TECHNOLOGICAL AND METHODOLOGICAL INNOVATIONS IN SEASONAL ADJUSTMENT OF ECONOMIC STATISTICS

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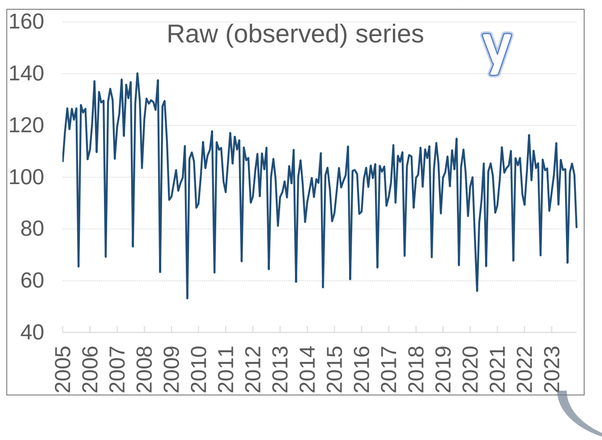
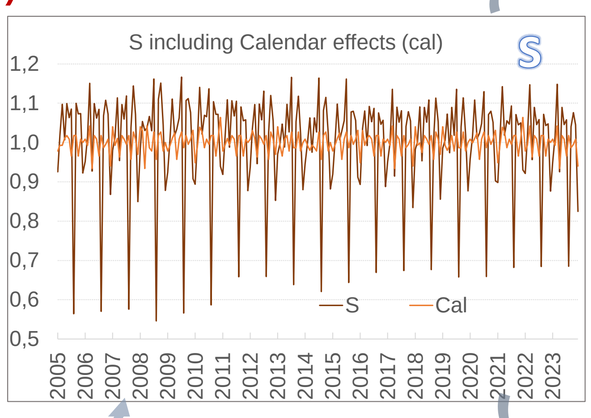
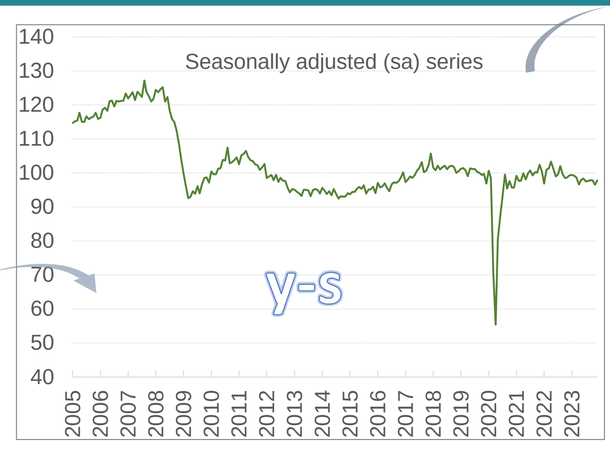
Seasonal Adjustment (SA)

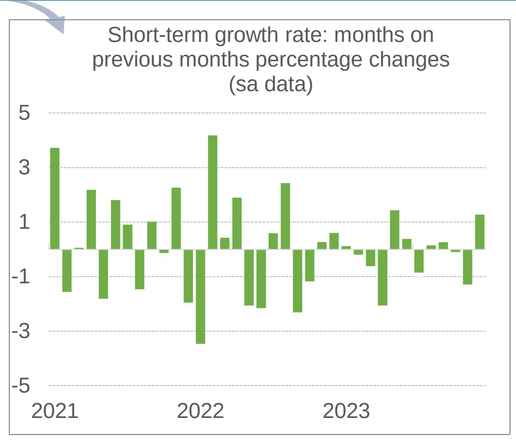
Statistical method for estimating and removing, when relevant, the **seasonal component** from a time series observed at infra-annual frequency, hypothesized as the combination of not directly observable components (tipically: Trend, Cycle, Seasonality, Irregularity).

Industrial production index (2021=100)

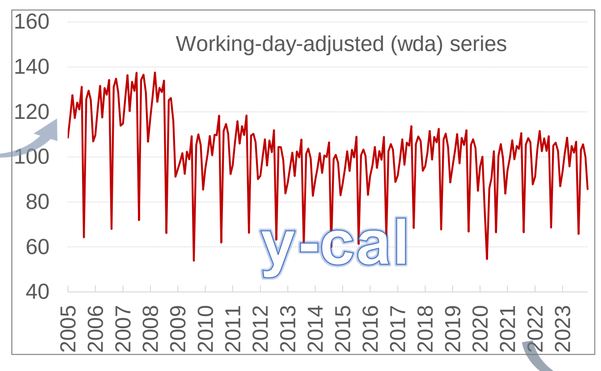


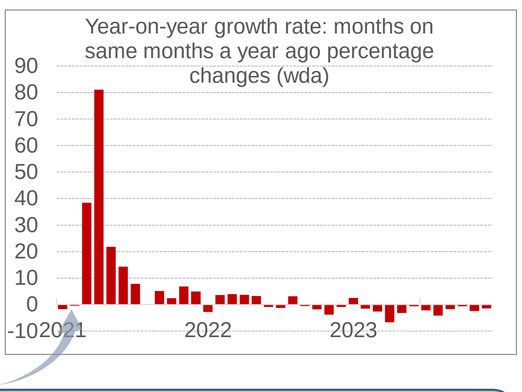






***sa* data** allow for meaningful comparisons of economic conditions from period to period, are suitable to more clearly describe short-term dynamics and the underlying movement of phenomena tipically obscured by *S*





***wda* data**: obtained by removing only the deterministic calendar effects (not seasonality) from the original series. Typically employed to calculate year-on-year growth rate.

Causing factors

Calendar Composition different length of periods, trading and working day effects, fixed and moving holidays,…

Climatic and Natural

Social, cultural, religious

Indirect affecting other sectors

Expectations

Institutional linked to regulations and administrative rules

Seasonality (Seasonal component) - *S*

Consists of annual and infra-annual fluctuations observed over the year, therefore periodic (recurring always in the same period), and repeating themselves more or less regularly (similar in term of amplitude and direction) in the same period (month, quarter,…) from one year to another

Main features on SA at Istat

Methodology

Arima Model Base approach TRAMO-SEATS (TS) by Gómez and Maravall (1996) instead of the other main approach employed (non- or semi- parametric FB approach of X11-family)

IT tool

Software **TS+ vs 942** for the great majority of short-term indicators; **TRAMO-SEATS as implemented in the software JDemetra+ (JD+)** in some cases mainly involved in *benchmarking* techniques

Model revision policy

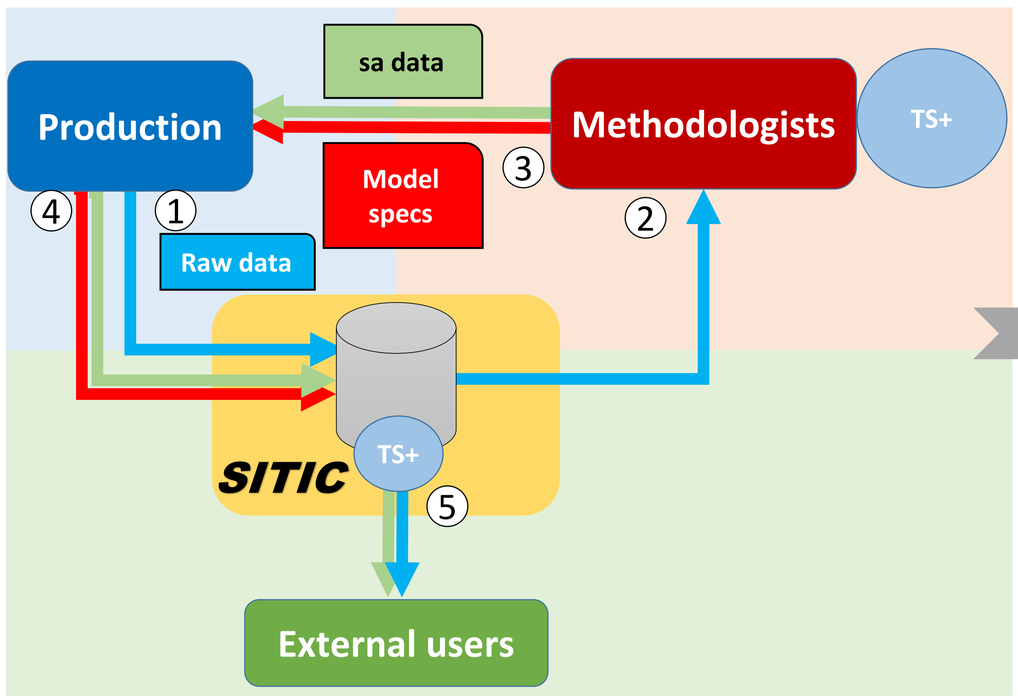
Revisions occur normally **once a year** with the release of the first period of each new year

Approach to estimate components

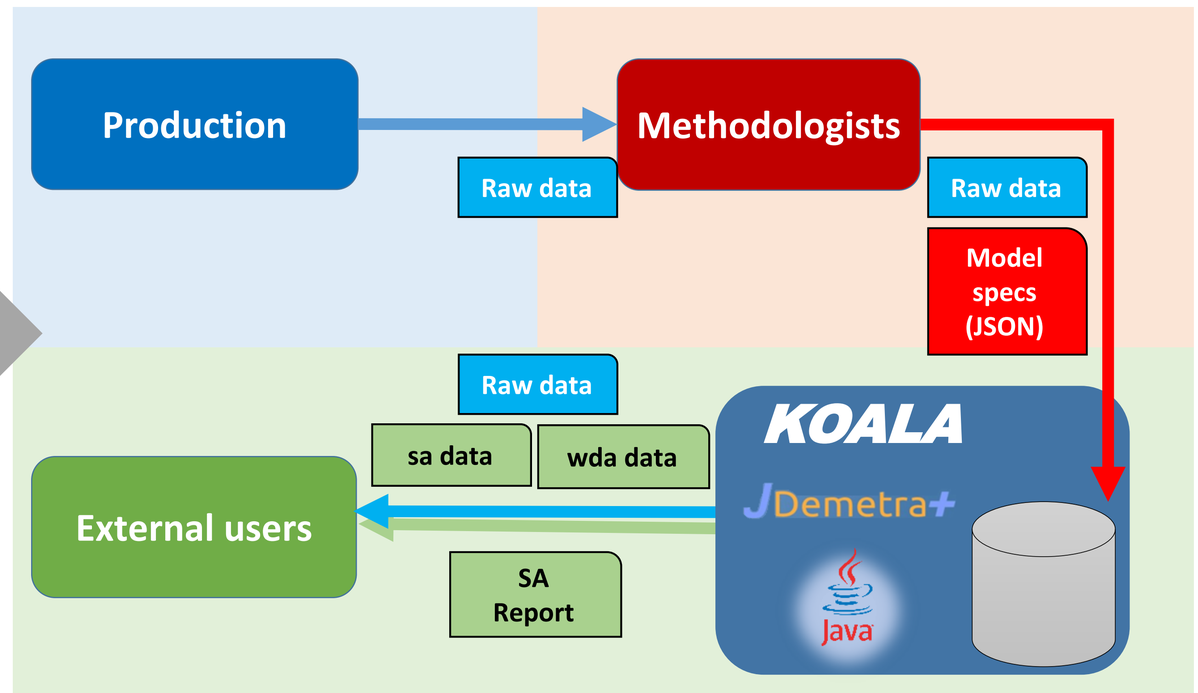
Partial concurrent

Choices on the Arima model order, transformations (log, diff) and reg-variables are "**fixed**" for a year while the respective parameters and factors estimated each time a new information is available

SITIC: the current system



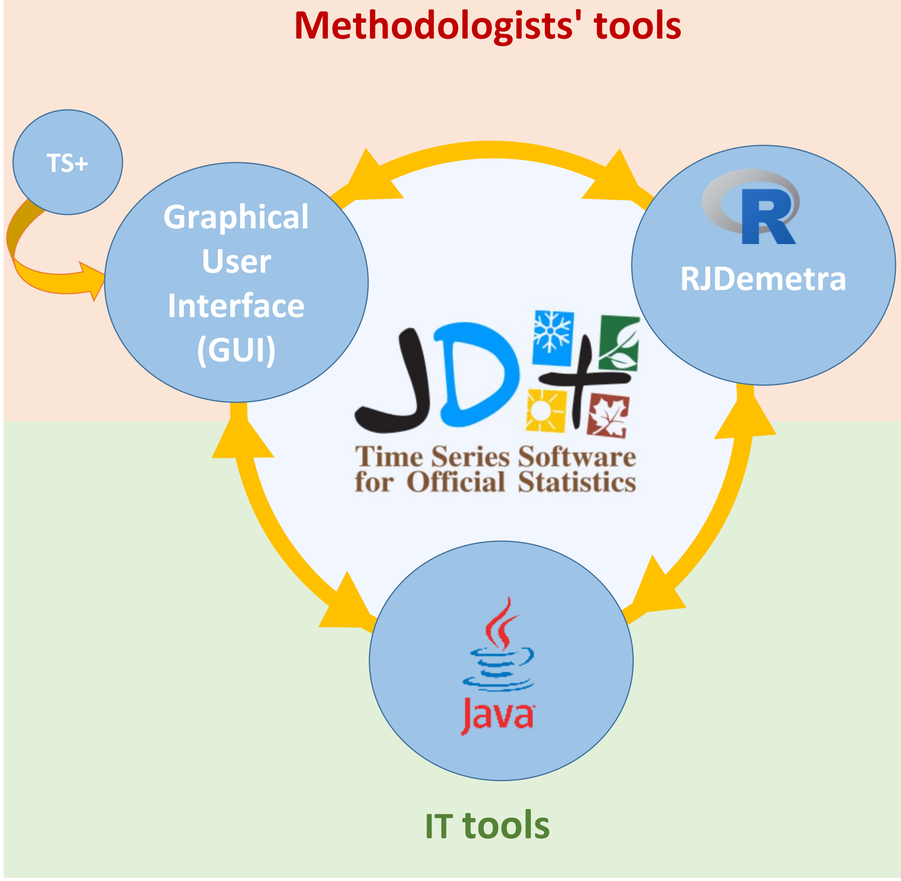
The new system



New software tools

JDemetra+ (JD+) is a suite of Java-based interoperable software: GUI (Graphical User Interface), R (RJDemetra) and Java libraries.
The JD+ tools are interoperable with each other thanks to the Workspace (collection of XML files).
JD+ is used instead of the software TS+.
JD+ is the tool recommended by Eurostat for the SA and correction of official statistics

Methodologists' tools



New methodologies

In addition to the currently used TRAMO-SEATS methodology for SA, JD+ also supports X13-ARIMA-SEATS. Benchmarking techniques for data correction and nowcasting functionality are also available

New IT services

Within the SINTESI system, with the new Koala component, data producers send data directly to methodologists, who build SA models and reports using the JD+ GUI, RJDemetra and R.
Models specifications are encoded in JSON format and stored in Koala, which uses them to perform SA on the data with JD+ Java libraries monthly or quarterly