

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

Country: CYPRUS

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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.

Sources:

For the compilation of employment in persons a variety of sources is used, depending on the timing and availability:

1. The Employment Survey (ES): A quarterly business survey, available at T+65 days after the reference quarter. Persons employed in all NACE activities are included, except those in NACE codes A, T and U. The survey collects information on monthly employment levels for each cell of a matrix determined by: (i) full-time/ part-time (less than 30 hours in the reference week) employment and (ii) status of employment (working proprietors, unpaid family workers, employees). It is noted that working proprietors are included also in cases where they are self-employed and are the only labour force of their enterprise. In addition, the questionnaire collects the number of hours worked by part-time workers, as well as an indication of the normal hours worked by a person in full-time employment.

The sampling frame used is drawn from the Business Register, which contains all enterprises as well as their local units. For the sample selection, a stratified sampling technique is used, with the strata defined by the cross-classification of NACE divisions with size classes. All enterprises employing more than 19,5 employees are included in the Survey, whereas for the other size categories, the sample within each stratum is selected using simple random sample. The sample is changed once a year and its size is about 3300 enterprises, out of a population of 66000 enterprises (NACE activities B-S).

For the case of the public sector and the publicly owned enterprises, the survey provides full coverage. In particular, the monthly employment levels for the Central government are directly obtained from the Government Treasury, while the number of conscripts is provided by the Ministry of Defence once a year. All municipalities and semi-government organizations are directly covered by the Survey.

2. Government Treasury Records: Administrative Records of the Central Government, covering all employees permanent or casual. This is available monthly and refers to persons. These employees are included in the ES results, as explained above
3. The Social Insurance Registry (SIR): The Social Insurance Scheme covers by Law every person gainfully employed in Cyprus, either as an employed person, or as a self-employed person. Data from the Social Insurance Registry is obtained by CYSTAT, on a monthly basis, at the micro detailed level and processed by the Labour Statistics Division of CYSTAT. The classification by NACE activity is originally made by the Social Insurance Department but it is corrected by CYSTAT based on the classification provided by the Business Registry. Employees working in foreign embassies, and in the British Base in Cyprus are excluded from the Dataset for the Domestic Concept of employment. The employment provided refers to the number of persons.

The data is available to Cystat 100 working days after the reference month, since employers are allowed by law, to pay social contributions up to 3 months after the reference month. Final data on the Social Insurance, however, are received by Cystat only every September and refer to the last completed year (T+9months). This is because the legal procedure for the employers that do not fulfill their obligation of paying contributions to SIR, is finalized 9 months after the reference month.

It should be noted that National Accounts further adjust the data in order to make them comparable to the ES. More specifically, the employees in Central and local government are redistributed by NACE based on the distribution used in the ES (instead of being classified entirely in Nace O, which is the initial classification used by the Social Insurance Department).

Note that in order to make SIR more exhaustive, self-employed should be added for some NACE activities, mainly in NACE A, since a portion of them is not registered. In addition, monks and priests are added, since these are not included in the Registry records.

4. Structural Business Statistics/or Annual Economic Surveys: Annual surveys available at T+18 months after the reference year. They include very detailed information related to production, including employment. They cover all NACE activities except codes A, K, O. All enterprises above 20 people are included in the sample, while smaller enterprises are randomly chosen. For all NACE Activities (B-J, L-N, P-S) a sample of approximately 8000 is chosen, approximately 12,5% of the total enterprise population.

Note that, these Surveys do not include government employees thus an adjustment is made by NA, based on the classification of government employees used in the ES.

5. Farm Structure Survey (FSS): This survey aims at collecting information on the structure and typology of agricultural farms, as well as their agricultural activities (NACE A). Among other, the survey collects detailed information on the persons employed and hours worked. FSS in Cyprus is conducted every 3 years as a sample survey and every 10 years as a census. The coverage of the survey is close to 50% of the population. The survey results are available T+18 months after the reference year.
6. Labour Force Survey (LFS): It is a quarterly household sample survey available at T+90 days after the reference quarter. The LFS provides population estimates for the main labour market

characteristics, such as employment, unemployment, inactivity, hours of work, occupation, economic activity and other labour related variables, as well as important socio-demographic characteristics, such as sex, age and education. The survey covers the total population of individuals living in private households only. It does not cover persons residing in collective households (i.e. institutions, homes for the aged, hospitals, monasteries etc.) and conscripts on compulsory military service. The resident population comprises persons who usually reside in Cyprus or intend to stay in Cyprus for at least 12 months. Students who study abroad as well as Cypriots who work abroad are not covered. Foreign armed forces and foreigners who work in embassies or diplomatic missions in Cyprus are also excluded. The sampling is based on household population by age and sex groups. For more information see below:

http://www.mof.gov.cy/mof/cystat/statistics.nsf/labour_31main_en/labour_31main_en?OpenForm&sub=1&sel=3

In NA estimates, LFS results is only used to estimate employment for some groups of the self-employed, which are not registered.

Compilation method for Quarterly Employment at T+65 days:

The following three sources are available at the time namely:

- the Employment Survey (Business survey)
- the Government Treasury employment records (Central Government)
- the provisional Social Insurance Registry (SIR), which is available partially -only for the first month of the reference quarter.

More specifically, the results of the ES by NACE (B-S) is used in both levels and growth rates, comparing the current quarter (i) to the previous quarter and (ii) to the respective quarter of the previous year. In addition, we compare the unweighted results of the enterprises which participate in both quarters (mainly larger enterprises). The unweighted results are used, in order to confirm the trend in employment, by removing possible sampling or weighting error. In cases of contradicting results, the most reasonable is adopted based on other information (e.g change in persons in SIR or other short term indicators). The Government employees are incorporated in the survey results by NACE, by the survey compilers.

SIR (only the first month of the quarter) provides an additional indication of the increase, in cases where this increase is not reflected by the ES. No conclusion can be made in case of a decrease though, because the data in the Registry is provisional at the time, thus a negative change can turn into positive when the data is finalized and all employees are registered.

The previous quarter is also revised upwards based on SIR, in cases where there is such an evidence from the last completed quarter in the Registry (now all three months are available). For example if provisional SIR show a 5%, while the ES (and thus NA) show only 1%, there is an indication of a higher increase not captured by the Survey. Thus, the higher growth rate is applied for the specific NACE. Note that the final number of persons can be even higher, since the SIR is still provisional.

In order to make the SIR records comparable by industry, we use the same NACE classification as the one used in the ES.

For Nace A, the number of employees is compiled using the number of employees registered in SIR plus the quarterly government employees in NACE A, coming from the Government Treasury. For the case of

self-employed in NACE A, the quarterly number is estimated by applying the growth rate of the self-employed in SSF on the annual level of self-employed for the last completed year. The annual level is determined every September (See below).

For Nace T, the only source is the Social Insurance Records. In cases where no data is available on time for the current quarter, this is set equal to the previous completed quarter and revised accordingly when the data becomes available.

Compilation method for March estimates (including Annual employment estimate):

Final data from the SIR, which is available to Cystat each September is incorporated in the next March annual estimate. In case of extreme differences between the current NA data and SIR, the data is partly adopted, until the Annual Economic Surveys become available.

Compilation method for September estimates (including Annual employment estimate):

The results of the Annual Economic Surveys/SBS are compared to the annual employment published for the year T-2. The results of these surveys (NACE B- J and L-S) are fully comparable to production estimates since this is the source used for the finalisation of annual GDP estimates. In case of difference between the Business Surveys and the SIR, the reasons of the differences are investigated (i.e. coverage, misclassification issues).

The annual final employment is then disaggregated to quarters using the the quarterly SIR after being adjusted by NA (Corrections for government classification by NACE and coverage as described above). When year T-2 is revised based on the Annual Economic Surveys, year T-1 and T are also revised accordingly, using the quarterly trend in SIR.

For NACE K and T, the final data in SIR is used. For NACE A, the SIR plus government is used for the employees. For the self-employed the Farm Structure Survey/Census and LFS is used. For the years this is not available, the growth rates in SIR are applied. For the self-employed in NACE C, F, G, the number of self-employed in LFS is also consulted (for those not registered in SIR).

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.

For quarterly employment the main sources used are the ES, the Government treasury administrative records and the Social Insurance Records. At the annual level, the Annual economic surveys (Business surveys) are incorporated.

During major revisions, the Population Census (Every 10 years) and the Labour Force survey are also compared with the NA estimates, after being adjusted to reflect the Domestic concept of employment.

A detailed description of the sources and their use is provided in Question 1.1 above.

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)?

Annual estimates are derived as the average of quarterly data for persons and the sum of quarterly data for hours. Quarterly estimates are derived as the average of monthly data (for persons), when available.

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).

No adjustments needed.

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.

Since Cyprus is an island cross border workers are not so relevant. Furthermore, the ES, the Annual Economic Surveys and the SIR, by definition, cover resident production units. Thus, no adjustments are necessary for the domestic concept of employment. LFS, which covers the National concept of employment is not used.

Data on conscripts and military personnel is collected by the ES compilers. These are also included in SIR.

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.)?

Self-employed in some activities, such as Agriculture, Manufacturing, Construction and Trade are likely not to register, thus an adjustment is made on the SIR records. For these NACE activities, the unregistered self-employed are estimated using FSS and/or LFS.

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.)?

In Cyprus, it is illegal to employ workers below the age threshold and it is not a common practice. Adjustment is made to include monks/nuns and priests which are not currently captured by SIR or the surveys. No adjustment is made for prisoners. Statistical deficiencies are minimized by using/comparing multiple sources.

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 not used as the main source for the following reasons:

- LFS results are available at T+90 days which is far after the deadline for NA quarterly estimates.
- Large quarterly fluctuations may be observed, even in NACE activities without seasonality. This is perhaps more obvious for smaller countries like Cyprus. The sampling error is quite big, especially for the classification by NACE activity. This is perhaps due to the fact that the sampling and weighting procedure does not ensure good sampling coverage by economic activity or by employment status, as it is the case with the business surveys.
- LFS is grossed up using household population estimates. Thus, any possible weakness in the population estimates might be reflected in LFS, for the years that no Population Census is conducted. After the Last Population Census in Cyprus (2011), it was evident that population estimates were underestimated due to weak migration statistics. As a result, when population was revised, the LFS results were also revised upwards for the years 2009-2014.
- The self-classification of each person into a NACE activity or status depends on his/her perception and not the official definition/guidelines, as it is the case for business surveys.
- LFS employment refers to the National concept, while the remaining sources refer to the Domestic concept, which is in line with the production estimates.

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 main source for the calculation of actual hours worked is the Labour Cost Survey (LCS), which is contacted every four years in accordance with EU regulation 1726/1999. LCS covers enterprises of ten or more employees and covers NACE Rev. 2 sections B to S. The sampling frame for the selection of the sample is the Business Register. The sample selection procedure takes place separately for each of the four categories: the private sector, the semi-governmental organisations, the municipalities and the Central Government. Concerning the first three categories, the population of enterprises are first stratified by NACE.Rev.2 two digits divisions and within each NACE division, by employment size class i.e. 10-49, 50-249, 250-499, 500-999 and 1000+. The hours worked derived, are the actual hours reported by the enterprises for the reference year. A detailed analysis is carried out starting from normal hours of work, deducting actual hours not worked (any absences whether paid or not (annual leave, sick leave, maternity leave, educational leave, army leave, any other absences, days off due to shift work or overtime, public holidays) and adding overtime (actual hours worked).

In order to derive hours worked, we use the average hours worked per week by economic activity from the LCS (different value for each quarter) multiplied by the number of persons employed in each activity as derived by the National Accounts and then multiplied by 13 in order to produce the quarterly figure. For the years that no LCS exists, the average hours worked per week are modified only if normal hours worked change (coming from the quarterly ES), or by using other qualitative information if available (e.g. long strikes at specific industries). The last LCS used refers to 2012.

For hours worked by the self-employed, we use the average weekly hours worked provided by the Labour Statistics Department multiplied by 13 times the number of self-employed in NA. Hours for persons that have a second job, as self employed for NACE A are also added, using direct information from the FSS.

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.

The main source is the Labour cost survey and captures actual hours worked. See Question 2.1 above.

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

All of the above have been taken into account in the Labour Cost Survey.

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.

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?

The number of hours assumed for the unregistered is set equal to the number of hours worked for those observed/registered in the same NACE category and employment status.

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

Hours worked as a second job in the agriculture sector are added, using information from the FSS. In addition, hours worked by professors and teachers that give private lessons in the afternoon are also taken into account.

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.

Please see the answer is question 1.8.

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?

No.

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

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?

It is not possible to produce flash estimates for employment, since no sources are available at t+30 or t+45. There are no plans for earlier estimates in the immediate future.

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

Not applicable.

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.)?

We currently investigate the coverage of employment on multinational companies, that are perhaps not registered in the SIR and hence, not captured by any survey.

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.

No.

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.

No.

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.

We currently work on various improvements, which will be incorporated in the data in the major revision in 2019. More specifically,

- With cooperation with the Social Insurance Services, we manage to obtain on a regular basis actual data for some specific categories of employees (e.g. priests), that are currently included as estimates.
- Any results on the work of the employment of multinationals are also expected to be incorporated. Based on our initial indications, this is more likely to result in a revision of the National concept of employment.
- Re- examine the use of hours worked from alternative sources if time permits (LFS, Annual Economic Surveys, other).

In addition, an update of the surveys for the year 2016 will also be incorporated in the next revision:

- Incorporation of the results of the FSS 2016, which might result in revisions for NACE A for the years 2014- today.
- Incorporation of the Labour Cost Survey 2016, which might result in revisions for hours worked for the years 2013- today.