

ESS-cooperation on Employment Flash Estimates

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Abstract

Following the successful introduction of EU and euro area GDP flash estimates after t+30 days in April 2016, Eurostat and national statistical institutes (NSIs) are cooperating on a new project: the estimation of EU and euro area employment flash estimates in national accounts, which could be published at t+45 or t+30 days. A task force has been set up in 2017 to work on test estimates and quality criteria to decide on the feasibility of such estimates. The task force allows NSIs to share their experience on the use of available source data as well as estimation techniques. These are documented in a manual to provide methodological guidance to NSIs and information to users. While the estimation of European aggregates is obtained as a weighted average of countries' growth rates, econometric techniques were explored to complement for missing country data and/or to address a systematic bias in the estimates reflecting countries' revisions. Following the first test estimates, country coverage and results look promising for a t+45 flash estimate. Estimates at t+30 are more challenging, since countries generally need to use modelling techniques to estimate missing data for the last month. Based on live estimates and back estimates and on quality criteria combining minimum country coverage and reliability of the estimate, the task force recommends starting official publication. The work of the task force is an appreciated opportunity to share experience between NSIs and a good example of cooperation within the ESS to improve the availability of high quality statistics for users.

Keywords: Employment early estimates, Task force, EU and euro area aggregates

1. Background

The first t+75 employment news release was published on 14 March 2007. In 2018, Eurostat's quarterly employment estimates for the euro area and the EU in the framework of national accounts is still estimated at 75 days after the quarter-end.

As acknowledged in the 2015 Economic and Financial Committee's status report on information requirements in EMU¹ 'the national accounts based employment indicator still remains well behind the target for timeliness'. For that reason and based on the fact that users request more timely information, Eurostat, supported by a task force, has been investigating whether producing an euro area and EU employment flash estimate at 30 or 45 days after the quarter-end would be feasible.

The successful previous introduction of the t+30 GDP flash estimates in 2016Q1 was an encouraging experience for this new project.

The first step was to get a more comprehensive picture on what employment data were already available at 45 days after the quarter-end (or earlier). For that purpose Eurostat launched the questionnaire on the availability of 'quarterly employment data within 45 days after the quarter-end'.

Considering the questionnaire results and the possible consequences for additional resources, it was decided – after consultation of the National Statistical Institutes – to focus the feasibility study on the variable **total employment in persons**, without any breakdowns.

2. A task force to carry out the feasibility study

In November 2016, the National Accounts Working Group established a task force with the following mandate:

1. exchange of knowledge between Member States and Eurostat on estimation methods and estimation practices regarding employment flash estimates;
2. preparation of real-time and retrospective national test estimates;
3. preparation of a methodology for producing euro area and EU employment flash estimates;
4. preparation of real-time and retrospective test estimates for the euro area and the EU;
5. preparation of quality criteria to assess the test estimates for the euro area and the EU;

¹ Economic and Monetary Union

6. preparation and assessment of the results of the feasibility study in an evaluation report.

13 Member States participate in this task force: Austria, Belgium, Croatia, Czech Republic, Denmark, France, Germany, Hungary, Italy, Lithuania, Slovakia, Spain and United Kingdom. In addition, **eight more countries** contributed to part of the work by providing test estimates: Bulgaria, Estonia, Luxembourg, Netherlands, Poland, Portugal, Slovenia and Finland.

Three meetings were held from March 2017 to March 2018 and enable Member States to share their experience on the use of available source data as well as estimation methodologies.

3. Outputs of the task force

1. 21 Member States provided with t+45 estimates from 2015Q1 to 2017Q4 (back estimates for 2015 and 2016)
2. Around 10 Member States provided with t+30 estimates from 2015Q1 to 2017Q4
3. A compilation methodology for European aggregates including quality acceptance criteria was defined and agreed
4. Discussion and exchanges on national methodologies during the meetings
5. A guidance document for national estimation techniques coordinated by Germany and Austria
6. Around 10 Member States have so far produced a description of their methodology on employment estimates: source, variables, estimation process, modelling, results, publication, revisions...(annex of the guidance document)
7. A methodological document on European employment aggregates by Eurostat

4. Description of the compilation methodology for European aggregates

The methodology and compilation process that is described below is valid for both the employment estimation at 30 and 45 days after the quarter-end. The compilation

process for producing the employment flash estimates for the euro area and the EU can be described in four steps:

1. A group of Member States send their quarter-on-quarter seasonally and calendar-adjusted employment growth estimates and their year-on-year unadjusted employment growth rates at least one working day before the agreed publication day (in the testing stage: mock publication date) to Eurostat. This group includes Member States that already publish their estimates nationally and Member States that send confidential estimates to Eurostat.

Regarding the t+45 test estimates, from 14 to 21 Member States sent their data depending the quarter. Regarding the t+30 test estimates, these numbers are far below (7 to 10 Member States).

2. Optional: preparation of estimates for missing countries. This step is elaborated below.

3. Eurostat aggregates the countries' quarter-on-quarter and year-on-year growth rates using the weights of their respective annual data for total employment in persons to produce aggregate growth rates for the euro area and the EU. For this purpose annual data of year y-2 are used for the first and the second quarter, and annual data of year t-1 for the third and the fourth quarter.

4. The resulting growth rates for the euro area and the EU are used to calculate the corresponding level data. Euro area and EU growth rates can be published in a news release; growth rates and level data can be disseminated in the Eurostat data base. If Member States publish their employment flash estimates nationally, these data can also be made available in the Eurostat data base.

Three methods were investigated to estimate missing countries:

- 1st method: All missing countries are estimated by the average of the non-missing countries
- 2nd method: If a large country is missing, it is estimated by modelling if the model is sufficiently reliable
- 3rd method: Large countries are estimated by modelling and the others by making use of available Labour Force Survey (LFS) as a proxy. This latter

source is only possible if data are available at t+30 / t+45 (for around 10 countries)

Test estimates for the euro area and the EU were produced for 12 quarters: 2015Q1-2017Q4. Of these, the data for 2015-2016 quarters are produced on a retrospective basis and the 2017 quarters are real-time estimations. Euro area and EU test estimates were produced for the seasonally and calendar adjusted quarter-on-quarter growth rates of the variable employment in persons, as well as for the unadjusted year-on-year growth rates.

The test estimates were produced both at 30 days and at 45 days after the end of the reference quarter.

5. Quality acceptance criteria

In order to assess whether the compiled European aggregates at 45 days after the end of the reference quarter are of an acceptable quality, it was necessary to set criteria that the results of the test estimates would need to fulfil.

The set of criteria combines the criteria used for the GDP t+30 and comparison of the first regular quarterly estimate at 75 days after the quarter-end with the next regular transmission at t+165 days.

5.1. Limited average revision

The employment flash estimate should be an unbiased estimate of the t+75 estimate of employment in persons, with an average revision between -0.05 and +0.05 percentage points.

5.2. Limited average absolute revision

The average absolute revision made to the t+45 estimates of the quarterly euro area and EU employment growth rates should be less than or equal to 0.10 percentage points when the regular t+75 employment estimate is published.

5.3. Sufficient coverage

The four most recent test quarters should fulfil the criterion that the input of Member States' national estimation of employment in persons covers at least 75% of the euro area and EU totals.

5.4. Availability communication plan

A communication plan (and related documents) must be available well before the start of the official release of the euro area and EU employment estimates. It should include the following actions:

Announcement of the launch of the new employment flash estimations in the employment news release preceding the introduction of the employment flash release

Informing the main users about the introduction of the national accounts employment flash release via the Eurostat press office

Publication of all methodological documents and an article on Eurostat website

Validation of the schedule for transmission and release dates

6. Results of test estimates and assessment against quality acceptance criteria

Table 1 shows the key results of the three t+45 quarter-on-quarter estimations for the euro area and the EU and their assessment against the predefined quality acceptance criteria.

Table 1. Assessment of t+45 employment test estimates for EU and EA against quality acceptance criteria (Revisions to growth rates, percentage points; coverage of national employment data as percentage of euro area and EU total employment)

	Euro area, revisions at t+75 days			Quality acceptance criteria	EU, revisions at t+75 days		
	T+45 transmission	T+45 trans. + model	T+45 trans. + model + LFS		T+45 transmission	T+45 trans. + model	T+45 trans. + model + LFS
2015Q1	-0.1	-0.1	-0.1		-0.1	0.0	0.0
2015Q2	0.0	0.0	0.0		0.0	0.0	0.0
2015Q3	0.0	0.0	0.0		0.1	0.1	0.1
2015Q4	-0.1	0.0	0.0		-0.4	-0.3	-0.3
2016Q1	-0.1	0.0	0.0		-0.1	0.0	0.0
2016Q2	0.0	0.0	0.1		-0.1	-0.1	-0.1
2016Q3	-0.1	0.0	0.0		0.0	0.0	0.0
2016Q4	0.0	0.0	0.0		-0.1	-0.1	-0.1
2017Q1	-0.1	0.0	0.0		-0.1	0.0	-0.1
2017Q2	0.0	0.0	0.0		-0.1	0.0	0.0
2017Q3	0.0	0.0	0.0		0.0	0.0	0.0
2017Q4	0.0	0.0	0.0		-0.1	-0.1	-0.1
Average revision all quarters excl. EU 2015Q4	-0.03	0.00	0.00	-0.05 - 0.05	-0.03	-0.01	-0.01
Average absolute revision all quarters excl. EU 2015Q4	0.03	0.02	0.02	=<0.10	0.04	0.03	0.03
Root mean squared error all quarters excl. EU 2015Q4	0.04	0.03	0.03		0.05	0.03	0.03
Coverage latest 4 quarters:				=>75			
2017Q1	72	90	93		66	79	83
2017Q2	77	95	95		78	90	92
2017Q3	93	93	93		90	90	92
2017Q4	95	95	95		91	91	93

Source: Eurostat calculations

The columns 'T+45 transmission' refer to the 1st method for estimating missing countries. See page 3.

The columns 'T+45 trans. + model' refer to the 2nd method and the columns 'T+45 trans.+ model+ LFS' refer to the 3rd method.

The t+45 euro area and EU employment estimates according to the first method are slightly upward biased, leading to negative revisions. The bias is mainly related to the fact that in the estimation according to the first method one large country is missing and this country had growth rates that were systematically different from the euro area average.

With the exception of quarter 2015Q4 for the EU, the revisions of the t+45 test estimates for all three sets of test quarters are in between -0.1 and 0.1 percentage points. The exceptional revisions for 2015Q4 can fully be explained by the fact that the t+75 transmission of an EU Member State contained a reporting error that was only corrected after its transmission and publication.

Comparing the test results with the predefined assessment criteria leads to the conclusion that the criteria regarding the average revision and average absolute revision are easily met for all three sets of estimations. Therefore **the test estimations are considered by the Task Force to be of (very) good quality.**

The transmitted national test estimates represent slightly less than the 75% threshold of the euro area and EU total employment for 2017Q1. However, as the transmission for this quarter was requested very soon after the start of the project, several countries were not yet ready for this first transmission. Coverage percentages for quarters 2017Q2 and even more 2017Q3 and 2017Q4 are considered to be more representative for a 'real publication situation'.

The same tests were performed at t+30 with similar outcomes except for the coverage which remains far below the 75%: regarding the euro area, the maximal coverage was 66% and for the EU, 45%.

Tests were also carried out for the EU excluding UK. Outcomes are close to EU's ones with coverage slightly lower but still equal or higher than 75% for the last 3 quarters of 2017.

7. Conclusions

- The task force achieves very good results towards its objectives regarding the feasibility study on an euro area and EU employment flash estimate at 45/30 days after the quarter-end.
- The European t+45 quarter-on-quarter test estimates show very limited revisions and the coverage criterion is almost fully met (2017Q1 was slightly below the coverage threshold). The estimates are considered to be reliable and of good quality. The same conclusion can be drawn if excluding UK from the EU estimates.
- Of the three employed methods, the second estimation method (taking into account the transmitted national data of Member States as well as a model estimate for one missing large country) performed best. As the missing large country started to transmit its national estimates as of quarter 2017Q3, the second method coincides with the first method (fully based on the received Member States transmissions) for 2017Q3 and 2017Q4. Therefore, if an official release will be started, the estimation can be done according to this first method, using only data transmitted by the Member States.
- No quality acceptance criteria were defined for the t+45 year-on-year European test estimates. However, the same criteria were calculated for this indicator and revisions for the 12 quarters are also very low (average revisions and absolute average revisions are limited). Therefore the conclusion is that the year-on-year test estimates are also of good quality.
- The revisions of the European t+30 quarter-on-quarter and year-on-year test estimates showed relatively limited revisions. However, coverage of the euro area and EU total employment by Member States' national data remains quite far below the predefined coverage assessment criterion: between 48% and 66% for the euro area and between 32 to 46% for the EU.

Based on the conclusions above, the task force considers feasible starting official publication of the t+45 seasonally adjusted quarter-on-quarter and unadjusted year-on-year euro area and EU growth rates soon, for example as of 2018Q3 or of 2018Q4. However, Eurostat's decision on publication will be taken only after the ongoing consultations of expert fora are completed.

Besides, the testing of the t+30 flash estimates from Member States would continue for the 2018 quarters.