

Package ‘rjd3production’

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Title Prepare for Production of Seasonal Adjustment with 'JDemetra+'

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Description A comprehensive tool for setting up seasonal data pipelines using 'JDemetra+' (version 3) and 'rjdverse'. This includes setting up a new working environment, creating and selecting calendar regressors, managing specifications (trading-days regressors and outliers) at the workspace level, making a workspace usable by the 'cruncher', removing insignificant outliers, and comparing workspaces.

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add_raw_data_path	<i>Add raw data from a file to a JWS workspace</i>
-------------------	--

Description

This function completes the ts metadata (moniker) to make the workspace refreshable and crunchable.

Usage

```
add_raw_data_path(jws, path, ...)
```

Arguments

jws	A Java Workspace object, as returned by <code>rjd3workspace::jws_open()</code> or <code>rjd3workspace::jws_new()</code>
path	A character string. Path to the input data file. Must be a .csv file (support for .xlsx is not yet implemented).
...	Additional arguments passed to <code>rjd3providers::txt_data()</code> (e.g., delimiter, date format, clean missing argument...).

Details

Currently, only CSV files are supported. Each column of the input file is interpreted as a time series and matched against the series names in the workspace.

The difference with the function `make_ws_crunchable` is that `add_raw_data_path()` will associate the workspace with a non temporary data path.

Value

The modified jws object invisibly.

Examples

```
library("rjd3workspace")
library("rjd3x13")
library("rjd3toolkit")

my_data <- ABS
path_ABS <- system.file("extdata", "ABS.csv", package = "rjd3providers")

jws <- create_ws_from_data(my_data)
add_raw_data_path(jws, path_ABS, delimiter = "COMMA")
```

assign_outliers

Manage regression components in JDemetra+ workspaces

Description

These functions allow extracting, exporting, importing and assigning regression components used in JDemetra+ workspaces.

Usage

```
assign_outliers(jws, outliers, verbose = TRUE)

assign_td(jws, td, verbose = TRUE)

export_outliers(outliers, path = NULL, verbose = TRUE)

import_outliers(path, verbose = TRUE)

export_td(td, path = NULL, verbose = TRUE)

import_td(path, verbose = TRUE)

retrieve_outliers(
  jws,
  domain = TRUE,
  estimation = FALSE,
  point = FALSE,
  verbose = TRUE
)

retrieve_td(
  jws,
  domain = TRUE,
```

```

    estimation = FALSE,
    point = FALSE,
    verbose = TRUE
  )

```

Arguments

jws	A Java Workspace object, as returned by <code>rjd3workspace::jws_open()</code> or <code>rjd3workspace::jws_new()</code>
outliers	[data.frame] A <code>data.frame</code> created with <code>retrieve_outliers</code> or <code>import_outliers</code> . See Format section for more information about the format of this argument.
verbose	Boolean. Print additional informations. Default is TRUE.
td	[data.frame] A <code>data.frame</code> created by <code>retrieve_td</code> or <code>import_td</code> . See Format section for more information about the format of this argument.
path	character Path to a YAML file to read or write a table.
domain	Boolean indicating if outliers should be extracted from the domain specification.
estimation	Boolean indicating if outliers should be extracted from the estimation specification.
point	Boolean indicating if outliers should be extracted from the point specification.

Details

Two types of regression components are currently supported:

- **Outliers**
- **Trading-day regressors (TD)**

Value

- `retrieve_outliers()` and `import_outliers()` returns `data.frame` representing the outliers.
- `retrieve_td()` and `import_td()` returns `data.frame` representing the trading days variables
- `export_outliers()` and `export_td()` functions invisibly return the path of the YAML file written.
- `assign_XXX()` functions invisibly return the updated workspace `jws`.

Format

Outliers table:

Outliers are represented by a `data.frame` with **three columns**:

- `series` : name of the series in the workspace.
- `type` : type of outlier (AO, LS, TC or SO).
- `date` : date of the outlier in YYYY-MM-DD format.

These tables are typically created with `retrieve_outliers()` or `import_outliers()`.

Trading-day table:

Trading-day specifications are represented by a `data.frame` with **two columns**:

- `series` : name of the series in the workspace.
- `regs` : name of the trading-day regressor set to apply (e.g. REG1, REG2, ..., optionally with LY).

These tables are typically created with `retrieve_td()` or `import_td()`.

Workflow

The workflow typically follows these steps:

1. Extract regression information from a workspace (`retrieve_XXX()`)
2. Optionally export it to a YAML file (`export_XXX()`)
3. Import it later from the YAML file (`import_XXX()`)
4. Assign the regression specification to another workspace (`assign_XXX()`)

Other

The assignment functions (`assign_XXX()`) modify the **first SA-Processing** of the workspace.

Currently, regression information can be extracted (`retrieve_XXX()`) from the `point`, `estimation` or `domainSpec`, while the assignment step (`assign_XXX()`) is performed in both the `domainSpec` and the `estimationSpec`.

Examples

```
library("rjd3workspace")
library("rjd3toolkit")

my_data <- ABS[, 1:3]
jws <- create_ws_from_data(my_data)
set_context(jws, create_insee_context(start = c(2015L, 1L)))

## Outliers

# Read all the outliers from a workspace
outs <- retrieve_outliers(jws, point = TRUE, domain = FALSE)

# Export outliers
path_outs <- tempfile(pattern = "outliers-table", fileext = ".yaml")
export_outliers(outs, path_outs)

# Import outliers from a file
outs2 <- import_outliers(path_outs)

# Assign the outliers to a WS
assign_outliers(jws = jws, outliers = outs2)

## Trading day workflow

# Read all the td variables from a workspace
```

```
td <- retrieve_td(jws)

# Export td variables
path_td <- tempfile(pattern = "td-table", fileext = ".yaml")
export_td(td, path_td)

# Import td variable from a file
td2 <- import_td(path_td)

# Select td
td3 <- select_td(my_data)

# Assign the td variables to a WS
assign_td(jws = jws, td = td3)
```

compare

Compare series across workspaces

Description

Reads multiple JDemetra+ workspaces and extracts comparable series (by SAI and series type), returning them in a tidy format. This is particularly useful to compare results across different specifications (e.g. RSA3 vs RSA5).

Usage

```
compare(..., series_names)
```

Arguments

... **character** Workspace file paths.
series_names **character** Vector of SAI names to compare.

Value

A data.frame with columns:

- ws: workspace name (derived from file basename),
- SAI: SAI name,
- series: type of series,
- date: observation date,
- value: numeric value.

Examples

```

library("rjd3toolkit")
library("rjd3x13")
library("rjd3workspace")

# Two demo workspaces (RSA3 and RSA5)
jws_rsa3 <- create_ws_from_data(ABS, x13_spec("rsa3"))
jws_rsa5 <- create_ws_from_data(ABS, x13_spec("rsa5"))

path_rsa3 <- tempfile(pattern = "ws-rsa3", fileext = ".xml")
path_rsa5 <- tempfile(pattern = "ws-rsa5", fileext = ".xml")

save_workspace(jws_rsa3, file = path_rsa3)
save_workspace(jws_rsa5, file = path_rsa5)

df <- compare(path_rsa3, path_rsa5, series_names = "X0.2.09.10.M")
head(df)

```

create_specs_set

Creating a set of X13 specifications

Description

Builds a set of X13 specifications from a start date, a modelling context (explanatory variables) and outliers (optional).

Usage

```

create_specs_set(
  spec_0 = NULL,
  context = NULL,
  outliers = NULL,
  span_start = NULL
)

```

Arguments

spec_0	Basic specification
context	list Modeling context created by <code>rjd3toolkit::modelling_context()</code> .
outliers	[list or NULL] Optional list with elements : <ul style="list-style-type: none"> • type: vector of outlier types (e.g. "AO", "LS", "TC") • date: vector of corresponding dates
span_start	character Estimation start date (format "YYYY-MM-DD").

Value

A list of named X13 specifications (TD and variants).

Examples

```
my_context <- create_insee_context()
create_specs_set(context = my_context)
```

create_ws_from_data *Create a Workspace from Data*

Description

Creates a new JDemetra+ workspace with all columns of a time series object using a specified specification.

Each column of *x* is interpreted as a separate time series and added to a newly created Seasonal Adjustment Processing (SAP).

Usage

```
create_ws_from_data(x, spec = rjd3x13::x13_spec())
```

Arguments

<i>x</i>	A time series object (e.g. <i>ts</i> , <i>mts</i> , or matrix coercible to <i>ts</i>) where each column represents a series to be seasonally adjusted. Column names are used as SA-Item names.
<i>spec</i>	A JDemetra+ specification. Defaults to <code>rjd3x13::x13_spec()</code> .

Details

All series share the same specification (*spec*).

Value

A JDemetra+ workspace object (Java pointer) containing one SA-Processing with one SA-Item per column of *x*.

Examples

```
library("rjd3toolkit")

# Create workspace
ws <- create_ws_from_data(ABS)
```

get_jsai_by_name	<i>Retrieve a SA-Item by its name</i>
------------------	---------------------------------------

Description

Searches a workspace for a seasonal adjustment item (SAI) whose name matches the user-supplied string and returns the corresponding object.

Usage

```
get_jsai_by_name(jws, series_name)
```

Arguments

jws	A Java Workspace object, as returned by <code>rjd3workspace::jws_open()</code> or <code>rjd3workspace::jws_new()</code>
series_name	character Name of the SAI to retrieve.

Value

A Java Seasonal Adjustment Item object (jsai).

Examples

```
library("rjd3toolkit")
library("rjd3workspace")

# Demo workspace
jws <- create_ws_from_data(ABS)
jws_compute(jws)
jsap <- jws_sap(jws, 1L)

jsai <- get_jsai_by_name(jws, "X0.2.09.10.M")
df <- get_series(jsai)
head(df)
```

get_named_variables	<i>Retrieve all the auxiliary variables from a workspace</i>
---------------------	--

Description

Lists all the variables in a modelling context.

Usage

```
get_named_variables(context = NULL)
```

Arguments

context a modelling context

Value

a list with all the groups and named variables

Examples

```
context_FR <- create_insee_context()
get_named_variables(context_FR)
```

get_series	<i>Extract all series from a SA-Item</i>
------------	--

Description

Extracts all available time series (pre-adjustment, decomposition, and final) from a seasonal adjustment item (jsai) inside a JDemetra+ workspace.

Usage

```
get_series(x, ...)

## S3 method for class 'JD3_TRAMOSEATS_RSLTS'
get_series(x, name, ...)

## S3 method for class 'JD3_X13_RSLTS'
get_series(x, name, ...)

## S3 method for class 'jobjRef'
get_series(x, ...)
```

Arguments

x The object to extract the series
 ... Additional argument
 name Name of the SA object

Details

x can be a Java SAI object, typically obtained via `rjd3workspace::jsap_sai()` after opening and computing a workspace with `rjd3workspace::jws_open()` and `rjd3workspace::jws_compute()`.

Value

A data.frame with columns:

- SAI: name of the SAI,
- series: the type of series (e.g. "y", "sa", "trend"),
- date: observation dates,
- value: numeric values of the series.

Examples

```
library("rjd3toolkit")
library("rjd3workspace")

# Demo workspace
jws <- create_ws_from_data(ABS)
jws_compute(jws)
jsap <- jws_sap(jws, 1L)
jsai <- jsap_sai(jsap, 1L)

df <- get_series(jsai)
head(df)
```

init_env

Initialize a seasonal adjustment project environment

Description

This function creates a complete project structure for a seasonal adjustment production workflow. It initializes an R project, sets up useful directories, configuration files, and development tools.

The generated structure is designed for workflows based on the 'rjdverse'.

Usage

```
init_env(path, open = FALSE)
```

Arguments

path	A character string. Path where the project will be created.
open	Boolean. Should the project be opened in RStudio after creation? Default is FALSE.

Value

The project path invisibly.

Examples

```
project_path <- tempfile(pattern = "my-project")

## Not run:
# Create a new project
init_env(path = project_path)

## End(Not run)
```

insee_modelling *French modelling context, calendar and trading days regressors.*

Description

These functions allow to construct the standard regressors and modelling context used by INSEE for seasonal adjustment:

- `create_french_calendar()` creates the French national calendar.
- `create_insee_regressors()` generates trading day regressors and leap-year effect (LY).
- `create_insee_regressors_sets()` organizes these regressors into standard sets (REG1, REG2, ..., REG6, with or without LY).
- `create_insee_context()` combines the regressors and calendar into a `modelling_context` object that can be used directly with `rjd3toolkit`.

Usage

```
create_french_calendar()

create_insee_regressors(
  start = c(1990L, 1L),
  frequency = 12L,
  length = 492L,
  s = NULL,
  cal = NULL
)

create_insee_regressors_sets(
  start = c(1990L, 1L),
  frequency = 12L,
  length = 492L,
  s = NULL,
  cal = NULL
)

create_insee_context(
```

```

    start = c(1990L, 1L),
    frequency = 12L,
    length = 492L,
    s = NULL
  )

```

Arguments

start	[integer vector] Start period in the format c(year, month) (default c(1990, 1)).
frequency	integer Series frequency (default 12L).
length	integer Series length (default 492L).
s	[numeric or NULL] Optional argument for adjustment (passed to rjd3toolkit).
cal	a calendar of class JD3_CALENDAR.

Value

- create_french_calendar() returns a national_calendar object.
- create_insee_regressors() returns a matrix of regressors (working days
 - LY).
- create_insee_regressors_sets() returns a list of regressor sets (REG1, REG2, ..., REG6, with or without LY).
- create_insee_context() returns a modelling_context object.

Examples

```

# 1. Create the French calendar
cal <- create_french_calendar()
cal

# 2. Generate regressors
regs <- create_insee_regressors(start = c(2000, 1), frequency = 12, length = 240)
head(regs)

# 3. Organize into standard sets
sets <- create_insee_regressors_sets(start = c(2000, 1), frequency = 12, length = 240)
names(sets)

# 4. Build a complete context for rjd3toolkit
context <- create_insee_context(start = c(2000, 1), frequency = 12, length = 240)
context

```

make_ws_crunchable	<i>Make a workspace crunchable</i>
--------------------	------------------------------------

Description

Complete and replace the ts metadata of a WS to make it crunchable

Usage

```
make_ws_crunchable(jws, verbose = TRUE)
```

Arguments

jws	A Java Workspace object, as returned by <code>rjd3workspace::jws_open()</code> or <code>rjd3workspace::jws_new()</code>
verbose	Boolean. Print additional informations. Default is TRUE.

Details

New metadata are added from temporary files created on the heap. Thus, this operation is not intended to make the workspace crunchable in a stable way over time, but rather for a short period of time for testing purposes, in particular when we are sent a workspace without the raw data.

Value

A java workspace (as jws) but with new ts metadata

Examples

```
library("rjd3workspace")
library("rjd3x13")
library("rjd3toolkit")

jws <- jws_new()
jsap <- jws_sap_new(jws, "sap1")
add_sa_item(
  jsap = jsap,
  name = "series_3",
  x = ABS[, 1],
  spec = x13_spec("RSA3")
)
jws <- make_ws_crunchable(jws)
```

`random-spec`*Random JDemetra+ Specifications Generator*

Description

`random_spec()` allows you to create a random specification based on a set of helper functions (auxiliary functions). These specifications are created from scratch.

Usage

```
random_spec()
```

Details

The objective is to enable:

- examples
- tests of other functions (notably for reverse engineering)
- other tests and demonstrations

Value

a JD+ Specification

Examples

```
set.seed(1L)
spec <- random_spec()
```

`remove_non_significative_outliers`*Remove non-significant outliers from a JDemetra+ workspace*

Description

This function scans a JDemetra+ workspace (.xml) and removes regression outliers whose p-values are above a given threshold. Both the estimation specification and the domain specification are updated accordingly, and the workspace file is saved in place.

Typical use case: after estimation with user pre-specified outliers, outliers with weak statistical significance (e.g. $p > 0.3$) are dropped to simplify the regression specification.

Usage

```
remove_non_significant_outliers(
  ws_path,
  threshold = 0.3,
  domain = FALSE,
  estimation = FALSE,
  verbose = TRUE
)
```

Arguments

ws_path	[character] Path to a JDemetra+ workspace file (usually with extension .xml).
threshold	[numeric] Maximum p-value for keeping an outlier. Outliers with $\Pr(> t) > \text{threshold}$ are removed. Default is 0.3.
domain	Boolean indicating if the domain specification should be modified.
estimation	Boolean indicating if the estimation specification should be modified.
verbose	Boolean. Print additional informations. Default is TRUE.

Details

The function:

- iterates over all the series (SA-Items) in the workspace,
- identifies outliers in the regarima specification,
- checks their p-values in the pre-processing regression summary,
- removes those with p-values above the threshold from both estimationSpec and, if present, domainSpec,
- saves the workspace file.

Value

The function invisibly returns NULL, but it **modifies the workspace file in place** (saved at the same location as ws_path).

Examples

```
library("rjd3workspace")
library("rjd3x13")
library("rjd3toolkit")

new_spec <- x13_spec() |>
  add_outlier(type = "LS", date = "1990-01-01")
jws <- create_ws_from_data(x = ABS[, 1, drop = FALSE], spec = new_spec)
path_ws <- tempfile(pattern = "ws", fileext = ".xml")
save_workspace(jws, file = path_ws)
```

```
# Remove non-significant outliers (p > 0.3) from a workspace
remove_non_significant_outliers(path_ws, threshold = 0.3, domain = TRUE)
```

run_app	<i>Run the Shiny comparison app</i>
---------	-------------------------------------

Description

Launches an interactive Shiny application to explore and compare seasonal adjustment results stored in a `data.frame` returned by `compare()`.

Usage

```
run_app(data, ...)
```

Arguments

<code>data</code>	A <code>data.frame</code> returned by <code>compare()</code> , containing the columns <code>ws</code> , <code>SAI</code> , <code>series</code> , <code>date</code> , and <code>value</code> .
<code>...</code>	Additional arguments passed to <code>shiny::shinyApp()</code> .

Value

Runs a Shiny app in the R session (no return value).

Examples

```
library("rjd3toolkit")
library("rjd3x13")
library("rjd3workspace")

# Two demo workspaces (RSA3 and RSA5)
jws_rsa3 <- create_ws_from_data(ABS, x13_spec("rsa3"))
jws_rsa5 <- create_ws_from_data(ABS, x13_spec("rsa5"))

path_rsa3 <- tempfile(pattern = "ws-rsa3", fileext = ".xml")
path_rsa5 <- tempfile(pattern = "ws-rsa5", fileext = ".xml")

save_workspace(jws_rsa3, file = path_rsa3)
save_workspace(jws_rsa5, file = path_rsa5)

# Compare the two workspace
df <- compare(path_rsa3, path_rsa5, series_names = "X0.2.09.10.M")
head(df)
```

```
# Launch the shiny app
if (interactive()) {
  run_app(df)
}
```

 select_td

Select Calendar Regressors for One or Multiple Series

Description

Applies the X13 regression selection procedure to one or more time series. If multiple series are provided as columns of a matrix or data.frame, each series is processed separately. The function returns the selected set of regressors for each series.

Usage

```
select_td(series, context = NULL, ..., verbose = TRUE)
```

Arguments

series	[ts or mts or matrix or data.frame] A univariate time series (ts) or a multivariate series (columns as separate series).
context	list Modeling context created by <code>rjd3toolkit::modelling_context()</code> .
...	Additional arguments passed to <code>create_specs_set()</code> controlling the generation of X13 specifications. Possible arguments include: <ul style="list-style-type: none"> outliers Optional list of outliers with elements type (vector of types, e.g., "AO", "LS", "TC") and date (vector of dates). span_start Starting date of the estimation (character, format "YYYY-MM-DD"). ... Other arguments accepted by <code>create_specs_set()</code>.
verbose	Boolean. Print additional informations. Default is TRUE.

Value

A data.frame with two columns:

series Name of the series (column name if series is multivariate).

regs Name of the selected regressor set.

Examples

```

library("rjd3toolkit")

# Single series
select_td(ABS[, 1])

# Multiple series
select_td(ABS)

# Restrict regressors sets
my_context <- create_insee_context(s = ABS)
my_context$variables <- my_context$variables[c("REG1", "REG1_LY", "REG6", "REG6_LY")]
select_td(ABS, context = my_context)

```

set_minimum_span	<i>Set span minimum to a value</i>
------------------	------------------------------------

Description

Set span minimum to a value

Usage

```

set_minimum_span(
  spec,
  d0,
  model_span = TRUE,
  series_span = TRUE,
  without_outliers = TRUE
)

```

Arguments

spec	Specification (object of class JD3_X13_SPEC or JD3_TRAMOSEATS_SPEC)
d0	characters in the format "YYYY-MM-DD" to specify first date of the span
model_span	Boolean. Should the estimation (= model) span be modified?
series_span	Boolean. Should the series (= basic) span be modified?
without_outliers	Boolean. Should the outliers set before the starting date be removed? (Small crutch while waiting for the resolution of jdemetra/jdplus-main issue 858 .)

Details

model_span = estimation_span series_span = basic_span

Value

the modify specification (an JD3_X13_SPEC or JD3_TRAMOSEATS_SPEC object).

Examples

```
library("rjd3toolkit")
library("rjd3x13")
library("rjd3workspace")

# Two demo workspaces (RSA3 and RSA5)
spec <- x13_spec("rsa3")
set_minimum_span(spec, "2012-01-01")
```

translate-spec

Reverse Engineering of rjd3 Specifications

Description

This family of functions reconstructs executable R code from a X13 specification object. the generated code uses only the packages {rjd3toolkit} and {rjd3x13}.

The main entry point is `rev_spec()`, which aggregates all reverse-generating helpers.

Usage

```
rev_spec(x)
```

Arguments

x A JDemetra+ specification object

Details

The functions are taking a specification (argument `x`) as input and returns A corresponding code that generates the object `x`.

`rev_spec()` is the main function and calls all other helper functions (`rev_XXX`). These helper functions (auxiliary functions) do NOT provide sufficient code to reproduce the specification, but only the part dedicated to them (outliers, trading days regressors, x11 filters, etc.).

The generated code is neither unique nor optimal.

That is, different codes (other than the one generated by `rev_spec`) can generate the same specification. It is not optimal because it does not use the default values of the functions but clearly redefines all the parameters.

Value

Each `rev_XXX()` function returns a character string containing executable R code. `rev_spec()` returns a complete multi-line pipeline.

Examples

```
spec_init <- rjd3x13::x13_spec("RSA3") |>
  rjd3toolkit::set_basic(type = "All") |>
  rjd3toolkit::set_automodel(enabled = FALSE)
code <- rev_spec(spec_init)
cat(code)
spec_rebuilt <- eval(parse(text = code))
```

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