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

Country: Portugal
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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.**

The methodology for the calculation of employment in the Portuguese National Accounts (Base 2011) is based on the comparison of statistical data from supply and demand of labour. We privilege the information of Labour Force Survey (LFS) – approach of the labour supply - as source of reference for the total of employment in the economy.

The Labour Force Survey having been calibrated based on population estimates, wich, in turn reflect the results of the Population and housing census 2011, and adjusted to the concept of domestic employment (an ESA 2010 concept, in accordance with §11.17-§11.19).

This statistical source is assumed to cover the following situations: Observed employment, Non-observed employment, Households producing for own final consumption, and to fill any gaps in coverage from the statistical sources on demand side.

This survey is crucial in calculating employment in the national accounts and for the exhaustiveness process.

The main assumptions and procedures are as fallow:

- The employment underlying the Labour force survey is assumed to be the total employment of the economy (in number of persons), which includes observed and non-observed employment.

- The employment recorded in the demand sources constitutes the minimum threshold of employment, by industry and/or sector;

- The differential (if positive) between the employment obtained via the Labour Force survey and that recorded in the demand sources will be classified as an 'adjustment' which captures the non-observed economy. A value of output, IC, GVA and compensation of employees is imputed to this 'adjustment' (measured in full-time equivalents) which reflects the contribution of this component of the 'non-observed economy' to the exhaustiveness of economic activity (GDP).

The following processes are applied to get the employment vector for the total economy, measured in jobs:

Demand > Supply
In those activities where the value of employment declared in the demand sources is higher than that recorded in the supply sources (Labour force survey), 'observed employment' is guaranteed.

Supply > Demand
In activities where there is traditionally a higher incidence of 'non-observed' employment (e.g., construction, trade, catering, personal services, etc.), the values recorded by the Labour force survey are higher than the employment declared in the demand sources and the LFS is used.

In the other cases, and in order to guarantee the overall value provided by the Labour force survey, the existing differential was arbitraged, or redistributed, by economic activity on the basis of certain criteria:

- Assuming the result indicated by the Labour force survey for aggregated levels of the CAE (2 digits). Distribution of the differential (supply less demand) according to the structure (3 digits) existing in the 'observed' sources (for example, the businesses' database);
- Analysis of the economic information from a production chain approach, weighting the allocation of employment and other variables throughout the activity process;
- Evaluation of any classification errors in the economic activity by individuals in cases of 'similar' economic activities.

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.

As mentioned in previous paragraph, the main source is LFS. This source is considered representative of the total employment in the economy after some corrections and adjustments to align it to ESA 2010 concepts.

LFS measures employment in persons. However, we can have an indicator of jobs by adding the persons in main activity and the jobs in secondary activity.

With regard to demand for labour, it is worth highlighting the Simplified Bussiness Information (SBI), which provides elements for non-financial corporations (S.11) and financial corporations (S.12). Administrative sources and specific surveys covering the sectors of general government (S.13) and non-profit institutions serving households (NPISH) (S.15).

The general government (S.13) and financial corporations (S.12) sectors are to be exhaustive, i.e. originating from exhaustive statistical information sources. Several additional statistical sources were also

used, namely the single report and industry statistics, among others.

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 annual estimates are calculated as average of the quarterly estimates. The other (regular) sources, namely SBI, asks specifically for annual averages.

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).**

As mentioned before, LFS is our "original" source and their main concept is in persons, allowing us to derive jobs, and not the opposite (jobs to persons). However, we use also LFS as main source to compute jobs, adding jobs in secondary activity to the persons in main activity. When LFS is complemented by other sources measuring jobs (e.g. SBI), a ratio jobs/persons from LFS is used for the conversion.

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 procedures adopted to transform from national concept (as in LFS) to the domestic concept, as in ESA 2010 §11.17 to 11.19 have been applied to the LFS results. LFS, as stated above, is the reference employment source for the total economy.

Specifically:
- The adjustments done to correct the coverage of LFS sources to the concept of territory is based mainly in 3 independent sources: administrative (Public Administration) data; LFS itself and Census. The first source is crutial to correct military, embassies, international organizations and "similares"; The LFS and census are used to correct the cross-border and seasonal workers. Irregularly we share information with Spain.

  Also persons living permanently in an institution (i.e., collective household) are added to LFS results, i.e. in the domestic employment, as far as they are included in the Population Census 2011 used to gross up LFS sample results.

See in more detail the answer to the Bridgetable.

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.)?**

As stated above (see answer question 1.1), national accounts assume that employment LFS, corrected for the domestic concept, measures employment in Portugal exhaustively. The "additional jobs" are converted

in FTE, and it is imputed output, intermediate consumption, GVA and compensation of employees. The amounts imputed are based on ratios from "small units" obtained in the SBI.

The calculation of the employment vector measured in FTE (via the Labour force survey) results from the conversion of jobs into units of work (full-time) by applying the ratio between the number of actual hours declared by individuals (including overtime), both full-time and part-time, and the number of hours actually worked by full-time employees, for each industry and according to employment status (employes or self-employed).

The full-time equivalent results from the sum of units of work in full-time main activity, plus the fractions of units of work associated with working in part-time main activity or secondary activity.

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 made the following adjustments in LFS:

- Employment related with production of goods for own final use;
- Employment related to illegal activities;

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?**

See previous paragraphs.

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 methodology adopted by the National Accounts explores two methods: the "Components approach" method, to compute hours worked in the observed employment; and the "Direct or Averaging approach" for observed employment and to compute hours worked in the industries with significant weight of non-observed employment and industries with low coverage of labor demand sources.

However, national accounts basically use the Direct or Averaging approach.

Briefly, the Component Approach adjusted the "working time legal" for the holidays, sickness or maternity / paternity leave, overtime. This method is applied to the statistical source "Personnel Tables" of the Ministry of Employment and Social Solidarity.

The Direct or Averaging approach uses the average weekly actual worked (Duração Efetiva Média Semanal = DEMS), as is the case of the LFS, and assumes that the reference period is representative of the entire annual period. Thus, the total annual actual hours is obtained by multiplying the number of actual weekly hours by the number of weeks of the year.

We follow mainly the DEMS. The preference for using the average of actual worked hours instead of the total number of actual worked hours, allows comparability between sources from demand side and supply side. Of course, the use of multiple sources for employment do not allow us to use directly the amount of hours worked done by the sources.

The reference sources are:

• Simplified Business Information (SBI)

The concept associated with the survey is hours actually worked, which provides the elements for non-financial corporations (S.11) and financial corporations (S.12).

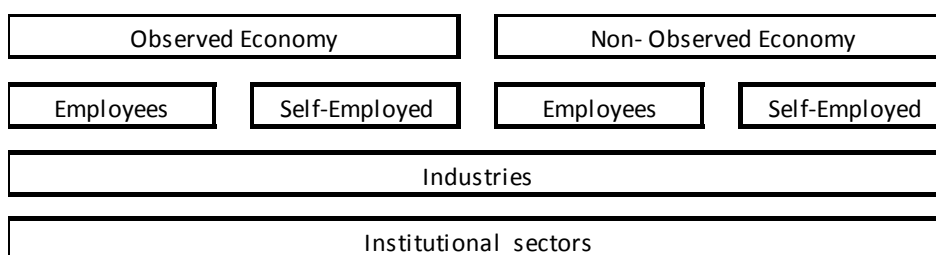We choose to apply the average weekly actual worked of this source to the observed employment.

• Labour Force Survey (Supply side) (LFS)

Provides information for average weekly actual worked. This source is very important mainly for activities with predominance of Non-observed Employment or with significant weight of Self-employed Workers (such as the primary Sector, construction, Accommodation and and food service activities, wholesale and retail trade, other Services), or the Household sector.

• Personnel Tables (PT)

Provides information for "paid hours" every October. We apply the method of the components to this source. It is assumed as a reference for Observed employment and for the Public Administration sector (S.13).

The "Working Hours" vector was constructed likely the Employment (employees), which guarantees the coherence of the results.

Observed Economy		Non- Observed Economy	
Employees	Self-Employed	Employees	Self-Employed
Industries			
Institutional sectors			

We illustrate our main options for the DMES in the base year

	Observed Economy		Non-Observed Economy	
	Employees	Self-employed	Employees	Self-employed
primary sector	SBI / LFS	LFS	LFS	LFS
Industry	SBI	SBI / LFS	SBI	SBI / LFS
construction	LFS	LFS	LFS	LFS
Trade and Accom&Food Serv	LFS	LFS	LFS	LFS
Other Services	SBI / LFS / PT	SBI / LFS / PT	SBI / LFS	SBI / LFS

After obtain the DEMS, the total level of hours actually worked is obtained as follows:

> average weekly actual worked (DEMS) x 52,14 weeks x Jobs (NA)

Note: Leap years, multiplied by 52.28 weeks

The results are compared to a set of indicators that allow us to evaluate the consistency of the data, namely:

• productivity measured in Hours and ETC, by industries and institutional sector;

• DEMS and respective variation obtained for National Accounts and the original sources;

• Variation of Hours and ETC by employee and self-employed

• DEMS associated to each employment vector: Jobs, ETC and Individuals;

• Average Hourly Compensation.

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.

See answer 2.1.

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

See answer 2.1.

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.**

See answer 2.1.

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?**

See answer 2.1.

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

See answer 2.1.

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).**

See answer 2.1.

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.**

See previous paragraphs.

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?**

year: 2015

	Numbers of Hours			DEMS		
	Total	Employees	Self-employed	Total	Employees	Self-employed
1. National Accounts	8 579 294 312	7 251 454 247	1 327 840 065	36,0	35,9	36,4
2. Labour Force Survey	7 827 459 540	6 451 757 520	1 375 702 020	35,0	34,9	35,3
1. minus 2.	*751 834 772*	*799 696 727*	*- 47 861 955*			

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

See answer 2.1.

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?**

Eurostat is currently studying the possibility of producing quarterly flash estimates at t+30 days or t+45 days for the variable Total Employment in Persons for the EA and the EU. For this purpose, a Working Group was created in February 2017. Even though Portugal is not a member of this WG, it is committed to provide its national estimates in order to be included in the feasibility study. These estimates are not yet published by Statistics Portugal.

At t+30 days, quarterly national accounts total employment estimates are largely based in the monthly estimates provided by the Labour Force Survey (LFS). As the minor adjustments usually made to pass from LFS to NA concept are unavailable at a monthly base, those are forecasted using the information of the last quarters through moving average techniques.

At t+45 days, the complete set of information from the quarterly LFS needed to estimate the NA employment is available. Therefore, the usual methods are applied.

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

As shown in the table below, the accuracy of Portuguese Flash estimates for employment is high, with small revisions in terms of growth rates.

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Total Employment estimates
Quality assessment
2015 Q1 - 2017 Q4 (12 observations)

	Y-o-Y growth revisions (raw data)		Q-o-Q growth revisions (seasonally adjusted data)	
	t+45d vs. t+30d	t+60d vs. t+45d	t+45d vs. t+30d	t+60d vs. t+45d
Average (p.p)	0.01	0.00	0.01	0.00
Absolute revision (p.p)	0.16	0.00	0.16	0.00
Upward revisions	7	0	7	0
Downward revisions	5	0	5	0

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.).**

Since few months ago, we have access to the Montly Social Security data that will be integrated in the set of sources, when the ongoing process of data analysis are finished.

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.**

See answer 1.6

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, we don't. We just publish global ratios for labour productivity at aggregated level. Nevertheless in INE website there is data on GVA and employment, both A38, allowing to comput the labour productivity by A38.

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