be corrected when using LFS data for years before 2015. Total number of working hours represents the total number of hours actually employed as an employee or self-employed person during the accounting period when their production is within the production boundary.

**Question 2.4: Is a specific adjustment made to account for under- or over-reporting in the source data? Please specify if these adjustments are made for employees and/or self-employed workers.**

Adjustment was not made because there was no need for it.

**Question 2.5: If an adjustment is made for the number of persons employed in relation to the unobserved economy, what assumption is made regarding the hours worked by these persons?**

Every quarter starting as I have already said since 2008q1 we added some 10,000 people (mostly illegal workers in processing, trade and service activities), and accordingly we added the number of hours worked proportionally

**Question 2.6: Which other adjustments, if any, are made?**

We have not yet made any other significant adjustments.

**Question 2.7: If necessary, please describe any additional calculations needed to derive total hours worked and average hours worked from the sources and adjustments specified above. This includes, but is not limited to, adjustments made to align the coverage of hours worked with that of employment in persons (i.e. the coverage produced by the process followed in section 1).**

There were no additional calculations of total and average hours of work.

## ***Part II: Other work in this area***

### **3. Differences between national accounts and Labour Force Survey estimates**

**Question 3.1: To what extent do you consider your Labour Force Survey an accurate tool for the measurement of employment and hours worked? Please describe any issues or shortcomings of which you may be aware.**

We consider that our Labor Force Survey is a very accurate tool for measuring employment and working hours, so we do not use other sources of data.

**Question 3.2: If the Labour Force Survey is not the primary source of data used to derive your estimates of employment in persons hours worked: Are you able to quantify, even approximately, what the difference would be between your current national accounts estimates and those you would obtain if you did use the Labour Force Survey data as your primary source?**

The differences between our estimates in national accounts compared to the Labor Force Survey, which is our primary source of data, is somewhere around 0.2%.

**Question 3.2.1: Where differences between these estimates exist, can you provide a brief assessment of the source of these differences?**

The only differences that exist are the following: The Labor Force Survey doesn't include illegal economy, which we have included in the calculation of employment in national accounts.

### **4. Flash estimates of employment in persons**

**Question 4.1: Are you currently producing flash estimates of employment (t+30 or t+45)? If so, please describe briefly the methodology, coverage and sources. If you are not producing a flash estimate, do you have plans to start doing so in the future?**

The CBS is currently compiling employment flash estimates at both t+30 and t+45. Employment flash estimates has been calculated since October 2017 when the first employment estimates regarding the first three quarters of 2017 were sent (real time series). Input data for flash estimates compilation are slightly adjusted labor force survey (LFS) data starting from 2000q1 (retrospective time series). A seasonal ARIMA models, with outliers taken into account (as regressors), have been used to compile employment flash estimates.

**Question 4.2: Please provide information on the quality of the estimates (e.g. revision analysis).**

At the current stage only the different classes of ARIMA models are being used. The criteria for choosing an ARIMA model with the most reliable flash estimate are mean error, root meansquare error and Akaike information criteria. Also, due to several revisions in the historical t + 70 employment series, the revision of flash estimates (at t+30 and t+40) was conducted accordingly.

## **5. Other data produced (Optional)**

**Question 5.1: Do you have plans in the near future to improve or expand the content of national accounts labour input data (e.g. improved alignment with national accounts concepts, extension of the time series, increased industry detail, etc.)?**

In the near future, we have plans to improve employee data and hours of work in national accounts. We plan to make a complete transition from the concept of Labor Force Survey to the concept of national accounts according to ESA 2010 (ie to include people in institutions, etc.). We also plan to transition from national to domestic concept (ie include non-resident firms in domestic firms and exclude resident firms).

**Question 5.2: Do you produce labour input data other than that already discussed, for example quality adjusted labour input or labour input in terms of full-time equivalents? If so, please provide details and/or links to these data.**

Only for internal poupose in SUT framework for the moment , and in Agricultural industry.

**Question 5.3: Do you produce productivity statistics (e.g. labour productivity for the total economy, further breakdowns of labour productivity, capital productivity, multi-factor productivity, etc.)? If so, please provide details and/or links with regards to these data.**

Only for internal poupose in SUT framework for the moment , and in Agricultural industry.

***Question 5.4: If there is any other work that you produce currently, or are looking to produce in the future, in the areas of labour input or productivity, please use the space below to inform us about this work.***

Not related to productivity but we will try to include Unpaid voluntary workers producing goods in calculation (2019).