

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

Country: Hungary  
Date: April 2018

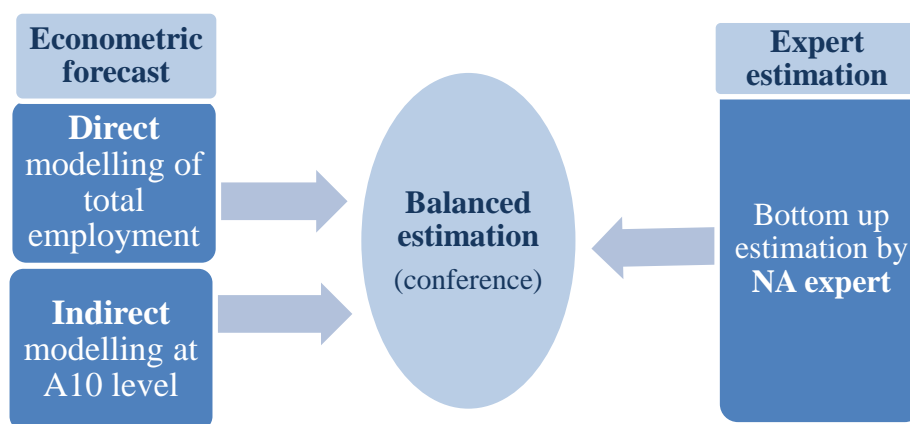
### *Part I: Methods*

#### **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.

**Flash estimates:** t+45 days test version

The main data source to flash estimate quarterly employment according to NA is Labour Force Survey. The quarterly data is available at t+35 days. The estimation process contains three steps as shown in the following illustration:



An econometric model is set up directly for estimating the total employment, and indirectly at A10 level. From the other side a previous expert estimation is also prepared at 2 digit level of NACE (as it is done for t+60 days). By this estimation, an index method is used to extrapolate the time series. The main data source is LFS, but quarterly data from monthly (institutional) labour survey (regarding to STS) is also used. The results of this two approaches are confronted in a balancing estimation meeting where the experts of each field are present and discuss the results and make the best decision.

The econometric model is set up directly using total employment except those working abroad from Labour Force Survey as an explanatory variable. Least square ARIMA model is applied using Eviews 8.0 software. Quarterly GDP lagged 4 quarters is also examined as an explanatory variable each quarter. In some quarters it shows significance, sometimes not. The bottom up modelling is also prepared at A10 level using total employment of the correspondent branch except those working abroad from Labour Force Survey as an explanatory variable and even GDP of the correspondent branch and its lagged version also examined each quarter.

Hungary does not publish employment data according to NA for t+45 days. This is still in an experimental period. The work in this field has started by joining Eurostat task force on the same subject in 2017. The results are sent to Eurostat confidentially as test results. Hungary is not planning yet to publish such a data.

### **Regular estimates**

Regular estimates are prepared for t+60 days at 2 digit level of NACE by employee and self employed. Due to the fact that not all “ESA bridges” are available quarterly therefore an index method is used to extrapolate the time series. The main data source is the LFS, that provides the level. For extrapolation at two digit level, quarterly data from monthly (institutional) labour survey (regarding to STS) is used to estimate employees. For estimating self employed at 2 digit level of NACE, the growth in number of persons with full-time private entrepreneurship is applied to extrapolate the correspondent time series. (This data comes from the BR. Each month a snapshot is made on the current BR status to provide a basis for statistics.) Total employment is the sum of employee and self employed.

The existed time series are adjusted to the annual ones as soon as they become available. Therefore bridges ensured indirectly. This method is used due to the lack of bridge data quarterly. There are some special branches, like 01 agriculture for self employed, where agriculture expert makes an estimation on number of agricultural producers for own final use, and 84 government for employee, government expert’s estimation is applied instead of institutional survey data (since 2005).

Estimations are prepared at two digit level since 2015 Q1 to be more coherent to the annual one. Before estimations were prepared at A10 level. This may cause a slight break in the series.

These results are sent to EUROSTAT quarterly at T+60 days but not published in Hungary.

### **Annual compilation**

Annual calculation is prepared for the number of employee and for that of self employed and from the sum of these two figures, the number of employment is reached at 2 digit level of NACE. The main source is the LFS data, which is adjusted by ESA-bridges: employed persons living in Hungary, but working abroad for a non resident company (-); employed persons living abroad, but working in Hungary for a resident company (+); foreign residents employed at Hungarian embassies (+);unpaid workers in household sector (+), employed persons living in institutional households (+); employed persons above the age of 74 (+). And in the case of self employed ESA bridges are the following: employed persons living in Hungary, but working abroad (-); agricultural producers for own final use (+); estimation on illegal workers (drugs and prostitution) (+).

***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 source** for employment is the **Labour Force Survey**. For employment, only full time workers are taken into account. For employees different classification is applied than the ILO one as specified in ESA 11.12-11.13.

According to this the following categories are included in employees: (1) employee at corporate enterprise (without cooperative); (2) employee at cooperative; (3) employee at private entrepreneur; (4) employee: casual worker; (5) member of cooperative; (6) member of LTD without employee; (7) member of LTD with employee; (8) member of other corporate enterprise without employee; (9) member other of corporate enterprise with employee.

And the following categories are included in self employed as specified in ESA 11.15-11.16: (10) private entrepreneur with self employed; (11) private entrepreneur without self employed; (12) assisting family member.

#### **Other sources used: Monthly Institutional Labour Statistics**

The most important information base on the labour characteristics of the organisations is our monthly institutional labour survey (hereafter: MILS) data collection. This data collection serves as a ground for the domestic mid-year earnings-statistics data and the mid-year labour input-data of the STS and the National Accounts. Its data are being partially used in the production of the labour statistics input data of the SBS.

The information content of the data collection:

The MILS contains on the organisational level such disbursements as payroll expenses and other staff expenses (traditional earnings and other labour income), and data regarding the staff number and working hours broken down by staff groups (employed: full-time, not full-time, manual/non-manual occupation; other workers). The data collection itself has a history going back several decades at the HCSO.

Units of the data collection:

- Enterprises employing at least 5 persons
  - The employers employing 5-49 persons are observed by using a sample on the branches A-C, E-N, and P-S by the statistical main activity (NACE Rev. 2)
  - A full-scope observation is carried out on the employers employing at least 5 persons that belong to branch D by the statistical main activity (NACE Rev. 2)
  - A full-scope observation is carried out on the employers employing at least 50 persons that belong to the branches A-C, E-N, and P-S by the statistical main activity (NACE Rev. 2)
- Full-scale observation of budgetary institutions
- Observed non-profit organisations
  - A full-scope observation is carried out on the employers employing at least 3 persons that belong to the branches P and Q by the statistical main activity (NACE Rev. 2)
  - A full-scope observation is carried out on the employers employing at least 50 persons that belong to the branches A-O and S by the statistical main activity (NACE Rev. 2)

Other Important Characteristics of the Data Collection:

The data collection is obligatory on the selected organisations, it is specified by government decree in the given year. The Hungarian State Treasury (HST) provides data in case of the budgetary institutions (apart from some exceptions) considering that their payroll calculation is done in the Centralised Payroll Calculation System (KIRA) at the Hungarian State Treasury. The Hungarian State Treasury provides data with identical questionnaire contents to that for the enterprises and non-profit organisations (NGOs), but in

a more detailed breakdown (i.e. breakdown by legal relationship) compared to the organisation-level breakdown. The enterprises and NGOs provide data independently, directly for the HCSO through the web platform (ELEKTRA) specially designed for this purpose. HCSO takes the Business Register as a basis for the MILS data collections – similarly to the majority of the institutional data collections –, for selecting the data providers, and for the production of the estimation on the range of entrepreneurs observed using a sample.

It becomes available at T+39 days and used for quarterly estimation of employee at 2 digit level. (Self employed is not included in this source) LFS does not provide an adequate distribution of branches. Due to the fact that ILS survey organisations and not households, the distribution among branches are more appropriate.

Furthermore LFS experts draw the attention: If a variable involves an occurrence of 2500 to 4999 persons, the data are to be regarded with caution because due to the high survey error rate they can be incorrect; in case of occurrence of fewer than 2500 persons, the data are not usable.

Therefore the quarterly estimation of self employed is based on Business Register data, that corresponds better to NA concept. Each month a snapshot is made on the current BR status to provide a basis for statistics, data collections (so called GÉSA system which is a centralized registering and monitoring system) and data sales. Yearly data collections are as of 31 December. To the next year's data collections, questionnaires are sent as of the October-end BR snapshot. For further information see:

[http://www.ksh.hu/apps/meta.objektum?p\\_lang=EN&p\\_menu\\_id=720&p\\_almenu\\_id=705&p\\_ot\\_id=700&p\\_obj\\_id=R004\\_2012&p\\_session\\_id=99273364](http://www.ksh.hu/apps/meta.objektum?p_lang=EN&p_menu_id=720&p_almenu_id=705&p_ot_id=700&p_obj_id=R004_2012&p_session_id=99273364)

The source of 'employed persons living in institutional households' and 'employed persons above the age of 74' comes from **Census 2011** and divided to branches according to the latest annual distribution of persons employed.

The data for foreign residents employed at Hungarian embassies is reported by the Ministry of Foreign Affairs and Trade. (See question 1.5)

***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)?***

Monthly Labour Force Survey data are used for annual calculations. Annual data are reached from LFS by average of months. This annual data are used for employee and for self employed as well.

The 'employed persons living in institutional households' and 'employed persons above the age of 74' comes from Census 2011 and does not change until the next census, only it is always divided to branches according to the latest annual distribution of persons employed.

***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).***

This is not the case in Hungary.

***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.***

As described in question 1.1 the following ESA adjustments are done to correct for coverage of the economic territory:

- Employed persons living in Hungary, but working abroad for a non resident company (-);  
It comes from LFS.
- Employed persons living abroad, but working in Hungary for a resident company (+);  
It comes from tax income declaration delivered by National Tax and Custom Administration.
- Foreign residents employed at Hungarian embassies (+);

The number of foreign residents employed at Hungarian embassies is calculated by the following formula:

CoE paid to foreign residents employed at Hungarian embassies<sup>1</sup>

EU28 average annual compensation of employees per capita

Compensation of employees (CoE) paid to foreign residents employed at Hungarian embassies are reported by the Ministry of Foreign Affairs and Trade only from 2014. Data on number of employees are not available.

This figure was backcasted till 2011.

- Employed persons living in institutional households (+);

This information comes from Census. The last Census took place in year 2011. The same amount is applied every years until the next census and divided to branches according to the most accurate annual data.

- Employed persons above the age of 74 (+);

This information comes from Census. The last Census took place in year 2011. The same amount is applied every years until the next census and divided to branches according to the most accurate annual data.

- Agricultural producers for own final use (+);

Data sources for labour input of private farms:

- Agricultural census (AC): 2000, 2010
- Farm Structure Survey (FSS): 2005, 2007, 2010, 2013, 2016 (sample size around 100 000 farms)
- Annual Sample Survey in every December (sample size around 30 000 farms).

Through the FSS and AC a quite detailed information are collected about the characteristics of farms, including family labour force at person level and purpose of farming (e.g. only for own final use)

Annual survey contains data on labour force in a less detailed format. Only the number and working days of paid and unpaid (family) employment is asked.

So the only survey information available is the labour input of farms producing solely for own final use in years when FSS was carried out. This information regards to the reference time of the survey.

For intermediate years and quarters the estimation is the following:

- Yearly estimation (in intermediate years):

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<sup>1</sup> Consulates are also included.

In FSS years, there is information about the number of family workers and amount of their AWU (Annual Work Unit) for the entire universe and for farms which are classified producing only for own final use. So we can calculate the ratio of own final use part of the universe.

For intermediate years (till the next FSS) this ratio is modified based on its own trend. The yearly estimation is computed based on this calculated ratio and based on the total number of family labour force and their labour input (expressed in AWU), collected by annual survey.

- Quarterly estimation:

The quarterly distribution is done based on the agricultural intermediate consumption.

Estimation on illegal workers (eg. drug and prostitution) (+).

The number of full time employees or self-employed persons in drug trafficking are estimated based on the approximated income of this activity. The distribution of the labour input between full-time, half-time and part-time employees are calculated based on data of the criminal statistics.

The number of employees and self-employer persons in prostitution are estimated based on direct information of the experts of the Association of Hungarian Sex Workers.

**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.)?**

Institutional Labour Survey (ILS) data and LFS data were examined and compared. The results showed that in case of employees the level of LFS data are higher than the ILS. (ILS has only data for employees.) In LFS households are surveyed while in ILS data collected from institutions, enterprises and organisations. This shows that LFS may include unobserved economy.

An adjustment is made for drug and prostitution.

**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.)?**

No adjustments are made in this field.

**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?**

LFS is used as the main source .

## 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.**

Employee: Hours per capita for employee is used at 2 digit level of NACE from ILS and multiplied by the number of employee estimated previously, that of domestic concept.

Self employed: Hours per capita for self employed is used at 2 digit level of NACE from LFS and multiplied by the number of self employed estimated previously, that of domestic concept.

This calculation method is applied from 2010. There is a break in this year in the time series. The backward calculation is under preparation now. Hungary has a derogation for this until 2020.

**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?**

**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.**

For employee: The main source is ILS (see in details in answer for question 1.2) due to the fact (based on previous examination) that LFS systematically overestimate the hours worked. This can be realized in the break of the hours worked time series in year 2010.

The monthly Institutional Labour Survey is a source that combine business survey and administration data, as the Hungarian State Treasury (HST) provides data in case of the budgetary institutions considering that their payroll calculation is done in the Centralised Payroll Calculation System (KIRA) at the Hungarian State Treasury. Scope of data collection: enterprises employing at least 5 persons, fully observed budgetary institutions and non-profit organizations involved in the observation.

Data used for the estimation is the employees working at least 60 hours a month. Hours worked means here the hours definitely worked according to the STS requirements.

Units of the data collection:

- Enterprises employing at least 5 persons
  - The employers employing 5-49 persons are observed by using a sample on the branches A-C, E-N, and P-S by the statistical main activity (NACE Rev. 2)
  - A full-scope observation is carried out on the employers employing at least 5 persons that belong to branch D by the statistical main activity (NACE Rev. 2)
  - A full-scope observation is carried out on the employers employing at least 50 persons that belong to the branches A-C, E-N, and P-S by the statistical main activity (NACE Rev. 2)
- Full-scale observation of budgetary institutions
- Observed non-profit organisations

- A full-scope observation is carried out on the employers employing at least 3 persons that belong to the branches P and Q by the statistical main activity (NACE Rev. 2)
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In case of enterprises where full scope observation is carried out and in case of non-profit organizations employing at least 50 persons, operating enterprises/organizations that failed to provide data are estimated by algorithm using the previous three periods data or in case of lack of these information the layer average is used.

For self employed the main source is LFS (employed persons aged 15-74). The following categories are included in self employed as specified in ESA 11.15-11.16: private entrepreneur with self employed; private entrepreneur without self employed; assisting family member. LFS captures actual hours.

**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:**

According to LFS and ILS:

- Accounting for holidays and annual leave: by definition hours worked cannot contain this so no adjustment needed
- Accounting for sickness leave: by definition hours worked cannot contain this so no adjustment needed
- Accounting for strikes and temporary lay-offs: by definition hours worked cannot contain this so no adjustment needed
- Accounting for paid but unreported overtime: by definition hours worked include this, as the actual hours worked should be reported thus overtime therefore no further adjustment needed .
- Accounting for unpaid overtime: by definition hours worked include this, so no adjustment needed

**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.**

No adjustments are made for this purpose.

**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?**

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

**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).**



## *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.

LFS is an accurate tool for the measurement of employment with the distinction: If a variable involves an occurrence of 2500 to 4999 persons, the data are to be regarded with caution because due to the high survey error rate they can be incorrect; in case of occurrence of fewer than 2500 persons, the data are not usable. LFS cannot provide an adequate distribution of branches.

**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?

This is the case in the estimation of hours worked for employees, where the main source became ILS since 2010 due to the fact (based on previous examination) LFS systematically overestimates the hours worked. This can be realized in the break of the hours worked time series in year 2010.

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

The difference can be realized in hours worked time series for employees.

### **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 work on it has started with the beginning of the Eurostat task force in this field. Backward estimation has been prepared till 2015Q1. It is still under test version, sent to Eurostat confidentially.

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

The YonY index is inside 0.2 percentage point compared to the t+60 days estimation.

### **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.)?

***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.

***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.

***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.