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WORKSHOP ON LABOUR COST STATISTICS

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Topic 4

Extending the data collection of the Labour Cost Index

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Summary: *the main objective of this document is to ensure a higher level of quality of the Labour Cost Index by proposing the sharing of the underlying data between the National Statistical Institutes and Eurostat through the extension of the Labour Cost Index data collection.*

I. LABOUR COST INDEX- BACKGROUND

1.1 State of play

Since the LCI regulation was approved in 2003, the Commission has reported to the European Parliament and the Council on the implementation of this regulation¹ on a regular basis. In the latest 2 yearly report, the **increasing relevance** of this indicator is highlighted.

Changes in labour costs per hour worked are a significant indicator for the analysis of short- and medium-term economic developments. The Commission and the European Central Bank rely on its prompt calculation to assess possible inflationary pressure due to developments in the labour market.

The labour cost index is also important for the social partners in wage negotiations and for the Commission itself in monitoring short-term developments in labour costs. It is also one of the Principal European Economic Indicators (PEEI). In addition, there is a growing interest in information on labour costs in absolute terms (euros/national currency per hour)².

On the other hand, the report analyses the quality of the LCI in terms of accuracy, timeliness and punctuality, accessibility and clarity, comparability, coherence and completeness. In particular, the report emphasizes the relevant improvements in timeliness and completeness during the last two years. In 2014Q3, almost all Member States delivered all three series (non-seasonally adjusted, working-day adjusted and seasonally adjusted) by the legal deadline and for the first time since 2012Q3, all countries were included in that Eurostat's news release.

Although punctuality and completeness remain of the utmost importance, more efforts are still needed to improve further the quality of labour costs statistics, such as coherence with national accounts and consistency.

1.2 Definition and calculation

Regulation 1216/2003³ defines the labour cost index (LCI) as the Laspeyres index of labour costs per hour worked, chain linked annually and based upon a fixed structure of economic activity at NACE Rev. 2 section level.

¹ Regulation (EC) No 450/2003 of the European Parliament and of the Council

² Since April 2012, Eurostat publishes annual hourly labour costs in euro and national currencies.

³ Regulation (EC) No 1216/2003 of 7 July 2003 implementing Regulation (EC) No 450/2003 of the European Parliament and of the Council concerning the labour cost index

The LCI is calculated using the following Laspeyres chain index formula for combinations of NACE Rev. 2 sections

The basic Laspeyres formula to be used to calculate the LCI for quarter t in year j, with base year k is defined as:

$$LCI_{tj(k)} = \frac{\sum_i (w_i^j / \omega_i^k) W_i^k}{\sum_i W_i^k}$$

where $1 \leq t \leq 4$.

w_i^j = labour costs per hour worked of employees in NACE Rev. 2 section i in quarter t in year j

ω_i^k = labour costs per hour worked of employees in NACE Rev. 2 section i in year k

h_i^k = hours worked by employees in NACE Rev. 2 section i in year k

$W_i^k = \omega_i^k * h_i^k$ = labour costs of employees in NACE Rev. 2 section i in year k.

The weights used to calculate the index are defined as:

$$\frac{W_i^k}{\sum_i W_i^k}$$

This means that the LCI can be calculated entirely on the basis of both the quarterly labour costs and quarterly number of hours worked by NACE Rev.2 section.

However, in the current EU legislation, Member States are only required to deliver the (chained) quarterly labour cost indices together with the annual weights.

1.3 LCI data requirements

Regulation 450/2003 specifies that countries should deliver:

The labour cost index "(...) (art.4) *broken down by economic activities defined by NACE Rev. 2 sections (...). Labour cost indices shall be provided separately for the three labour cost categories identified below:*

(a) *total labour costs;*

(b) *wages and salaries, (D.11) (...)*

(c) employers' social contributions plus taxes paid by the employer less subsidies received by the employer, (D.12 +D.4 - D.5) (...)

2. An index estimating total labour costs (per hour worked), excluding bonuses (D.11112) (...) shall be provided, broken down by economic activities and shall be based on the NACE Rev. 2 classification (...) In addition, as indicated by article 6, the weights used to calculate the index (...) shall be made available for publication at the same time.

As mentioned in article 1.2. of Regulation 1216/2003, "the index series shall (also) be delivered in the following forms:

(a) unadjusted;

(b) working-day adjusted;

(c) seasonally and working-day adjusted".

This paper will focus on three **quality concerns**: inconsistency between the growth rate of the total and the component, the erratic movement of the series and the uncertainty of the evolution of the underlying components of the labour cost index: the number of hours worked and the total labour costs. It will propose possible solutions by extending the data collected for the LCI to include the number of hours worked. Coherence with national accounts and labour cost surveys will not be addressed in this paper as it is discussed in other documents of this workshop.

II. QUALITY CONCERNS ON THE LABOUR COST INDEX

2.1 Inconsistency between the growth rate of the total and the components of the labour cost index

Eurostat regularly finds inconsistencies between the growth rate of the total (TOT) and the components of the labour cost index (WAG, OTH) during the quarterly quality checks of the national data .Inconsistency means that the growth rate of the total is not in between the growth rate of the components:

Either $TOT < OTH$ and $TOT < WAG$

or $TOT > OTH$ and $TOT > WAG$

Between the third quarter of 2013 and the third quarter of 2014 delivery, there have been inconsistencies in 21 countries (including Norway and Turkey) in at least one of the non-seasonally adjusted (NSA), working day adjusted (WDA) or seasonally adjusted (SA) series.

In particular, in the third quarter of 2014 delivery, we have found the following inconsistencies from 2013Q3 to 2014Q3 (see table 1). In addition, there were other inconsistencies reported by these/other countries referring to previous periods.

The need of achieving consistency was already raised in the October 2014 LAMAS. The most critical cases are where the non-seasonally adjusted series are not consistent. This is highlighting that there is an issue in the underlying data.

However, the LAMAS report focused on the working-day adjusted figures as they are highly visible being the headline figures in Eurostat's news release. Consequently, Eurostat introduced a policy of publishing only the total index, i.e. hiding the components, if the annual change of the total is more than 2 basis points (0.2 percentage points) outside the interval of (changes in) the components.

Table 1. Inconsistencies between the growth rate of the total and the components of the labour cost index for the main NACE aggregates from 2013Q3 to 2014Q3

2014q3	NSA	WDA	SA
Austria	-	-	-
Belgium	-	-	-
Bulgaria	-	-	-
Croatia	-	nd	Nd
Cyprus	-	-	-
Czech Republic	-	BS, BN, BE, F*, GN, OS,	BS, BN, BE, F, OS
Denmark	-	-	-
Estonia	-	-	-
Finland	-	-	BE, GN
France	-	-	-
Germany	-	-	-
Greece	BS, F	BS*, BN, BE*, F, OS	BN, BE, F, GN, OS
Hungary	-	BS, BN*, GN*	F
Ireland	-	-	-
Italy	-	-	-
Latvia	-	-	-
Lithuania	-	-	-
Luxembourg	F, OS	BS, BN, BE, F	F, OS
Malta	-	-	-
The Netherlands	GN	GN*	GN
Poland	-	-	-
Portugal	-	-	-
Romania	-	-	-
Slovenia	-	-	F
Slovakia	-	F	BS, BN, F
Spain	-	-	-
Sweden	-	-	-
United Kingdom	-	-	-
Turkey	-	-	BE
Norway	-	-	-

nd: no data *No publishable in the news release (beyond 0.2 percentage points)

In the latest news releases, such cases were detected for Hungary (aggregates B-N and G-N, 2014Q3), the Netherlands (aggregate G to N, 2014Q3), Greece (aggregate B to S, 2013Q3). For Greece (aggregate B-S and F section in 2014Q3), the WDA series were deemed too inconsistent and/or having too large adjustment coefficients to be accepted for the News Release, therefore, the NSA

was used. These data are however available in the online database and the underlying problem of inconsistency remains unsolved.

Finally, there seems to be a problem of inconsistency in the seasonal adjusted series in other countries; however, this is impacted by the choice of method for seasonal adjustment (direct vs indirect method).

Having the underlying data would have allowed us to better identify where these inconsistencies come from.

2.2 Erratic movement of the series

We often observe big jumps or an unexpected evolution of the series (e.g. increase in the labour costs in a sector particularly hit by the crisis). For instance, in Greece for F section, (-6.4% in Q3-2013, -21% in Q4-2013, -3.6% in Q1-2014, -0.2% in Q2-2014 and 9.8% in Q3-2014)) or Portugal for B-N sections (-1.6% in Q1-2001, 1.3% in Q2-2013, -1.5% in Q3-2013 and -5.2% in Q4-2013).

However, these are not an exceptional cases Having the underlying data would have allowed us to analyse the evolution of the series and to give an indication to our users of the direction of the change of the labour costs and hour worked.

However, there is no current obligation for delivering to Eurostat the underlying data used to compile these indices (i.e. value of hours worked and total labour costs separately).

2.3 Uncertainty on the evolution of hours worked and total labour costs

The LCI sent by countries is the final product after a production process⁴ that can be simplified for the sake of clarity as follows:

1. Collecting the micro data for the total labour costs and hours worked by NACE Rev.2 Section through different data sources (administrative and survey data, imputation)
2. Aggregating the total labour costs and hours worked by NACE Rev.2 Section
3. Calculating the ratio of the total labour costs divided by the hours worked by NACE Rev.2 Section.
4. For working-day adjusted and seasonally adjusted figures, adjust the ratio of the labour costs per hours worked. (Ideally, otherwise after step 5)
5. Calculate the (Laspeyres) index of the total labour costs per hours worked $\frac{w^{tj}}{\omega^k}$ for each NACE Rev.2 section
6. Calculating the Laspeyres index of labour costs per hour worked, chain linked annually and based upon a fixed structure of economic activity at NACE Rev. 2 section level

⁴ It should be noted that none of these steps are specifically mentioned in the LCI regulation

However, Eurostat only receives the final product (indices in steps 5 and 6), without the results of the previous steps: there is a black box with the information on the previous calculations but also on how to interpret the change in the index. Although the evolution of the labour cost index can simply be an increase, a decrease or no change, the reasons behind this change are multiple and cannot be assigned to either the hours worked and/or the total labour costs. This black box is hiding several possibilities which can be summarised in table 2.

Table 2. Possible reasons explaining a change in the index on the total labour costs per hour

		The Labour Cost Index		
		does not change	increases	decreases
Labour cost and hours worked	No change	√	-	-
	Both LC and H increase	√	√	√
	Both LC and H decrease	√	√	√
	LC increases/H decreases	-	√	-
	LC decreases/H increases	-	-	√

LC: total labour costs; H: number of hours worked

This is because the result depends on the relative change of the LC compared to the H. For instance, the LCI may not have changed which maybe either because the LC and H have not changed at all or because the relative increase/decrease for both is the same. Due to this, we think that the level of uncertainty in the reasons behind this change is high. Especially for an increase or a decrease of the index, the real causes of its evolution can picture a completely different situation of the labour market developments.

If the underlying data were available, a critical assessment on the evolution of the hours worked and total labour costs could be performed. This evolution might be questionable from a statistical and/or economical point of view and could help identifying where the inconsistency problem(s) lies.

However, this is currently out of the scope of our quality checks. We are unable to disentangle the impact of the real evolution of the economy from inconsistencies or other mistakes and revisions. We see that there is a non-negligible risk of not identifying a mistake in the underlying series that could be propagated during several quarters along the series. In case of being identified, it might lead to a significant revision undermining the quality of the labour cost index. However, without further checks in the underlying data, it is more likely that inconsistencies remain unidentified for a longer period.

III. TOWARDS SHARING THE UNDERLYING DATA TO CALCULATE THE LABOUR COST INDEX: OPENING THE BLACK BOX

According to the National Quality Reports on the year 2013 for all Member States, it seems that the majority of countries seem to collect the most important cost items and hours worked on a quarterly basis and many collect them on an annual basis. The situation is quite heterogeneous as countries

use a mix of different sources, imputations (e.g. for size of enterprise or cost items only available every four years) and/or modelling. Therefore, drawing a summary table of the situation by group of countries would be an oversimplification of the situation across countries.

Nevertheless, this unexploited source data available in the majority of Member States could be used more exhaustively by Eurostat to improve the quality checks on the labour cost index.

As mentioned in part 1 of this document, the current transmission requirements on the LCI data collection are:

Current transmission

- **Quarterly** delivery of the **quarterly** labour cost per hour worked indices by NACE Rev.2 section and aggregates and wage/non-wage costs.
- **Annual**⁵ delivery of the **annual** total labour costs in national currency (weights) by NACE Rev.2 section and aggregates and wage/non-wage costs.

These requirements could be extended in the short-term to provide different detail of underlying data on a voluntary basis.

Eurostat proposes to collect instead

- **Quarterly** delivery at t + 70 of
 - the **quarterly** labour cost per hour worked indices by NACE Rev.2 section and aggregates and wage/non-wage costs (current situation)
 - the value of the **quarterly** hours worked (H) by NACE Rev.2. Section and aggregates
 - the value of the **quarterly** total labour costs (LC) and by NACE Rev.2. Section and aggregates and by wage/non-wage components
 - the value of the **quarterly** total labour costs per hour worked (LC/h) by NACE Rev.2. Section and aggregates and by wage/non-wage components
- **Annual** delivery of the **annual** total labour costs in national currency (weights) by NACE Rev.2 section and aggregates and wage/non-wage costs.

This will allow Eurostat to analyse the evolution of the individual series (i.e. total labour costs and the number of hours worked), to better identify inconsistencies or other mistakes and to perform better quality checks to ensure a higher level of quality of the Labour Cost Index.

If some sources are missing to deliver the quarterly labour costs and number of hours worked at t+70 days, it could be envisaged to transmit these quarterly figures with 1 quarter lag compared with the labour cost indices.

After a testing period of this extended quarterly LCI delivery, it might be envisaged to replace the annual weights by the annual sum of the quarterly total labour costs (LC) in which case the transmission of annual weights would no longer be needed.

⁵ Some countries deliver annual LC (weights) more than once per year

The participants of the workshop are invited to:

- **raise other quality concerns on the Labour Cost Index**
- **assess the feasibility of the implementation of the transmission of full quarterly LCI data (including the possibility of 1 quarter lag for some variables)**