# Evolving with JDemetra+

Generalitat de Catalunya
**Institut d'Estadística de Catalunya**

Mònica Gasulla, Jesús Muñoz

## Time Series Methods for Official Statistics, September 26-27, 2019 – OECD, Paris, France

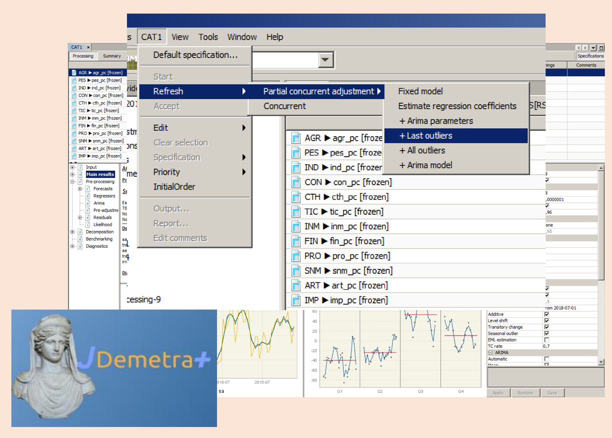
**Idescat** (Statistical Institute of Catalonia) has combined the graphical interface of JDemetra + with custom extensions of the released R-interfaces (**jdemetra-R**, **JDLight** and **RJDemetra**) to obtain a solid architecture for a **medium-scale statistical production**.

## QUARTERLY NATIONAL ACCOUNTS – GDP FLASH

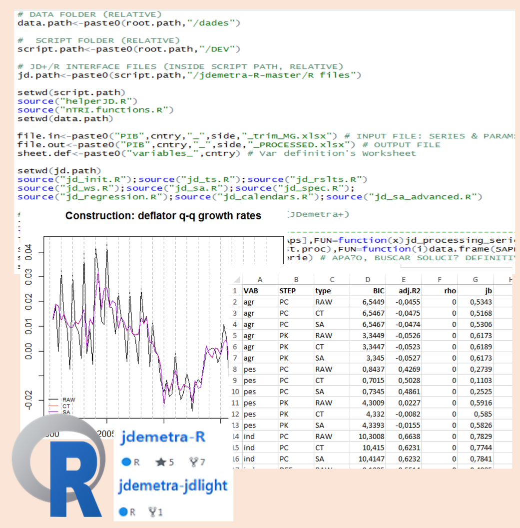
**Before 2015** →

- Manual seasonal adjustment with TSW.
- Temporal disaggregation in Matlab (E.M. Quilis).
- Process driven by Excel sheets and formulas.

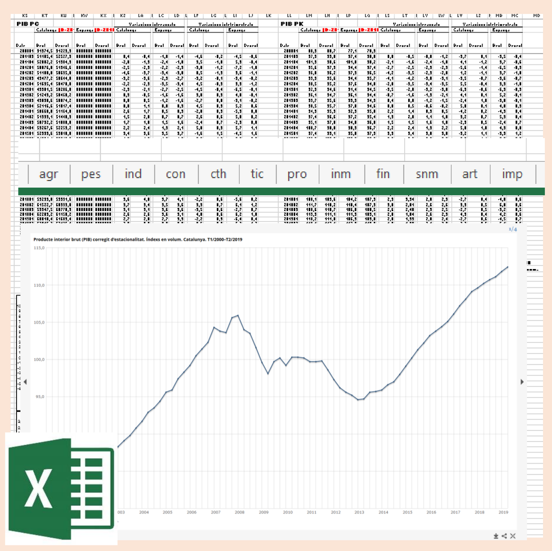
**2018** **Process driven by R scripts**: first stage.



JDemetra+ GUI: partial concurrent adjustment of indicators and deflators



R: workspaces **reading** and aggregates **computation**



Microsoft Excel: final GDP chaining

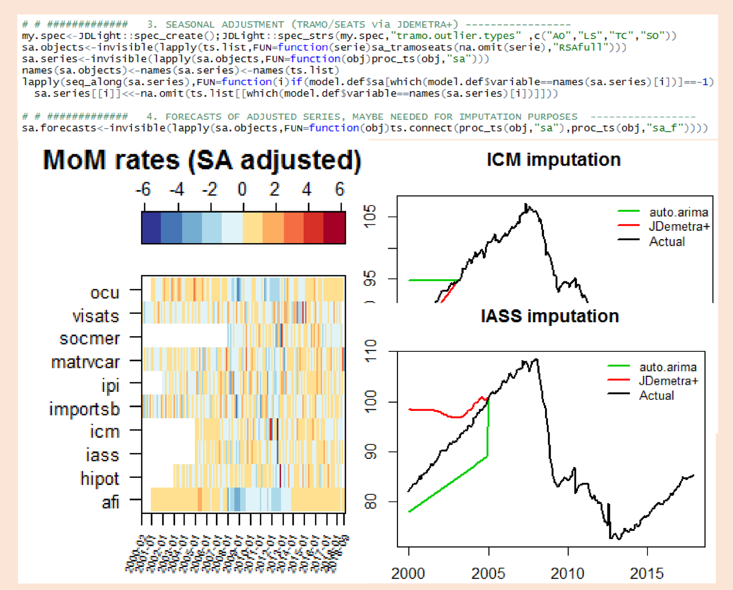
**NEXT** development stage → whole process with **RJDemetra.**

## GDP NOWCASTING

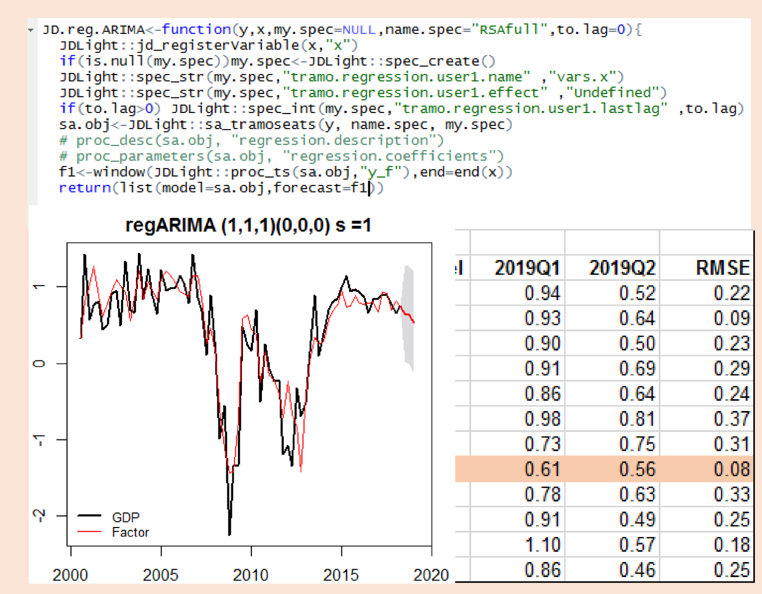
**2016** Development of 2 Factor Models (FM) inspired on
- the FASE model (spanish AIReF)
- the JDemetra+ plugging

**2017** Development of 3 bridges to predict GDP from factor(s).
Implementation of a battery of connectors for daily downloads.

**2018** New FM estimated from *MARSS* and *nowcasting* R-packages.
Nowcast generation based on a suite of 12 models (combination or selection?).



Concurrent adjustment and (maybe) imputations



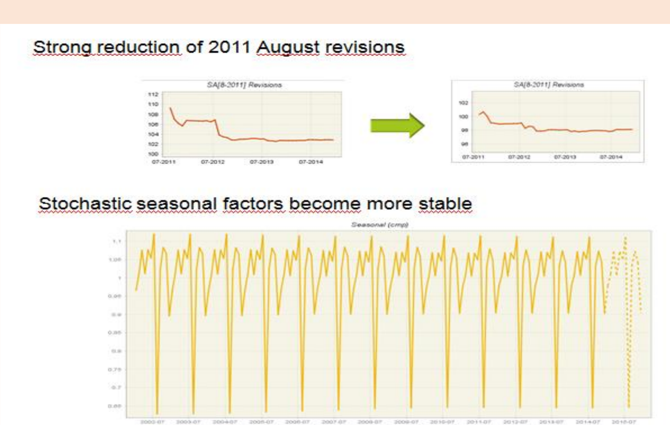
Reg-ARIMA bridge models (factors predict GDP)

## SEASONAL ADJUSTMENT OF SHORT-TERM INDICATORS: MAIN ACHIEVEMENTS

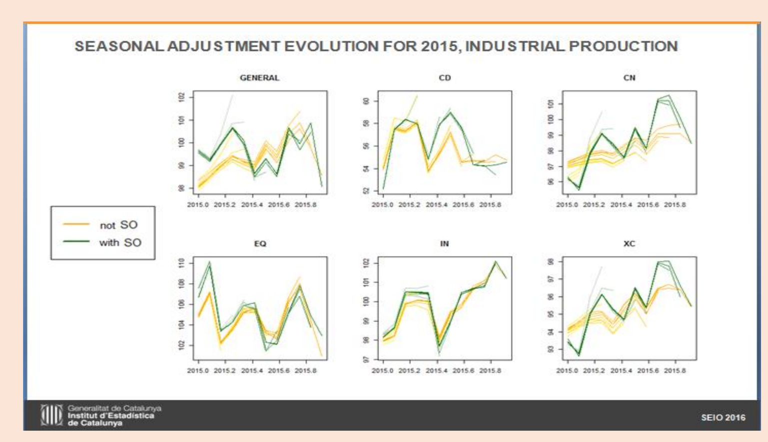
**2014** Producing with **TRAMO/SEATS** (TSW), we started the **JDemetra+ 1.5.1** GUI evaluation.

**2015** JDemetra+ and TSW comparisons: GUI use, parameterization, calendar regressors and results.

**2016** With the help of the **SACE,** and extending some methods of the **jdemetra-R interface** (JDemetra+ 2.1.0), we performed a wide analysis of **seasonal outliers** (SO) effects on industrial production and services activities indexes adjustments.



JDemetra+ GUI: single analysis



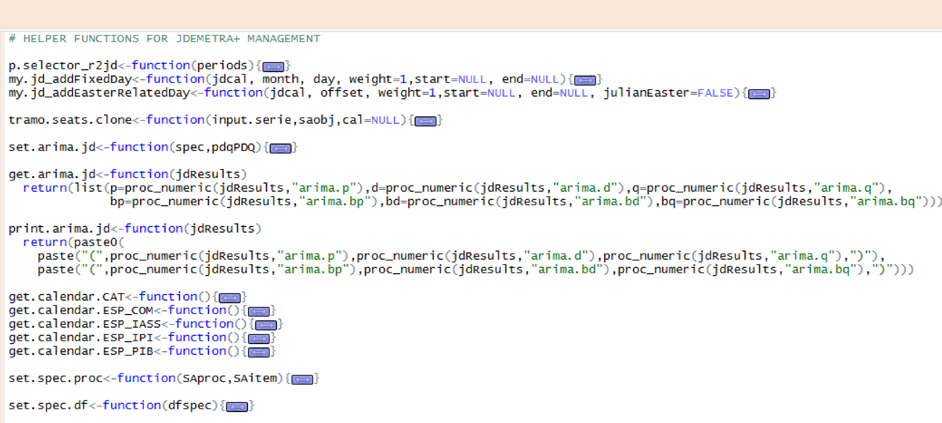
jdemetra-R interface: group analysis

**2017** Extension of a custom package based on the **JDLight** and **jdemetra-R interface** fusion, developed for versions 2.1 and 2.2 of JDemetra+:

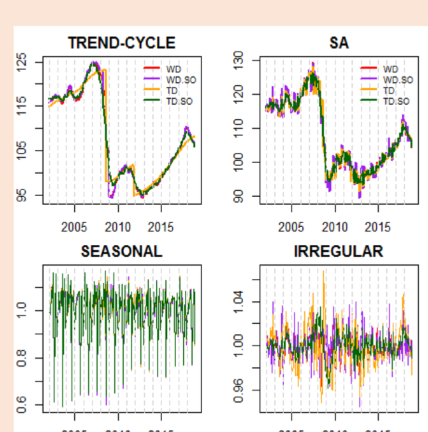
- Creation of functions for setting an automatic seasonal adjustment output as an input specification for another one.
- Creation of functions for national calendars management: validity periods and weights.

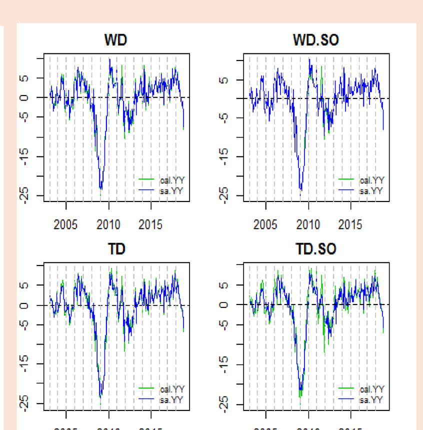
Modelization - Intensive simulation functions for assessing:

- the impact of adding/removing a single national calendar day
- Trading Days/Working Days specifications
- revisions and model stability
- effects of Easter duration
- scheme sensibility (log/level)
- effects of the raw data revisions

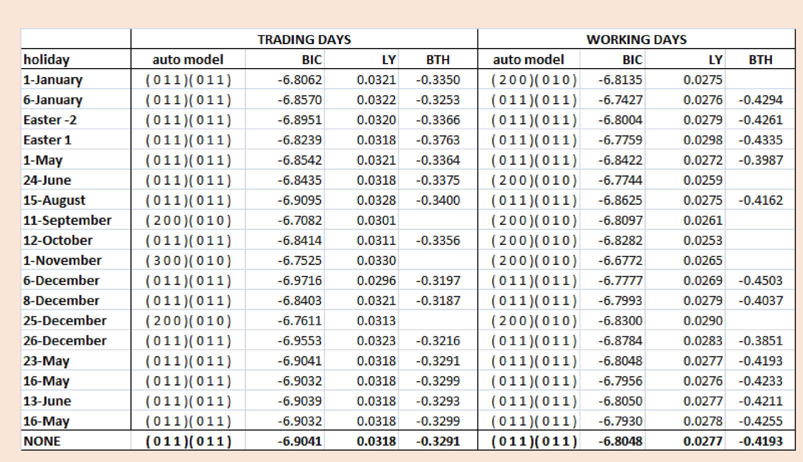


JDLight and jdemetra-R auxiliar functions

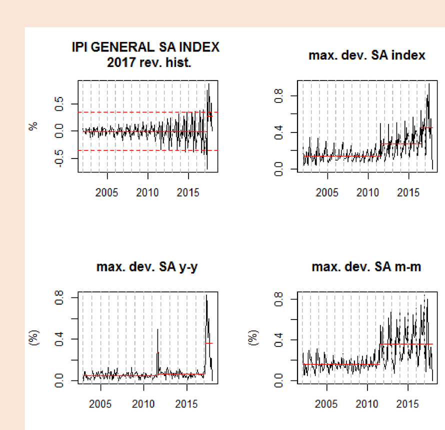




Components and YoY rates **consistency** of 4 models



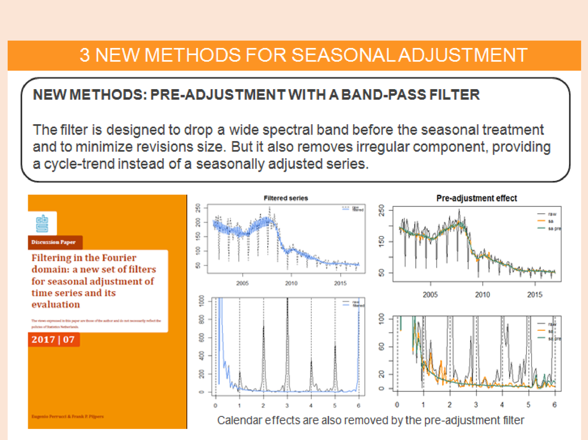
Effects of omitting national holidays

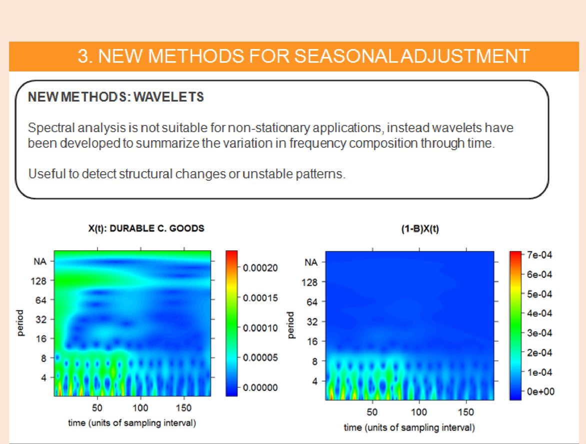


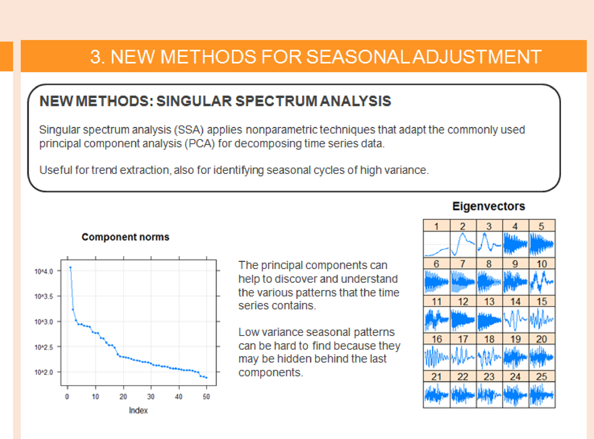
Assessing revisions sizes

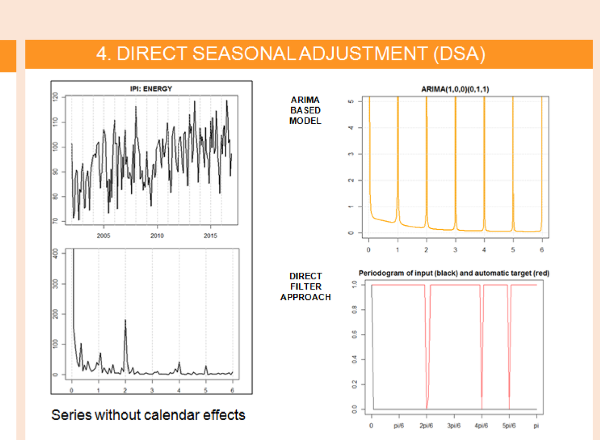
**2018** Analysis of the process **spectral properties:** comparisons with the **Direct Filter Approach** (DFA) and other spectrum-based adjustment methods:

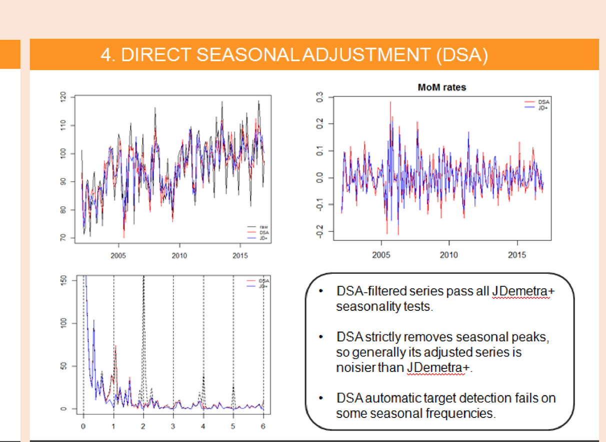
Calendar regressors







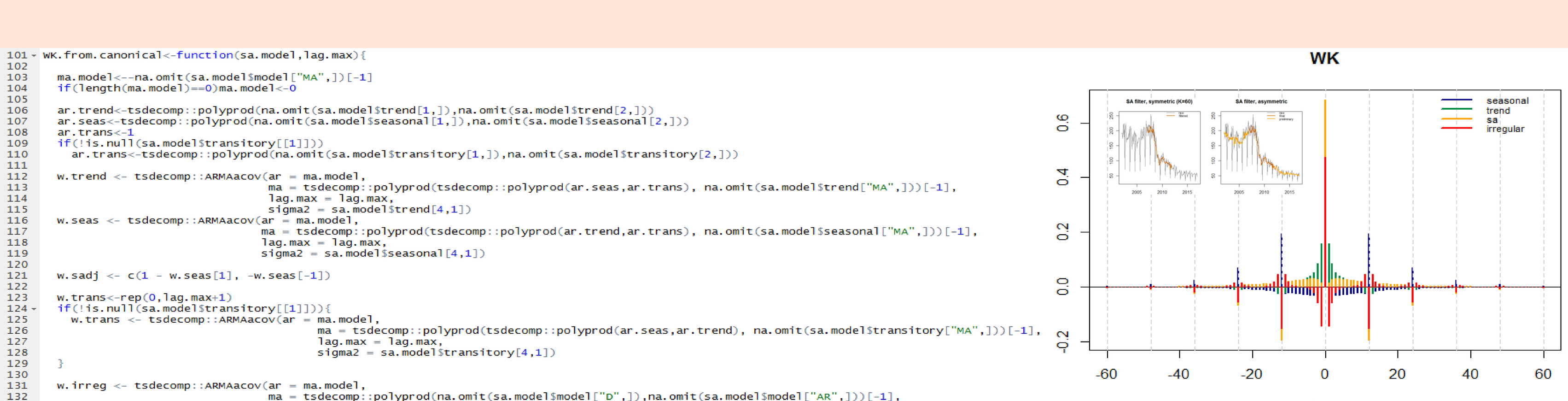




**2019** Derivation of the **Wienner-Kolmogorov** filter weights from the canonical decomposition provided by the **RJDemetra** package.

**Production system** developed with **RJDemetra**:

- partial concurrent revision from the JDemetra+ GUI.
- an R-script reads the workspace and perform all posterior transformations: base year adjustment, exportation formats, custom summaries...



WK filter weights computation: the canonical decomposition is the input for the **tsdecomp** package functions

Monthly production R-script