Using JDemetra+ in R: from version 2 to version 3
Presentation 4: SA production and quality report in R

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Tackling Production issues

Context of use :

- massive data sets
- setting up a production process
- annual or infra-annual reviews
- producing quality reports
- manual fine tuning a selected sub-set of series

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Quality report with JDCruncheR package (1/4)

JDemetra+ Cruncher (executable module) allows to

- update a JDemetra+ workspace (refresh policy)
- export the results (series and diagnostics), without having to open the graphical interface and operate manually.

It can be launched in R with rjwsacruncher or JDCruncheRR packages.

The **JDCruncheR package** produces a QR based on JDemetra+ cruncher output

Quality report with JDCruncheR package (2/4)

The three main functions of the JDCruncheR package are:

- extract_QR to extract the quality report from the csv file (demetra_m.csv) that contains all JD+ diagnostics

- compute_score to compute a weighted score based on selected diagnostics and corresponding "Good", "Bad",... modalities

- export_xlsx to export the quality report to Excel

Quality report with JDCruncheR (3/4): example

```r
# choose the demetra_m.csv file generated by the cruncher
QR <- extract_QR("../Output/SA")
QR


?compute_score # to see how the score is calculated (formula)
QR <- compute_score(QR, n_contrib_score = 3)


QR


QR <- sort(QR, decreasing = TRUE, sort_variables = "score")
export_xlsx(QR, file_name = "U:/quality_report.xls")
```

Quality report with JDCruncheR (4/4) : example

Missing values can be ignored and conditions can be set for indicators:

```r
# oos_mse weight reduced to 1 when the other
# indicators are "Bad" ou "Severe"
condition1 <- list(indicator = "oos_mse",
                   conditions = c("residuals_independency",
                                  "residuals_homoskedasticity",
                                  "residuals_normality"),
                   conditions_modalities = c("Bad","Severe"))

BQ <- compute_score(BQ, n_contrib_score = 5,
                    conditional_indicator = list(condition1),
                    na.rm = TRUE)
```

Example of score composition

Diagnostics		Weights (out of 100)
Pre-adjustment	ARIMA Model Residuals	30
	Residual Calendar Effects	20
Decomposition	Residual seasonality	45
	Decomposition Quality (stats M if X11)	5

Customize the score computation

Practical steps if you want to customize the score computation (see package documentation in R)

- select your indicators of interest
- adjust "good", "bad"... threshold in JD+ GUI if necessary
- by default good=0, uncertain=1, bad or severe=3
- change this grading system and/or the weights directly in the package functions
- rebuild your package

Future developments: make this functions directly customizable by the user

In this QR only diagnostics are taken into account, revisions and numerical effects of potential parameter tuning still have to be analysed

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SA production (fully?) in R

A request which comes back all the time

- better (?) automation when the remainder of the production process (outside of SA) is also done in R

We will contrast

- "old fashion set-up": workspace created in GUI, readable with GUI and refreshable with the cruncher (functions from R packages might be used as auxiliary tools, e.g "instant read"..)
- "full R set-up": no workspace structure, time series objects only

Data format and portability

Workspace created in GUI:

- rigid data structure (series order constraints)
- physical path to data (not portable)

Time-series objects in R: complete flexibility and portability (Sharing R projects can be done easily)

Fine-tuning specifications

Context of use :

- SA processing first set-up or annual review

- massive data set

- each series has specific (pre-determined) parameters: pre-specified outliers, calendar regressors

Fine-tuning specifications:

- In a classical Workspace: not easy, need for an auxiliary tool (in java for example)

- In a full R set-up: easier to write code generating specific (different) specifications in large number and link them to series

Estimation and Refreshing data

In a classical workspace :

- very easy and fast with the Cruncher

In a full R set up:

- more code needed, as fast ? (probably)
- refresh policies (v3) even more flexible
- output is directly available in R for further processing

Annual review, selective editing and manual fine tuning

Step 1: comparing old and new sets of parameters (classical "current" vs "automatic" reestimation)

- easy in both contexts using R (reading W with RJDemetra) :
- score computation with diagnostics : JDCruncheR or adapted version to R objects

Step 2: select important series and fine-tune manually

- classical Workspace GUI for manual expertise: significant asset
- R setup: visual feedback not as rich, nor multi-layer, nor as easy to navigate as GUI

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On production in R

Main asset of WS-GUI-Cruncher set up:

- GUI rich and multi-level feedback for manual fine tuning
- use data structure rigidity at your advantage (easier to keep track of production with workspaces ?)

Assets of "Full R set up"

- portability
- direct availability of objects in R

Upgrading from v2 to v3

What is new ?

- Tools : tests, arima estimation
- More specific and `fast()` functions
- Refresh policies, even more flexible

Upgrading code from v2 to v3

Cost of code conversion

- global functions very similar (arguments)
- customization process significantly different
- organisation of stored objects significantly different

Future developments

what is missing ?

- functions for handling workspaces in v3
- update/reframe auxiliary packages (rdjworkspace, ex ggdemetra3)

. . . open discussion

Possible Contributions

- Testing and reporting issues (test_rjd3 repo on GitHub)
- Developing new tools (other packages, new functions, etc.)

Resources and documentation

Webinar Resources on GitHub:

- slides with code (rmd files)

- additional references: Beamers, Working Paper on v2 set of tools (jan 2021) will be updated to v3 (March 2023)

https://github.com/annasmyk/Tsace_RJD_Webinar_Dec22

Coming soon: **JDemetra+ NEW online documentation** "first release" on Thursday December 22nd:

https://jdemetra-new-documentation.netlify.app/

Restricted scope : Chapters on SA (incl HF) and Chapters on Tools (GUI, R packages and plug-ins) It will grow from there...

BLOG JDemetra+ universe

We are starting a Blog: **JDemetra+ universe**, the missing piece between Cros Portal and GitHub pages
https://jdemetra-universe-blog.netlify.app/

- can be used for problem/solution/insights sharing (comments available if logged into GitHub)

- guest posts welcome

- we will link "all" presentations about JDemetra+ in conferences / workshops * (If you give a talk about JD+ let us know...)

Thank you for your attention

Packages ®:

- palatej/rjd3toolkit
- palatej/rjd3modelling
- palatej/rjd3sa
- palatej/rjd3arima
- palatej/rjd3x13
- palatej/rjd3tramoseats
- palatej/rjdemetra3

- palatej/rjdfilters
- palatej/rjd3sts
- palatej/rjd3stl
- palatej/rjd3highfreq
- palatej/rjd3bench
- AQLT/ggdemetra3