

Short-term business statistics - revisions

Statistics Explained

This article provides an overview of revisions and revision policy of [short-term business statistics \(STS\)](#) . It is part of a set of [background articles](#) treating various methodological aspects of STS.

The first section presents the main reasons for revisions. The second section describes how the [European statistical system \(ESS\)](#) guidelines on revision policy have been implemented in STS. Historical data on the revisions of STS are presented in the third section. The article also provides some general conclusions on the quality of STS indicators revealed by the revision analysis.

Reasons for revising short-term business statistics

Revisions are changes in the value of statistics that have been published. STS data are very often subject to revisions, i.e. changes of published data.

Revisions can be caused by several reasons:

- **Routine revisions** of STS 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.

Late data

STS publish monthly and quarterly indicators within one to three months after the end of the reference period. To meet these deadlines STS require early [estimations](#) which may have to be revised later when more complete data becomes available.

Late data arrival can occur at least at two different levels: First, some respondents of statistical surveys in the [Member States](#) send their questionnaires after the national deadlines and the statistical authorities need to estimate the missing data when sending national data to [Eurostat](#) . Later, the estimated values are replaced by the more complete data that are re-transmitted to Eurostat.

Second, Eurostat often releases its first estimates at the time when some Member States' data are still missing. In STS, small countries often have more time to compile their national data and send them to Eurostat. Later, when all countries have sent their data and some have even revised their estimates, Eurostat revises the European aggregates for the [European Union \(EU\)](#) and for the [euro area](#) .

Seasonal adjustment

STS are adjusted for [seasonal effects](#) in order to allow comparing month-on-month or quarter-on-quarter changes whenever indicators are subject to seasonal variation. For example retail sales in December are always higher than

in November because of Christmas shopping. To compare December sales with those of November, the regular impact of Christmas has to be removed from the data.

The estimation of seasonal effects requires long time series. The mathematical models used to identify seasonal effects work in a way that a new observation can change the seasonal factors applied to the whole time series. Consequently, when the new seasonal factors are applied to the older data, the whole time series may need to be revised. Additionally, an annual (or more frequent) overhaul of seasonal adjustment models is needed to maintain the quality of the models. When models are changed, the adjusted time series are also revised.

Benchmarking

Benchmarking (also called [data confrontation](#) or consolidation) is defined as the adjustment of (generally) higher frequency data to take account of more complete lower frequency results, which become available only later. STS can be confronted with [structural business statistics](#), labour statistics or [national accounts](#). Structural business statistics are also used as the basis for the weights of economic activities within the Member States and for the weights of the countries when compiling the European aggregates of STS. They are released more than a year after the end of the reference year, and this has an impact on the updates of weights of STS. Furthermore, several countries use quarterly national accounts, for example in estimating the labour productivity that may be used for compiling monthly production in construction on the basis of hours worked.

Methodological changes

Methodological changes, including changes of definitions and classifications, are important reasons for major revisions. They cause statistics to be redefined so that the results for the old and the new time series are different, if they are even comparable at all. In the latter case, the users need to be informed about the break in series.

Changes in base and reference year

Revisions can also be caused by changes in the [base and reference year](#), which, together with new weighting systems, can alter the paths of time series. Changing the weighting system affects the growth rates of the European aggregates, if the weights of the different countries change considerably. The change of the reference year only means that all values of the time series are divided by the average of the new reference year. This can change the index levels for time series, but it does not have an impact on the growth rates.

Corrections

Alterations to the data may also stem from correcting errors. Unfortunately, it is not possible to entirely rule out errors during the compilation process in the Member States and in Eurostat, and the correction of such errors requires revisions of the published statistical results. The correction of Member States' data leads also to corrections of the European aggregates. Obviously, corrections of errors cannot be planned in advance, but it is possible to inform the users on how errors are dealt with. Significant errors need to be corrected as soon as possible.

Release and revision policy of short-term business statistics

In February 2012 the European Statistical System Committee (ESSC) approved guidelines on how to deal with the various types of revisions for the [Principal European economic indicators \(PEEIs\)](#).

The release and revision policy of the European STS aggregates are generally in line with the [ESS guidelines on revision policy for PEEIs](#). In order to comply with the guidelines, the revision policy of STS is as follows:

- European aggregates are generally released and revised once per month. This policy is applied for all PEEIs but also for other STS indicators.
- European aggregates of STS labour indicators and construction prices or costs are revised when new information becomes available.
- National data are revised whenever new information becomes available.

This revision policy concerns only routine revisions. Detected errors in national data or in European aggregates are corrected immediately.

Users will be informed about forthcoming major revisions (e.g. due to methodological changes) in news releases and on Eurostat's website.

The [calendar with the STS release dates](#) is published on the Eurostat website. For indicators subject to a [monthly news release](#), the European aggregates are revised on the same dates. For other STS [PEEIs](#), the release and revision dates are identical and lie within a few working days after the end of the deadline for new data transmissions from the Member States.

Revisions of STS Principal European economic indicators (PEEIs) - Main statistical findings

In order to monitor the economic and financial development of the EU and euro area [Principal European economic indicators \(PEEIs\)](#) have been selected. Eight of these indicators are provided by STS:

- [industrial production](#) (volume)*
- industrial producer prices*
- [industrial import prices](#)
- [production in construction](#) (volume)*
- volume of sales in retail trade*
- services turnover
- [services producer prices](#)
- [building permits](#) indicators.

The PEEIs subject to a Eurostat monthly news release are marked with*.

In this section, the reliability of the monthly EU and euro area year-on-year growth rates for the PEEIs subject to a news release is evaluated. The following quality indicators are calculated: mean absolute revision (MAR(L)), relative mean absolute revision (RMAR(L)) and mean revision (MR(L)). They are defined as

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

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

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

with $t = 1, \dots, n$

denoting the number of reference periods, $X_{\{L_t\}}$

the latest available revision of the growth rate for reference period t

and X_{0_t}

the first release for reference period t

.

For monthly data it is recommended to use 36 reference periods. It should be noted that revisions occur mainly between the first and second release of an STS indicator. In this case, the later available revision is the first revision.

The quality indicators are calculated based on unadjusted year-on-year growth rates for prices and based on calendar adjusted year-on-year growth rates for turnover and production. The year-on-year growth rates are calculated as

$$X_t = \frac{I_t - I_{t-1}}{I_{t-1}} \times 100$$

where I_t

is defined as index data at time t

.

MAR(L) gives the mean of the absolute revisions between the initially published and revised growth rate. It should be small in comparison with the revised growth rate. A high MAR indicates a poor [accuracy](#) of the initial publication.

RMAR(L) put the absolute revision in relation with the value of the revised growth rate. Thus, it makes the MAR comparable across indicators, i.e. it takes into account that one percentage point revision is to be judged differently for a growth rate of 1 % than for a growth rate of 10 %. As in the case of MAR, a high RMAR also indicates a poor accuracy of the first release.

MR(L) is the mean of the revisions between the initially published and the revised growth rate. It should be zero or close to zero as upward and downward revisions should cancel each other out to a certain degree.

The quality indicators for the four STS indicators subject to a news release are shown in Table 1 for EU aggregates and in Table 2 for euro aggregates. For EU aggregates and euro area aggregates the quality indicators are calculated for changes between the first release and the latest available revision (columns “MAR(Latest)”, “RMAR(Latest)”, “MR(Latest)”). Since most revisions occur in the second release, the quality indicators are also calculated for changes between the first and second data release (=first revision, columns “MAR(1)”, “RMAR(1)”, “MR(1)”).

The tables show that the accuracy of the first release is the highest for industrial producer prices and the poorest for production in construction both for EU (Table 1) and euro area aggregates (Table 2). Generally, the largest revisions occur predominantly with the second release. For the most part, the quality indicators obtained based on the first and the second release are close to the quality indicators based on the first and the latest release. An exception appears to be industrial production, where the quality indicators are further apart and revisions occur also with later releases.

Quality indicators for EU aggregates, until July 2023 release
based on year-on-year growth rates from June 2020 to May 2023

Indicator	MAR (percentage point)		RMAR (%)		MR (percentage point)	
	MAR(1)	MAR(36)	RMAR(1)	RMAR(36)	MR(1)	MR(36)
Industrial production	0.3	1.1	0.1	0.3	0.0	1.1
Volume of retail trade	0.4	0.6	0.2	0.3	0.3	0.6
Production in construction	0.7	0.9	0.2	0.3	0.3	0.4
Industrial producer prices	0.1	0.1	0.0	0.0	0.0	0.0

Source: Eurostat (online data code: sts_inpr_m; sts_trtu_m; sts_copr_m; sts_inppd_m)

eurostat 

Table 1: Quality indicators for EU aggregates, until July 2023 release Source: Eurostat (sts_inpr_m), (sts_trtu_m), (sts_copr_m) and (sts_inppd_m)

Quality indicators for euro area aggregates, until July 2023 release
based on year-on-year growth rates from June 2020 to May 2023

Indicator	MAR (percentage point)		RMAR (%)		MR (percentage point)	
	MAR(1)	MAR(36)	RMAR(1)	RMAR(36)	MR(1)	MR(36)
Industrial production	0.3	1.3	0.1	0.4	0.0	1.3
Volume of retail trade	0.5	0.7	0.2	0.3	0.3	0.7
Production in construction	0.8	1.0	0.3	0.3	0.4	0.5
Industrial producer prices	0.1	0.1	0.0	0.0	0.0	0.0

Source: Eurostat (online data code: sts_inpr_m; sts_trtu_m; sts_copr_m; sts_inppd_m)

eurostat 

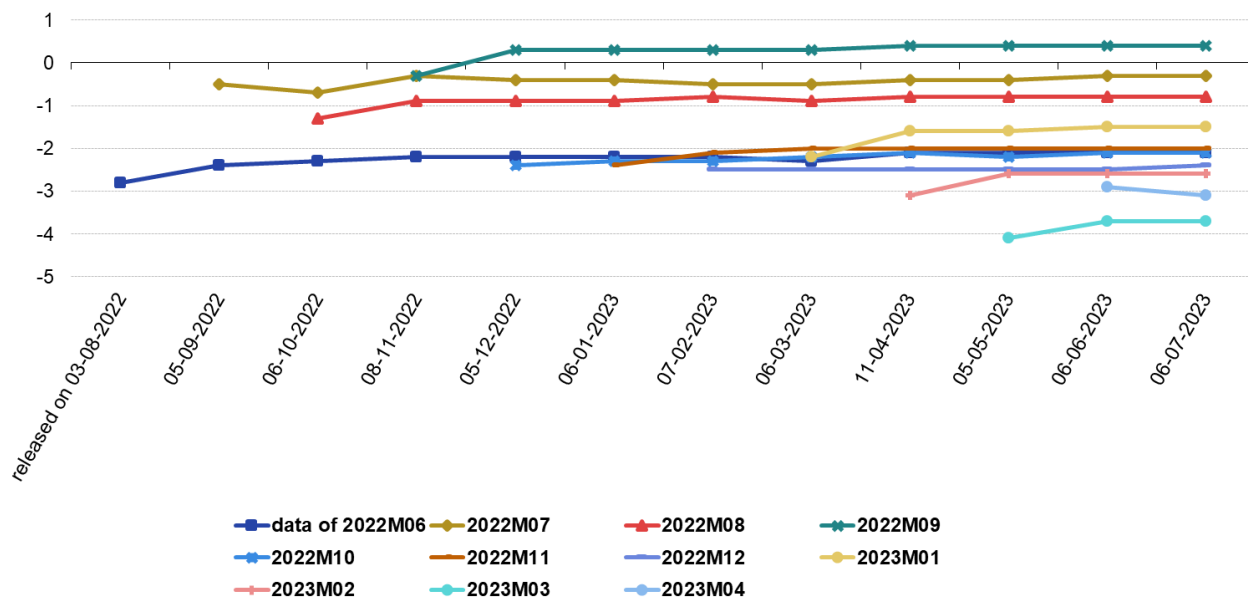
Table 2: Quality indicators for euro area aggregates, until July 2023 release Source: Eurostat (sts_inpr_m), (sts_trtu_m), (sts_copr_m) and (sts_inppd_m)

In the following figures, the revision tracks are used to illustrate the results of Table 1. The figures show the revisions of the EU year-on-year growth rates of volume of sales in retail trade (Figure 1), industrial producer prices (Figure 2), production in construction (Figure 3) and industrial production (Figure 4). For illustrative purposes, only the revisions from June 2022 are shown. The y-axis shows the year-on-year growth rates and the release dates are depicted on the x-axis. The first data release is two months after the reference period.

Figures 1, 2 and 3 confirm the finding, that the largest revisions occur mainly with the second release. From the third release onwards, the revision tracks are relatively flat. The year-on-year-growth rates of volume in sales in retail trade show some variation between the first and second data release (Figure 1). From the second release onwards, the revisions are moderate.

Revision tracks: EU27 volume of sales in retail trade data

% change of the month compared with same month of the previous year



Source: Eurostat (online data code: sts_trtu_m)

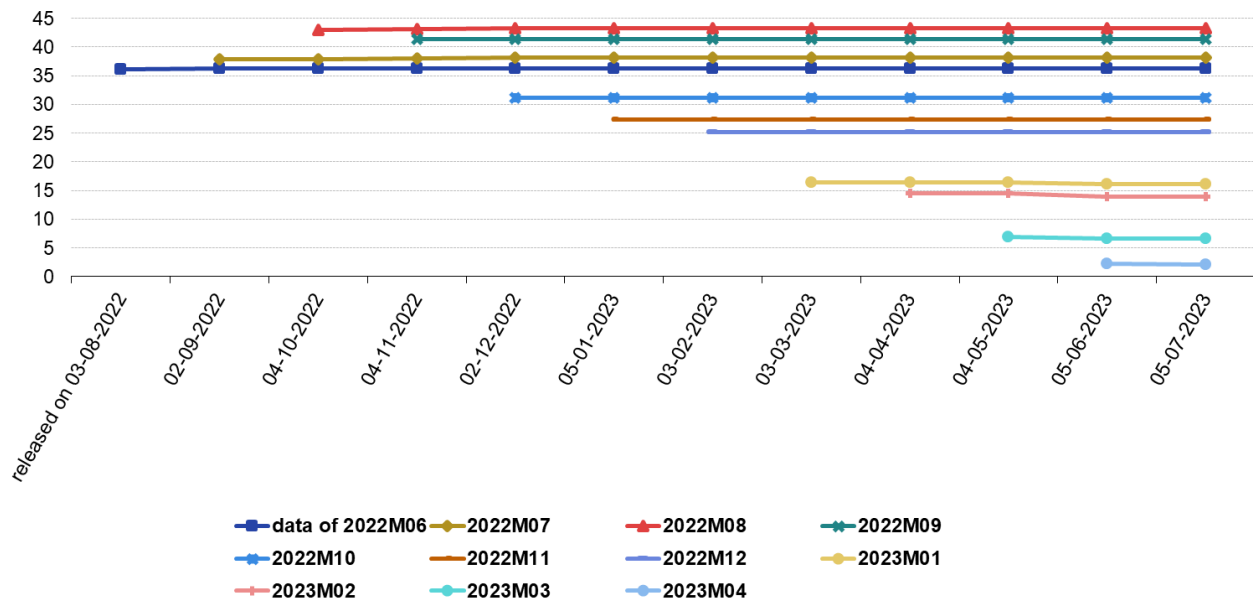


Figure 1: Revision tracks: EU27 volume of sales in retail trade Source: Eurostat (sts_trtu_m)

Industrial producer prices have very smooth revision tracks (Figure 2). Most year-on-year growth rates are not revised at all. If a revision takes place, it is very small in size. This is in line with the good performance of industrial producers prices in the quality indicators MAR, RMAR and MR.

Revision tracks: EU27 industrial producer prices (domestic) data

% change of the month compared with same month of the previous year



Source: Eurostat (online data code: sts_inppd_m)

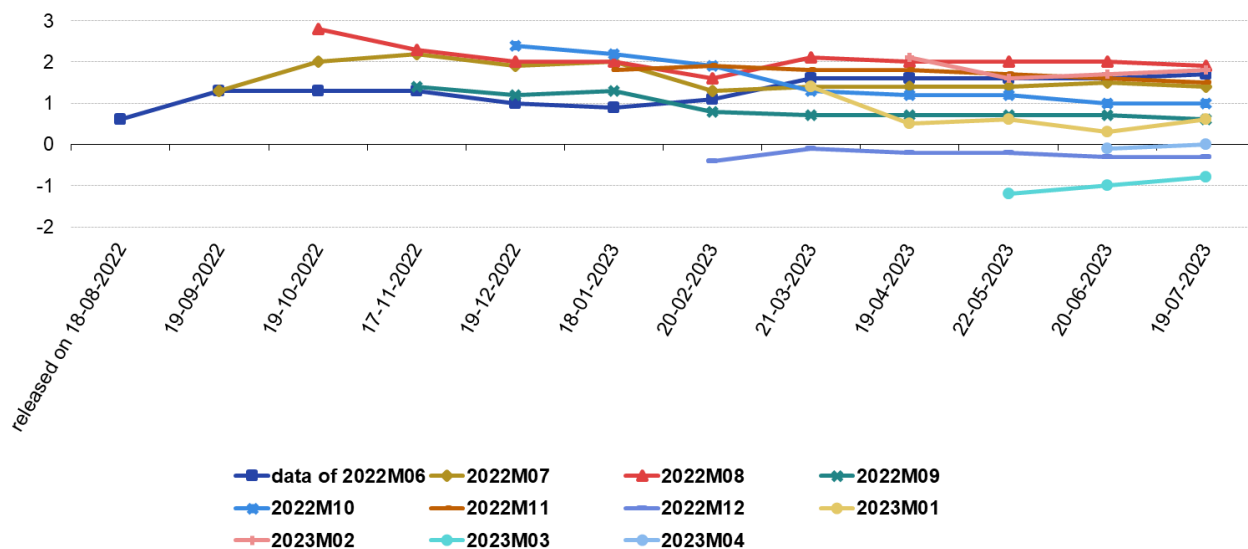


Figure 2: Revision tracks: EU27 industrial producer prices (domestic) Source: Eurostat (sts_inppd_m)

According to Table 1, the MAR(1) is the highest for production in construction among the selected PEEIs. This finding is supported by Figure 3. For example, the year-on-year growth rate of July 2022 is revised from 1.3% to 2.0% with the second release.

Revision tracks: EU27 production in construction data

% change of the month compared with the same month of the previous year



Source: Eurostat (online data code: sts_copr_m)

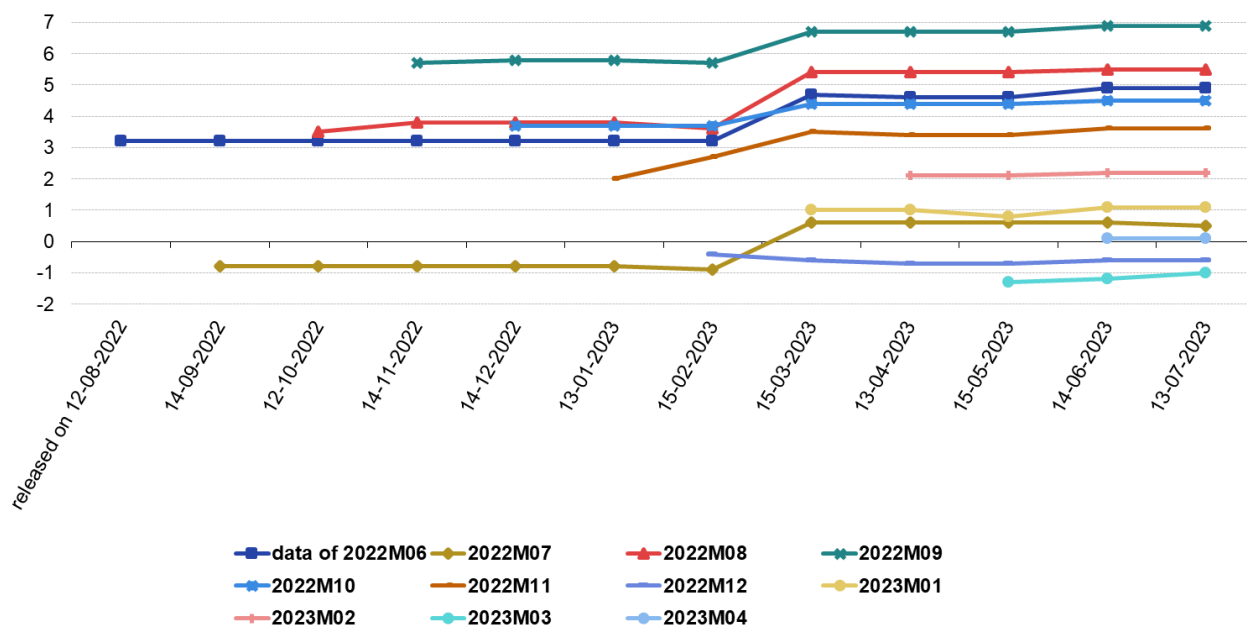


Figure 3: Revision tracks: EU27 production in construction Source: Eurostat (sts_copr_m)

While the revision tracks of the year-on-year growth rates presented above remain quite stable after the first revision, the growth rate of industrial production is revised more frequently (Figure 4). For example, a major revision takes place in March 2023. This revision is mainly driven by revisions of one medium-sized country.

Revision tracks: EU27 industrial production data

% change of the month compared with same month of the previous year



Source: Eurostat (online data code: sts_inpr_m)

eurostat

Figure 4: Revision tracks: EU27 industrial production Source: Eurostat (sts_inpr_m)

Conclusions

The quality indicators show that revisions of the European STS aggregates are moderate and occur mainly between the first and second release of the indicators. Among the selected PEEIs, the most stable is industrial producer prices. The largest revisions with the second data release can be expected for production in construction and the largest revisions with the latest release for industrial production. When large or medium-sized countries revise their data, the European aggregates are also revised. Major methodological changes, for example changes of classifications or the base year understandably introduce revisions to the entire length of the concerned time series.

Source data for tables and figures

[Short-term business statistics - revisions: data](#)

[Short-term business statistics - revisions: tables and figures](#)

Other articles

- [All articles on short-term business statistics](#)

Dedicated section

- [Short-term business statistics](#)

Methodology

- [ESS guidelines on revision policy for PEEIs](#)
- [Methodology of short-term business statistics – interpretation and guidelines](#)
- [Methodology of short-term business statistics – associated documents](#)
- [Short-term business statistics - Metadata in SDMX format \(ESMS metadata file — sts_esms\)](#)
- [More information on Metadata in Eurostat](#)