TSACE Webinar, Wednesday December 14th 2022

Using JDemetra+ in R: from version 2 to version 3
Presentation 1: General Outline of the R-JDemetra+ universe

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Outline of the webinar

```
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```

Scope of the webinar: Seasonal Adjustment with X13-Arima and Tramo-Seats (leaving the rest aside... for future webinars ?)

Four presentations (approx 90')

- P1: introduction
  - highlighting the main evolutions between version 2 and 3
  - outlining the global scope of R tools for JDemetra+
  - working environment set-up
- P2: Focus on SA with X13-Arima or Tramo-Seats in R and related tools.

10' Coffee Break

- P3: Working in R with JDemetra+ workspaces
- P4: Quality assessment and production in R

Resources on GitHub: slides, code, additional papers and beamers
https://github.com/annasmyk/Tsace_RJD_Webinar_Dec22

JDemetra+: a library of algorithms for time series analysis

JDemetra+ is a library of algorithms on:

- Seasonal Adjustment (GUI and R)
- Trend and cycle estimation (R only)
- Benchmarking and temporal disaggregation (GUI and R)
- Nowcasting (R and Plug-in)

They can be accessed via graphical user-interface (GUI) and/or R and/or plug-ins.

The available output, functions or tools are in general not identical using R or GUI for example, it is often fruitful to combine them.

JDemetra+ also offers general utilities for time series analysis: tests, auto-correlation functions, Arima modelling, spectral analysis tools ... (in GUI and R)

Why R packages ?

Before 2019: access only through GUI and plug-ins.

Why add R packages ?

Allows to immerse JD+ algorithms in the R universe, with all its pre-existing statistical functions and user-community.

In March 2019, `RJDemetra` (containing X-13 Arima and Tramo-Seats) was published on CRAN:

- first R package that enables to use Tramo-Seats
- faster than existing R packages on seasonal adjustment

Ever-growing R ecosystem

Since, many more packages have been developed as JDemetra+ Core was upgraded from version 2 to version 3

Extension of scope:

- High-frequency data (extended)
- STL
- refresh policies for SA
- new tools

Modifications of existing functions and output organisation

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From v2 to v3: changing gears

Version 2:

- RJDemetra (X13-Arima, Tramo-Seats, functions for workspace wrangling)
- additional packages based on RJDemetra: rjdworkspace, ggdemetra, rjdqa (see paper on v2)
- more specific packages like rjdhighfreq, rjdsts

(corresponding to the version 2.x family of JD+ Core)

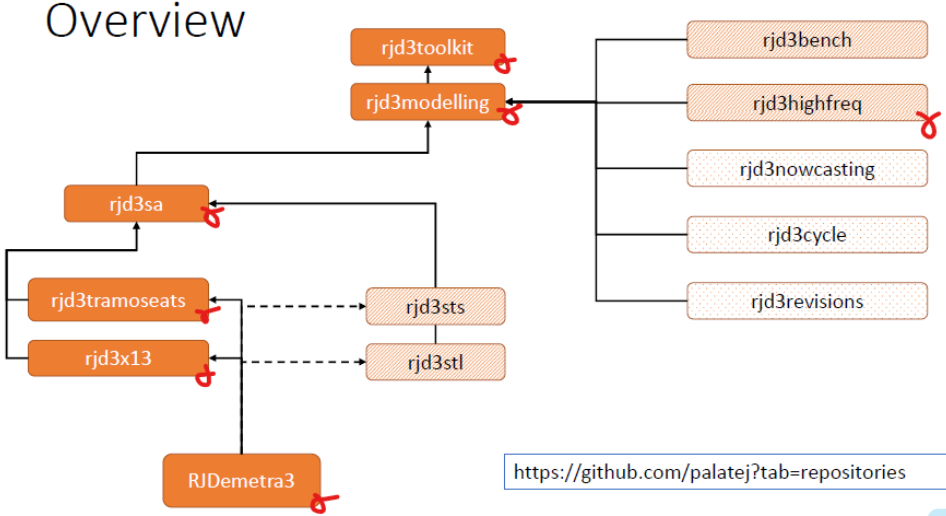
The mindset of version 3 is:

- modular organisation: independent more specific functions
- more "stand alone" tools (not only retrieving results from SA processing)

Version 3: A suite of packages (see below)

- corresponding to the version 3.x family of JD+ Core
- still under construction, moving perimeters

Organisation of the rjd3 packages



Seasonal adjustment algorithms in JDemetra+ version 3

For seasonal adjustment, specifically, JDemetra+ contains:

- X13-Arima (GUI and R)
- Tramo-Seats (GUI and R)
- STL (R only)
- Structural Time Series (SSF framework) (R only)

All of these algorithms can be used with HF data.

For X13-Arima and Tramo-Seats some illustrations are available only in GUI. (auxiliary tools like: spectral analysis, sliding spans, revision history...)

Scope of this webinar: SA with X-13 and Tramo-Seats, including HF data

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Installing packages (1/2)

Version 2: RJDemetra is on CRAN

```
install.packages("RJDemetra")
library("RJDemetra")
```

In part 3 and 4 we will also use

- JDCruncheR (based on cruncher output) To install it: download the **.zip** or **.tar.gz** file from https://github.com/InseeFr/JDCruncheR/releases.
- rjdworkspace (based on RJDemetra) To install it: download the **.zip** or **.tar.gz** file from https://github.com/InseeFrLab/rjdworkspace/releases.

You can run v2 and v3 simultaneously

Version 3 requires Java ≥ 17 (see https://github.com/jdemetra/rjdemetra/wiki/Installation-manual)

Installing packages (2/2)

Installing latest version from GitHub (as not on CRAN yet)

```
# install.packages("remotes")

remotes::install_github("palatej/rjdemetra3")

remotes::install_github("palatej/rjd3toolkit", ref = "v0.6.0")

remotes::install_github("palatej/rjd3modelling", ref = "v0.6.0")
remotes::install_github("palatej/rjd3arima", ref = "v0.6.0")
remotes::install_github("palatej/rjd3sa", ref = "v0.6.0")

remotes::install_github("palatej/rjd3tramoseats", ref = "v0.6.0")
remotes::install_github("palatej/rjd3x13", ref = "v0.6.0")
remotes::install_github("palatej/rjdemetra3", ref = "v0.6.0")

remotes::install_github("palatej/rjd3sts", ref = "v0.5.0")
remotes::install_github("palatej/rjd3highfreq", ref = "v0.5.0")
remotes::install_github("palatej/rjd3stl", ref = "v0.5.0")
```