

Package ‘procregcmpnt’

February 11, 2025

Title Support routines for importing data from the Census Bureau's regCMPNT program

Version 1.0

Description Utilities that allow the results from the regCMPNT modeling software into R.

License MIT + file LICENSE

Encoding UTF-8

LazyData TRUE

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.2

Imports openxlsx,

stringr,
sautilities,
utils

Suggests cli,

glue (>= 1.6.1),
lifecycle (>= 1.0.3),
magrittr,
rlang (>= 1.0.0),
stringi (>= 1.5.3),
vctrs (>= 0.4.0)

Depends R (>= 3.6)

Contents

convert_date_string	2
get_arima_estimates_matrix	2
get_component_model_list	3
get_regression_estimates_matrix	4
import_est	5
import_udg	6
import_var	6
qs	7
save_component_model_list	8

Index	10
--------------	-----------

convert_date_string	<i>convert date string from regCMPNT UDG file</i>
---------------------	---

Description

Converts date string from regCMPNT UDG file into a vector of beginning and ending dates

Usage

```
convert_date_string(this_date_string = NULL, this_freq = 12)
```

Arguments

this_date_string	Character string; beginning and ending date from regCMPNT UDG file. This is a required entry
this_freq	Integer scalar; periodicity of time series Default is 12

Details

Version 1.2, 1/27/2025

Value

A vector of the beginning and ending date from the regCMPNT UDG file

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3000019_udg      <- import_var("n3000019_rev2.udg", return_matrix = FALSE)

## End(Not run)
```

get_arima_estimates_matrix	<i>ARMA Coefficient Summary</i>
----------------------------	---------------------------------

Description

Generate a summary of ARMA coefficients for a component in a regCMPNT model as run by SeasCen.

Usage

```
get_arima_estimates_matrix(this_udg = NULL, this_component = NULL)
```

Arguments

`this_udg` List object; UDG list generated from a regCMPNT run on a single time series
This is a required entry.

`this_component` Integer scalar; number of component ARIMA model This is a required entry.

Details

Version 1.8, 2/6/2025

Value

matrix of ARMA coefficients, standard errors, and variances for a given series

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3008396_udg      <- import_udg("n3008396.udg")
n3008396_arima_c1 <- get_arima_estimates_matrix(n3008396_udg, 1)
n3008396_arima_c2 <- get_arima_estimates_matrix(n3008396_udg, 2)
n3008396_arima_c3 <- get_arima_estimates_matrix(n3008396_udg, 3)

## End(Not run)
```

get_component_model_list

Generate component model summary

Description

Generate a summary of component models for a single series into a list object

Usage

```
get_component_model_list(this_udg = NULL)
```

Arguments

`this_udg` List object; UDG list generated from a regCMPNT run on a single time series
This is a required entry.

Details

Version 1.7, 2/11/2025

Value

list of matrices of regression and ARIMA coefficients, standard errors, variances, and t-statistics for a given series

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3008396_udg      <- import_udg("n3008396.udg")
n3008396_comp_list <- get_component_model_list(n3008396_udg)

## End(Not run)
```

```
get_regression_estimates_matrix
```

Generate regression coefficient summary

Description

Generate a summary of regression coefficients for a single series

Usage

```
get_regression_estimates_matrix(this_udg = NULL)
```

Arguments

this_udg	List object; UDG list generated from a regCMPNT run on a single time series This is a required entry.
----------	--

Details

Version 1.1, 2/6/2025

Value

matrix of regression coefficients, standard errors, and t-statistics for a given series

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3008396_udg      <- import_udg("n3008396.udg")
n3008396_reg_matrix <- get_regression_estimates_matrix(n3008396_udg)

## End(Not run)
```

import_est	<i>Import regCMPNT estimates file</i>
------------	---------------------------------------

Description

Reads in an estimated component from a file saved by regCMPNT

Usage

```
import_est(file_name = NULL, column_name = NULL, return_matrix = TRUE)
```

Arguments

file_name	Character string; file name for regCMPNT estimate file. This is a required entry
column_name	Array of character strings; names for the columns of the estimates matrix. Array must be of length 5. Default is c("Unscaled_Stochastic", "Scale_Factors", "Scaled_Stochastic", "Regression_Effects", "Combined_Estimate").
return_matrix	Logical scalar; determines if a matrix or data frame object is returned. Default is TRUE.

Details

Version 1.4, 1/27/2025

Value

A ts matrix object or a data frame of ts objects which contains the contents of the estimates for a given component from a regCMPNT run. The file name for the component file has an .est file extension.

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3000019_trend_df      <- import_est("n300019_rev2_comp01.est", return_matrix = FALSE)
n3000019_seasonal_df   <- import_est("n300019_rev2_comp02.est", return_matrix = FALSE)
n3000019_irregular_df  <- import_est("n300019_rev2_comp03.est", return_matrix = FALSE)
n3000019_samplerror_df <- import_est("n300019_rev2_comp04.est", return_matrix = FALSE)

## End(Not run)
```

import_udg	<i>Import regCMPNT UDG file</i>
------------	---------------------------------

Description

Reads in diagnostics and series information for a UDG file saved by regCMPNT

Usage

```
import_udg(file_name = NULL)
```

Arguments

file_name	Character string; file name for regCMPNT variance file. This is a required entry
-----------	--

Details

Version 1.3, 2/6/2025

Value

A list with the diagnostics stored in the UDG file read into the function

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3000019_udg      <- import_udg("n300019_rev2.udg")

## End(Not run)
```

import_var	<i>Import regCMPNT Variance file</i>
------------	--------------------------------------

Description

Reads in variances for a component from a file saved by regCMPNT

Usage

```
import_var(file_name = NULL, column_name = NULL, return_matrix = TRUE)
```

Arguments

<code>file_name</code>	Character string; file name for regCMPNT variance file. This is a required entry
<code>column_name</code>	Array of character strings; names for the columns of the estimates matrix. Array must be of length 4. Default is <code>c("Unscaled_Stochastic", "Scaled_Stochastic", "Regression_Estimation", "Combined")</code> .
<code>return_matrix</code>	Logical scalar; determines if a matrix object is returned. Default is TRUE, which forces the function to return a data frame object.

Details

Version 1.4, 1/27/2025

Value

A `ts` matrix object or a data frame of `ts` objects which contains the contents of the variances for a given component from a regCMPNT run. The file name for the component file has an `.var` file extension.

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3000019_trend_var_df      <- import_var("n3000019_rev2_comp01.var", return_matrix = FALSE)
n3000019_seasonal_var_df  <- import_var("n3000019_rev2_comp02.var", return_matrix = FALSE)
n3000019_irregular_var_df <- import_var("n3000019_rev2_comp03.var", return_matrix = FALSE)
n3000019_samplerror_var_df <- import_var("n3000019_rev2_comp04.var", return_matrix = FALSE)

## End(Not run)
```

qs	<i>Generate qs statistic</i>
----	------------------------------

Description

Generates QS statistic for a given time series

Usage

```
qs(x = NULL, freq = 12, log_trans = TRUE, first_diff = TRUE, full_span = TRUE)
```

Arguments

<code>x</code>	Time series used to generate QS statistic. This is a required entry.
<code>freq</code>	Integer scalar; frequency of the time series specified in <code>x</code> . This is a required entry.
<code>log_trans</code>	Logical scalar; takes log of time series before computing QS. Default is TRUE.
<code>first_diff</code>	Logical scalar; takes first difference of time series before computing QS. Default is TRUE.
<code>full_span</code>	Logical scalar. If TRUE, QS will be computed for the entire series. If FALSE, QS will be computed for the last 8 years of the series. Default is TRUE.

Details

Version 1.4, 1/28/2025

Value

Returns a list with entries for QS, p-value.

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
UKgas_qs_full <- qs(UKgas, freq = 4)
UKgas_qs_short <- qs(UKgas, freq = 4, full_span = FALSE)
```

save_component_model_list

Saves a component model into Excel

Description

Generate a summary of regression coefficients for a single series

Usage

```
save_component_model_list(
  this_comp_list = NULL,
  this_file_name = NULL,
  save_as_table = TRUE,
  this_table_style = "TableStyleLight9"
)
```

Arguments

this_comp_list List object; compoent model summary for a single series. This is a required entry.

this_file_name character string; file that component model will be saved in. Default is formed from the name of the variable used for this_comp_list.

save_as_table Logical scalar; saves the components as an Excel table. Default is TRUE.

this_table_style Character string; specify an Excel table style to save the worksheets. This argument is only used if save_as_table = TRUE Default is "TableStyleLight9"

Details

Version 1.0, 2/11/2025

Value

Saves the component model into an Excel file, with each component in a separate worksheet

Author(s)

Brian C. Monsell, <monsell.brian@bls.gov> or <bcmonsell@gmail.com>

Examples

```
## Not run:
n3008396_udg      <- import_udg("n3008396.udg")
n3008396_comp_list <- get_component_model_list(n3008396_udg)
save_component_model_list(n3008396_comp_list, "n3008396_comp.xlsx",
                          this_table_style = "TableStyleLight2")

## End(Not run)
```

Index

`convert_date_string`, [2](#)

`get_arima_estimates_matrix`, [2](#)

`get_component_model_list`, [3](#)

`get_regression_estimates_matrix`, [4](#)

`import_est`, [5](#)

`import_udg`, [6](#)

`import_var`, [6](#)

`qs`, [7](#)

`save_component_model_list`, [8](#)