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How to Communicate and Visualise the Quality of Short-term Business Statistics Indicators to Users?

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Release and Revision Policy of STS

- European aggregates are generally released and revised once per month
- European aggregates of STS labour indicators and construction prices or costs are revised when new information becomes available
- National data are revised when new information becomes available
- Detected errors in national data or in European aggregates are corrected immediately
- Users are informed about forthcoming major revisions in news releases or on Eurostat's website



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Reasons for Revising STS Data

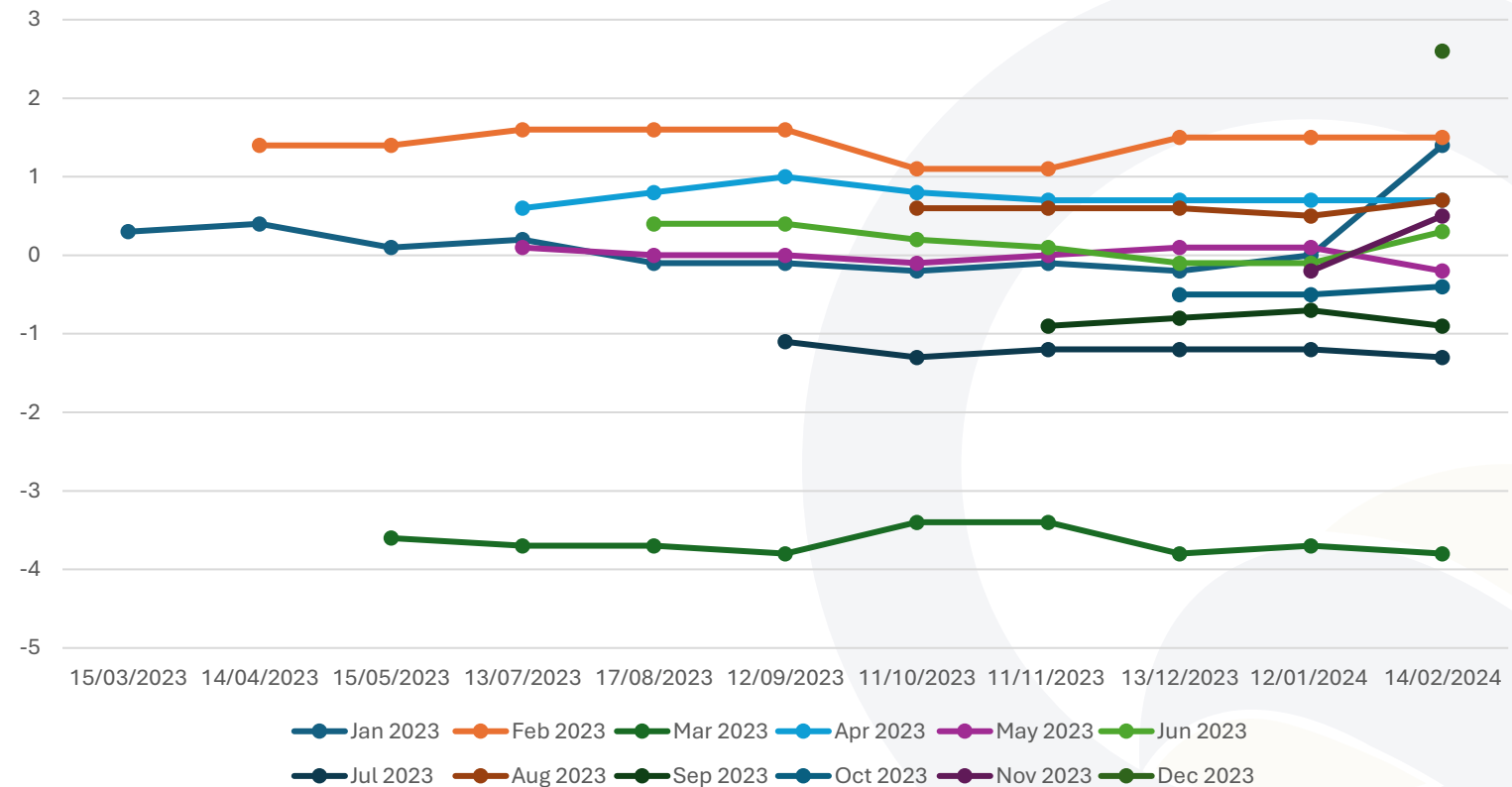
- Short-term business statistics are the earliest statistics released by Eurostat
- Revisions constitute an integral part of the production and publication process
- Revisions can be caused by several reasons:
 - Routine revisions of STS data are necessary because of late incoming data, seasonal adjustment, or regular benchmarking
 - Methodological changes and changes of the reference and base year introduce main revisions that may be large in size but take place less frequently and regularly than routine revisions
 - Corrections of errors may take place at any moment



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Revision Tracks

Figure: Evolution of the industrial production month-on-month growth rate by publication date, EU, January 23 (reference month) to December 2023 (reference month)





Revision Analysis (1)

- Quality indicators

$$MAR(L) = \frac{1}{n} \sum_{t=1}^n |X_{L_t} - X_{0_t}|$$

$$RMAR(L) = \frac{\sum_{t=1}^n |X_{L_t} - X_{0_t}|}{\sum_{t=1}^n |X_{L_t}|}$$

$$MR(L) = \frac{1}{n} \sum_{t=1}^n (X_{L_t} - X_{0_t})$$

$t = 1, \dots, n$: number of reference periods

X_{L_t} : latest available data release for reference period t

X_{0_t} : first available data release for reference period t

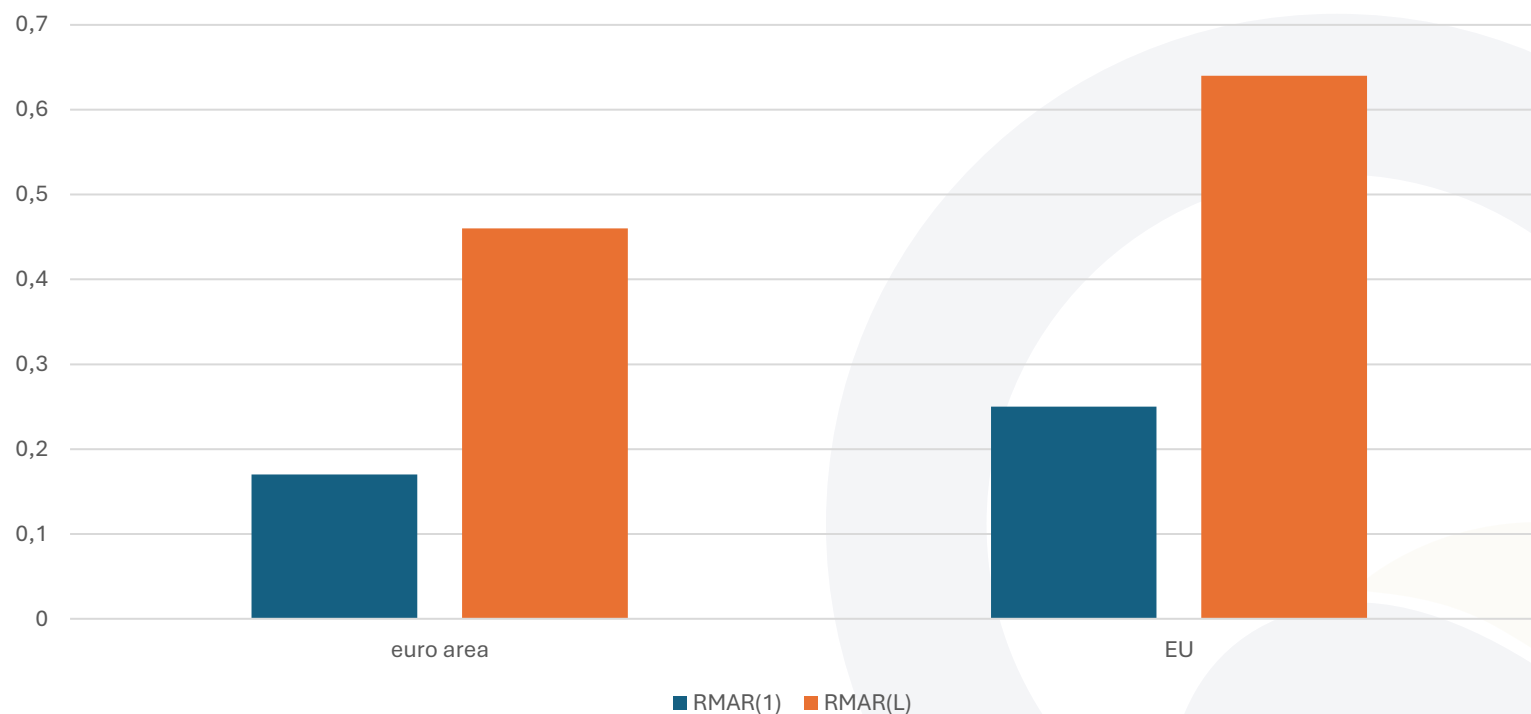
- For monthly data, 36 reference periods are used to calculate the quality indicators



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Revision Analysis (2)

Figure: $RMAR(1)$ and $RMAR(L)$ of industrial production for the euro area and the EU





Revision Analysis (3)

Table: Quality indicators for industrial production

	MAR (pp)		RMAR (%)		MR (pp)	
	MAR(1)	MAR(L)	RMAR(1)	RMAR(L)	MR(1)	MR(L)
Euro area	0.20	0.63	0.17	0.46	0.09	-0.11
EU	0.24	0.73	0.25	0.64	0.03	0.02

- Revisions of month-on-month growth rates of industrial production are moderate for EU and euro area
- Euro area and EU month-on-month growth rates are revised upwards on average with the second data release ($MR(1) > 0$)



Revision Analysis (4)

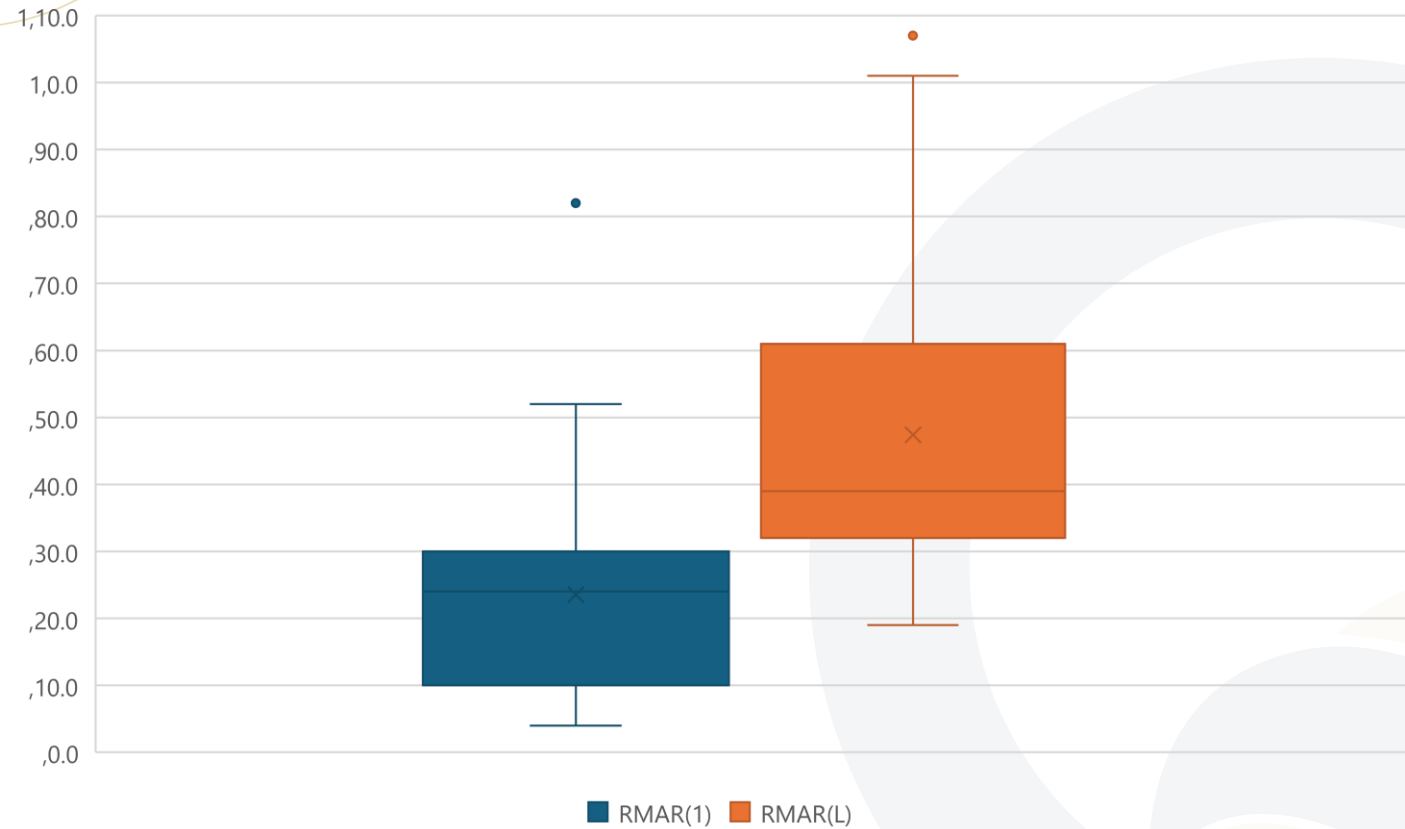
- **Proposals** to determine critical revisions that are outside the typical range of revisions for the respective indicator:
 1. **threshold:** Double the size of the arithmetical average of the available country revisions
 2. **threshold:** 1.5 interquartile range (IQR) rule
- For the industrial production indicator, based on the **first threshold**
 - Two Member States are identified as countries with critical revisions based on the $RMAR(1)$
 - Two Member States are identified as countries with critical revisions based on the $RMAR(L)$
- For the industrial production indicator, based on the **second threshold**
 - One Member State are identified as countries with critical revisions based on the $RMAR(1)$
 - One Member State are identified as countries with critical revisions based on the $RMAR(L)$



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Revision Analysis (5)

Figure: Boxplots for $RMAR(1)$ and $RMAR(L)$ of industrial production





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Conclusion

- The magnitude and direction of revisions provide crucial indications to users regarding the reliability of initial estimates
- Revision analyses are very important and should be carried out on a regular basis
- Routine revisions of the STS data are moderate for most countries
- First data releases can be considered reliable
- Revision analyses and visualisations provide guidance on the assessment of the data quality of first estimates
- Thresholds may help users to identify critical revisions



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