

# Package ‘procregcmpnt’

April 2, 2025

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

**Version** 1.2

**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** dplyr (>= 1.0.10),  
ggplot2 (>= 3.0.0),  
magrittr (>= 1.5),  
openxlsx,  
RColorBrewer,  
rlang (>= 1.0.0),  
stringr,  
sautilities,  
tidyr (>= 1.3.0),  
tsbox,  
utils

**Suggests** cli,  
glue (>= 1.6.1),  
lifecycle (>= 1.0.3),  
stringi (>= 1.5.3),  
vctrs (>= 0.4.0)

**Depends** R (>= 3.6)

## Contents

convert_date_string . . . . .	2
get_arima_estimates_matrix . . . . .	3
get_component_model_list . . . . .	4
get_regression_estimates_matrix . . . . .	4
import_acf . . . . .	5
import_est . . . . .	6
import_inn . . . . .	7
import_udg . . . . .	8

import_var . . . . .	8
n3000019 . . . . .	9
n3000019.acf.matrix . . . . .	10
n3000019.comp.df . . . . .	10
n3000019.pacf.matrix . . . . .	11
n3000019.udg . . . . .	11
n3008396.udg . . . . .	15
plot_acf_innov . . . . .	19
plot_component_facet . . . . .	21
plot_sadj_and_trend . . . . .	22
plot_sadj_and_trend_facet . . . . .	24
qs . . . . .	26
save_component_model_list . . . . .	27

## Index 28

---

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 1.3, 3/28/2025

## 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

```
this_daspan <-
convert_date_string(n3000019.udg[["daspan"]], n3000019.udg[["freq"]])
this_modelspan <-
convert_date_string(n3000019.udg[["modelspan"]], n3000019.udg[["freq"]])
this_sigexspan <-
convert_date_string(n3000019.udg[["sigexspan"]], n3000019.udg[["freq"]])
```

---

get\_arma\_estimates\_matrix

*ARMA Coefficient Summary*


---

## Description

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

## Usage

```
get_arma_estimates_matrix(
  this_udg = NULL,
  this_component = NULL,
  convert_to_space = FALSE
)
```

## 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.
convert_to_space	Logical scalar; replace underscores in UDG keys with spaces. Default is FALSE.

## Details

Version 2.1, 2/20/2025

## 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

```
n3008396_arma_c1 <- get_arma_estimates_matrix(n3008396.udg, 1)
n3008396_arma_c2 <- get_arma_estimates_matrix(n3008396.udg, 2)
n3008396_arma_c3 <- get_arma_estimates_matrix(n3008396.udg, 3)
```

---

```
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, convert_to_space = FALSE)
```

### Arguments

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

`convert_to_space` Logical scalar; replace underscores with spaces. Default is FALSE.

### Details

Version 2.1, 2/20/2025

### 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

```
n3008396_comp_list <- get_component_model_list(n3008396.udg)
```

---

```
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, convert_to_space = FALSE)
```

**Arguments**

- `this_udg` List object; UDG list generated from a regCMPNT run on a single time series. This is a required entry.
- `convert_to_space` Logical scalar; replace underscores in UDG keys with spaces. Default is FALSE.

**Details**

Version 2.1, 3/28/2025

**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**

```
n3008396_reg_matrix <- get_regression_estimates_matrix(n3008396.udg)
```

---

import_acf	<i>Import regCMPNT ACF file</i>
------------	---------------------------------

---

**Description**

Reads in the ACF and PACF of the KF standardized innovations saved by regCMPNT

**Usage**

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

**Arguments**

- `file_name` Character string; file name for regCMPNT ACF 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("LAG", "ACF", "ACF_SE", "Q", "DF", "Pval")` for ACF files, or `c("LAG", "PACF", "PACF_SE")`.
- `return_matrix` Logical scalar; determines if a matrix or data frame object is returned. Default is TRUE.

**Details**

Version 1.5, 3/28/2025

**Value**

A matrix object or a data frame of ts objects which contains the ACF or PACF estimates for the KF standardized innovations. The file name for the for the ACF file has an .acf file extension. The file name for the for the PACF file has an .pacf file extension.

**Author(s)**

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

**Examples**

```
## Not run:
n3000019_acf_df      <- import_acf("n300019_rev4.acf", return_matrix = FALSE)
n3000019_pacf_df     <- import_acf("n300019_rev4.pacf", return_matrix = FALSE)

## End(Not run)
```

---

import\_est

---

*Import regCMPNT estimates file*


---

**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 2.0, 3/26/2025

**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_arima01.est", return_matrix = FALSE)
n3000019_seasonal_df   <- import_est("n300019_rev2_arima02.est", return_matrix = FALSE)
n3000019_irregular_df  <- import_est("n300019_rev2_arima03.est", return_matrix = FALSE)
n3000019_samplerror_df <- import_est("n300019_rev2_arima04.est", return_matrix = FALSE)

## End(Not run)
```

---

import_inn	<i>Import regCMPNT KF Innovations file</i>
------------	--

---

## Description

Reads in the KF innovations from a file saved by regCMPNT

## Usage

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

## Arguments

file_name	Character string; file name for regCMPNT KF innovations 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 4. Default is c("Data", "Innovations", "Innov_Var", "Standardized_Innov").
return_matrix	Logical scalar; determines if a matrix or data frame object is returned. Default is TRUE.

## Details

Version 1.0, 2/18/2025

## Value

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

## Author(s)

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

## Examples

```
## Not run:
n300019_inn_df      <- import_est("n300019_rev4.inn", 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 2.0, 2/19/2025

### 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("n3000019_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 2.0, 3/26/2025

**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("n300019_rev2_arma01.var", return_matrix = FALSE)
n3000019_seasonal_var_df  <- import_var("n300019_rev2_arma02.var", return_matrix = FALSE)
n3000019_irregular_var_df <- import_var("n300019_rev2_arma03.var", return_matrix = FALSE)
n3000019_samplerror_var_df <- import_var("n300019_rev2_arma04.var", return_matrix = FALSE)

## End(Not run)
```

---

n3000019

n3000019

---

**Description**

A time series object containing the national level series of Unemployed Black teens (16-19)

**Usage**

```
n3000019
```

**Format**

Retail sales of shoes ending in December of 2023

---

n3000019.acf.matrix	<i>n3000019.acf.matrix</i>
---------------------	----------------------------

---

### Description

A dataset containing the ACF from the UCM model information of the n3000019 CPS series. The variables are as follows:

### Usage

```
n3000019.acf.matrix
```

### Format

A matrix with 24 rows and 6 columns:

- LAG: Lag of the ACF (integer)
- ACF: Sample ACF of KF standardized innovations from UCM Model estimation
- ACF\_SE: Standard error of ACF of KF standardized innovations
- Q: Ljung-Box Statistic
- DF: Degrees of freedom (integer)
- Pval: p-value

---

n3000019.comp.df	<i>n3000019.comp.df</i>
------------------	-------------------------

---

### Description

A dataset containing the components of a UCM signal extraction of the n3000019 CPS series. The variables are as follows:

### Usage

```
n3000019.comp.df
```

### Format

A data frame with 252 rows and 8 variables:

- year: year of the observation (2003 to 20023)
- month: month of the observation (1 to 12)
- trend: trend of the UCM signal extraction of n3000019
- seasonal: seasonal of the UCM signal extraction of n3000019
- samplingerror: sampling error component of the UCM signal extraction of n3000019
- irregular: irregular of the UCM signal extraction of n3000019
- sadj: seasonal adjustment generated from the UCM signal extraction of n3000019
- sadj\_minus\_se: seasonal adjustment generated from the UCM signal extraction of n3000019 minus the sampling error component

---

n3000019.pacf.matrix	<i>n3000019.pacf.matrix</i>
----------------------	-----------------------------

---

**Description**

A dataset containing the PACF from the UCM model estimation of the n3000019 CPS series. The variables are as follows:

**Usage**

```
n3000019.pacf.matrix
```

**Format**

A matrix with 24 rows and 3 columns:

- LAG: Lag of the ACF (integer)
- PACF: Sample PACF of KF standardized innovations from UCM Model estimation
- PACF\_SE: Standard error of PACF of KF standardized innovations
- Q: Ljung-Box Statistic
- DF: Degrees of freedom (integer)
- Pval: p-value of the Q statistics for this lag

---

n3000019.udg	<i>n3000019.udg</i>
--------------	---------------------

---

**Description**

A dataset containing the contents of the UDG file of a UCM signal extraction of the n3000019 CPS series. The variables are as follows:

**Usage**

```
n3000019.udg
```

**Format**

A list object with 151 elements:

- date time
- srsttl
- freq
- dataspan
- modelspan
- sigexspan
- power
- converged

- nliter
- nfev
- ncomponents
- cmpttl\$1
- cmptyp\$1
- model\$1
- Nonseasonal Difference\$Lag 1\$1
- Nonseasonal Difference\$Lag 2\$1
- Nonseasonal MA\$Lag 1\$1
- variance\$1
- cmpttl\$2
- cmptyp\$2
- model\$2
- User Nonseasonal Difference\$Lag 1\$2
- User Nonseasonal Difference\$Lag 2\$2
- User Nonseasonal Difference\$Lag 3\$2
- User Nonseasonal Difference\$Lag 4\$2
- User Nonseasonal Difference\$Lag 5\$2
- User Nonseasonal Difference\$Lag 6\$2
- User Nonseasonal Difference\$Lag 7\$2
- User Nonseasonal Difference\$Lag 8\$2
- User Nonseasonal Difference\$Lag 9\$2
- User Nonseasonal Difference\$Lag 10\$2
- User Nonseasonal Difference\$Lag 11\$2
- Nonseasonal MA\$Lag 1\$2
- Nonseasonal MA\$Lag 2\$2
- Nonseasonal MA\$Lag 3\$2
- Nonseasonal MA\$Lag 4\$2
- Nonseasonal MA\$Lag 5\$2
- Nonseasonal MA\$Lag 6\$2
- Nonseasonal MA\$Lag 7\$2
- Nonseasonal MA\$Lag 8\$2
- Nonseasonal MA\$Lag 9\$2
- Nonseasonal MA\$Lag 10\$2
- variance\$2
- cmpttl\$3
- cmptyp\$3
- model\$3
- variance\$3
- cmpttl\$4

- cmptyp\$4
- model\$4
- Nonseasonal AR\$Lag 1\$4
- Nonseasonal AR\$Lag 2\$4
- Nonseasonal AR\$Lag 3\$4
- Nonseasonal AR\$Lag 4\$4
- Nonseasonal AR\$Lag 5\$4
- Nonseasonal AR\$Lag 6\$4
- Nonseasonal AR\$Lag 7\$4
- Nonseasonal AR\$Lag 8\$4
- Nonseasonal AR\$Lag 9\$4
- Nonseasonal AR\$Lag 10\$4
- Nonseasonal AR\$Lag 11\$4
- Nonseasonal AR\$Lag 12\$4
- Nonseasonal AR\$Lag 13\$4
- Nonseasonal AR\$Lag 14\$4
- Nonseasonal AR\$Lag 15\$4
- variance\$4
- ACF\$Lag 1
- Q\$Lag 1
- PValue\$Lag 1
- ACF\$Lag 2
- Q\$Lag 2
- PValue\$Lag 2
- ACF\$Lag 3
- Q\$Lag 3
- PValue\$Lag 3
- ACF\$Lag 4
- Q\$Lag 4
- PValue\$Lag 4
- ACF\$Lag 5
- Q\$Lag 5
- PValue\$Lag 5
- ACF\$Lag 6
- Q\$Lag 6
- PValue\$Lag 6
- ACF\$Lag 7
- Q\$Lag 7
- PValue\$Lag 7
- ACF\$Lag 8

- Q\$Lag 8
- PValue\$Lag 8
- ACF\$Lag 9
- Q\$Lag 9
- PValue\$Lag 9
- ACF\$Lag 10
- Q\$Lag 10
- PValue\$Lag 10
- ACF\$Lag 11
- Q\$Lag 11
- PValue\$Lag 11
- ACF\$Lag 12
- Q\$Lag 12
- PValue\$Lag 12
- ACF\$Lag 13
- Q\$Lag 13
- PValue\$Lag 13
- ACF\$Lag 14
- Q\$Lag 14
- PValue\$Lag 14
- ACF\$Lag 15
- Q\$Lag 15
- PValue\$Lag 15
- ACF\$Lag 16
- Q\$Lag 16
- PValue\$Lag 16
- ACF\$Lag 17
- Q\$Lag 17
- PValue\$Lag 17
- ACF\$Lag 18
- Q\$Lag 18
- PValue\$Lag 18
- ACF\$Lag 19
- Q\$Lag 19
- PValue\$Lag 19
- ACF\$Lag 20
- Q\$Lag 20
- PValue\$Lag 20
- ACF\$Lag 21
- Q\$Lag 21

- PValue\$Lag 21
- ACF\$Lag 22
- Q\$Lag 22
- PValue\$Lag 22
- ACF\$Lag 23
- Q\$Lag 23
- PValue\$Lag 23
- ACF\$Lag 24
- Q\$Lag 24
- PValue\$Lag 24
- KFin\$Min
- KFin\$Max
- KFin\$Med
- KFin\$Rsd
- ncombinations
- nb
- nregderived
- componentreg
- nopr\$1
- nopr\$2
- nopr\$3
- nopr\$4
- nACFlag

---

n3008396.udg

n3008396.udg

---

## Description

A dataset containing the contents of the UDG file of a UCM signal extraction of the n3008396 CPS series. The variables are as follows:

## Usage

n3008396.udg

**Format**

A list object with 135 elements:

- date time
- srsttl
- freq
- dataspan
- modelspan
- sigexspan
- power
- converged
- nliter
- nfev
- nb
- Outliers\$ls2008.may
- Outliers\$a02020.mar
- Outliers\$a02020.apr
- Outliers\$a02020.dec
- User Defined\$reg45
- User Defined\$tc2009Jan
- User Defined\$tc2020Mar
- nregderived
- ncomponents
- componentreg
- component
- cmpttl\$1
- model\$1
- Nonseasonal Difference\$Lag 1\$1
- Nonseasonal Difference\$Lag 2\$1
- Nonseasonal MA\$Lag 1\$1
- variance\$1
- cmpttl\$2
- model\$2
- User Nonseasonal Difference\$Lag 1\$2
- User Nonseasonal Difference\$Lag 2\$2
- User Nonseasonal Difference\$Lag 3\$2
- User Nonseasonal Difference\$Lag 4\$2
- User Nonseasonal Difference\$Lag 5\$2
- User Nonseasonal Difference\$Lag 6\$2
- User Nonseasonal Difference\$Lag 7\$2
- User Nonseasonal Difference\$Lag 8\$2



- User Nonseasonal Difference\$Lag 9\$2
- User Nonseasonal Difference\$Lag 10\$2
- User Nonseasonal Difference\$Lag 11\$2
- Nonseasonal MA\$Lag 1\$2
- Nonseasonal MA\$Lag 2\$2
- Nonseasonal MA\$Lag 3\$2
- Nonseasonal MA\$Lag 4\$2
- Nonseasonal MA\$Lag 5\$2
- Nonseasonal MA\$Lag 6\$2
- Nonseasonal MA\$Lag 7\$2
- Nonseasonal MA\$Lag 8\$2
- Nonseasonal MA\$Lag 9\$2
- Nonseasonal MA\$Lag 10\$2
- variance\$2
- cmpttl\$3
- model\$3
- variance\$3
- ACF\$Lag 1
- Q\$Lag 1
- PValue\$Lag 1
- ACF\$Lag 2
- Q\$Lag 2
- PValue\$Lag 2
- ACF\$Lag 3
- Q\$Lag 3
- PValue\$Lag 3
- ACF\$Lag 4
- Q\$Lag 4
- PValue\$Lag 4
- ACF\$Lag 5
- Q\$Lag 5
- PValue\$Lag 5
- ACF\$Lag 6
- Q\$Lag 6
- PValue\$Lag 6
- ACF\$Lag 7
- Q\$Lag 7
- PValue\$Lag 7
- ACF\$Lag 8
- Q\$Lag 8

- PValue\$Lag 8
- ACF\$Lag 9
- Q\$Lag 9
- PValue\$Lag 9
- ACF\$Lag 10
- Q\$Lag 10
- PValue\$Lag 10
- ACF\$Lag 11
- Q\$Lag 11
- PValue\$Lag 11
- ACF\$Lag 12
- Q\$Lag 12
- PValue\$Lag 12
- ACF\$Lag 13
- Q\$Lag 13
- PValue\$Lag 13
- ACF\$Lag 14
- Q\$Lag 14
- PValue\$Lag 14
- ACF\$Lag 15
- Q\$Lag 15
- PValue\$Lag 15
- ACF\$Lag 16
- Q\$Lag 16
- PValue\$Lag 16
- ACF\$Lag 17
- Q\$Lag 17
- PValue\$Lag 17
- ACF\$Lag 18
- Q\$Lag 18
- PValue\$Lag 18
- ACF\$Lag 19
- Q\$Lag 19
- PValue\$Lag 19
- ACF\$Lag 20
- Q\$Lag 20
- PValue\$Lag 20
- ACF\$Lag 21
- Q\$Lag 21
- PValue\$Lag 21

- ACF\$Lag 22
- Q\$Lag 22
- PValue\$Lag 22
- ACF\$Lag 23
- Q\$Lag 23
- PValue\$Lag 23
- ACF\$Lag 24
- Q\$Lag 24
- PValue\$Lag 24
- KFin\$Min
- KFin\$Max
- KFin\$Med
- KFin\$Rsd
- nopr\$1
- nopr\$2
- nopr\$3
- nACFlag

---

plot\_acf\_innov

---

Generate ACF plot of the regCMPNT innovations.

---

### Description

Generate ACF or PACF plot of the regCMPNT innovations.

### Usage

```
plot_acf_innov(
  this_acf_matrix = NULL,
  this_plot = "acf",
  acf_range = NULL,
  add_ci = TRUE,
  this_acflimit = 1.6,
  this_frequency = 12,
  main_title = NULL,
  sub_title = NULL,
  this_x_label = "Lag",
  this_y_label = NULL,
  this_x_axis_breaks = NULL,
  do_grid = FALSE,
  do_background = FALSE,
  acf_color = "steelblue",
  ci_color = "grey"
)
```

**Arguments**

<code>this_acf_matrix</code>	Matrix object; ACF or PACF values saved from regCMPNT. This is a required entry.
<code>this_plot</code>	Character string; three character code for the type of plot to be generated. Allowed entries are "acf" (sample autocorrelation function, default), "pcf" (sample partial autocorrelation function), "ac2" (squared autocorrelation function).
<code>acf_range</code>	Range of values you wish the acf plot to be plotted over. Default is range of the series.
<code>add_ci</code>	Logical scalar; indicates if confidence intervals are added to the plot. Default is confidence intervals are added.
<code>this_acflimit</code>	Numeric scalar; the multiplier for the confidence interval usually read from the udg. Default: 1.6.
<code>this_frequency</code>	Integer scalar; Frequency of the time series. Default is 12.
<code>main_title</code>	Title for the plot. Default is character string 'ACF Plot'.
<code>sub_title</code>	Subtitle for the plot. Default is NULL, or no subtitle.
<code>this_x_label</code>	Label for X axis. Default is "Lags".
<code>this_y_label</code>	Label for Y axis. Default is "ACF".
<code>this_x_axis_breaks</code>	Numeric vector; sets the values for the x-axis. Default uses the value of <code>this_frequency</code> to set x-axis.
<code>do_grid</code>	Logical scalar; indicates if certain plots will have grid lines. Default is no grid lines.
<code>do_background</code>	Logical scalar; indicates grey background included in plot. Default is no grey background;
<code>acf_color</code>	Color used for lines in ACF plot. Default is "steelblue".
<code>ci_color</code>	Color used for confidence interval in ACF plot. Default is "grey".

**Details**

Version 2.0, 2/18/2025

**Value**

A ggplot object that produces an ACF or PACF plot of the regCMPNT innovations.

**Author(s)**

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**Examples**

```
n3000019_acf_plot      <- plot_acf_innov(n3000019.acf.matrix)
n3000019_pacf_plot     <- plot_acf_innov(n3000019.pacf.matrix, this_plot = "pacf")
```

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plot\_component\_facet    *Component facet plot*


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## Description

Generates a plot for the components of a UCM signal extraction from regCMPNT - trend, seasonal, and irregular, with an optional additional component for holiday or sampling error.

## Usage

```
plot_component_facet(
  comp_df = NULL,
  additional_comp = NULL,
  main_title = "Component Facet Plot",
  sub_title = NULL,
  this_x_label = "Time",
  this_y_label = " ",
  do_grid = FALSE,
  do_background = FALSE,
  this_scale = "free_y",
  rel_strip_label_size = 1,
  rel_y_axis_text_size = 1,
  line_color = "steelblue"
)
```

## Arguments

comp_df	data frame composed of time series objects of components from a UCM signal extraction from regCMPNT. The data frame should have entries for month, year, trend, seasonal, irregular, and could contain one other element. This is a required entry.
additional_comp	Character string for additional component in comp_df include in plot. Possible entries would be <code>samplingerror</code> , <code>holiday</code> . Default is no additional components.
main_title	Title for the plot. Default is character string 'Component Facet Plot'.
sub_title	Subtitle for the plot. Default is either "SEATS seasonal adjustment" or "X-11 seasonal adjustment".
this_x_label	Label for X axis. Default is "Time".
this_y_label	Label for Y axis. Default is " ".
do_grid	Logical scalar; indicates if certain plots will have grid lines. Default is no grid lines.
do_background	Logical scalar; indicates grey background included in plot. Default is no grey background.
this_scale	Character scalar; set the scale for the y-axis of the facet plots. Default is "free_y". To set axis to be the same for the different plots, set <code>this_scale = "fixed"</code> . Note: Setting <code>this_scale = "fixed"</code> seasonal is not recommended for multiplicative adjustments.

`rel_strip_label_size` Numeric scalar; resizes the facet strip label - values smaller than one makes the label smaller, larger than one makes the label larger. Default leaves the strip label the same size.

`rel_y_axis_text_size` Numeric scalar; resizes the y-axis text - values smaller than one makes the label smaller, larger than one makes the label larger. Default leaves the y-axis text the same size.

`line_color` Color used for lines in component plot. Default is "steelblue".

### Details

Version 2.0, 3/28/2025

### Value

A ggplot object that generates a facet plot for the trend, seasonal, and irregular from the data frame `comp_df`.

### Author(s)

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

### Examples

```
n3000019_comp_plot <-
  plot_component_facet(n3000019.comp.df, additional_comp = "samplingerror",
    main_title = "N3000019 regCMPNT Signal Extraction",
    sub_title = "Local Linear Trend, TRIG-1, White Noise, Sampling Error",
    rel_strip_label_size = 0.8,
    rel_y_axis_text_size = 0.75)
```

---

`plot_sadj_and_trend`     *Plot regCMPNT signal extraction, trend on same axis*

---

### Description

Generates a ggplot object with a time series plot that compares a UCM signal extraction from regCMPNT for the seasonal adjustment and trend, optionally including the original series.

### Usage

```
plot_sadj_and_trend(
  comp_df = NULL,
  this_ori = NULL,
  this_sadj_type = "sadj",
  main_title = NULL,
  sub_title = NULL,
  this_x_label = "Time",
  this_y_label = " ",
  do_grid = FALSE,
  do_background = FALSE,
```

```

    line_color = NULL,
    this_palette = "Dark2",
    line_label = NULL,
    this_guide_legend = "Series"
  )

```

### Arguments

comp_df	data frame composed of time series objects of components from a UCM signal extraction from regCMPNT. The data frame should have entries for month, year, trend, seasonal, irregular, and could contain one other element. This is a required entry.
this_ori	Time series object of the original series Default is NULL, which means that the original series is not included in the plot.
this_sadj_type	Character string; type of seasonal adjustment used in plot. Default is <code>sadj</code> , the original series minus the seasonal factor. Additional option is <code>sadj_minus_se</code> , which is the seasonally adjusted series minus the sampling error component, if it exists.
main_title	Title for the plot. By default, the routine will generate a trend based on the type of adjustment (X-11 and SEATS) done.
sub_title	Subtitle for the plot. Optional entry.
this_x_label	Label for X-axis. Default is "Time"
this_y_label	Label for Y-axis. Default is " "
do_grid	Logical scalar; indicates if certain plots will have grid lines. Default is no grid lines.
do_background	Logical scalar; indicates grey background included in plot. Default is no grey background;
line_color	Character vector of length 2 (if <code>plot_ori</code> is FALSE) or 3 (if <code>plot_ori</code> is TRUE); color used for lines in the plot, in the order of original series (if specified), seasonally adjusted series, trend. Default is generated from the RColorBrewer palette "Dark2".
this_palette	Character string; default RColorBrewer palette. Default is "Dark2".
line_label	Character vector of length 2; labels used for lines in the plot, in the order of original series, seasonally adjusted series. Default is <code>c("Ori", "SA", "Trend")</code> (if original series plotted) or <code>c("SA", "Trend")</code> .
this_guide_legend	Title for legend. Default is "Series"

### Details

Version 1.1, 4/2/2025

### Value

A ggplot object that generates a plot comparing a seasonally adjusted series with the trend generated from the same regCMPNT signal extraction.

### Author(s)

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

## Examples

```
n000019_sadj_and_trend_p <-
  plot_sadj_and_trend(n3000019.comp.df, this_ori = n3000019,
    main_title = "n3000019 - Unemployed Black teens (16-19)",
    sub_title = "regCMPNT signal extraction",
    this_palette = "Set2")
n000019_sadj_minus_se_and_trend_p <-
  plot_sadj_and_trend(n3000019.comp.df, this_sadj_type = "sadj_minus_se",
    main_title = "n3000019 - Unemployed Black teens (16-19)",
    sub_title = "regCMPNT signal extraction",
    line_color = c("steelblue", "forestgreen"))
```

---

```
plot_sadj_and_trend_facet
```

*Plot regCMPNT signal extraction, trend in a facet plot*

---

## Description

Generates a ggplot object with a time series facet plot that compares an regCMPNT seasonal adjustment and trend, optionally including the original series.

## Usage

```
plot_sadj_and_trend_facet(
  comp_df = NULL,
  this_ori = NULL,
  this_sadj_type = "sadj",
  main_title = NULL,
  sub_title = NULL,
  this_x_label = "Time",
  this_y_label = " ",
  do_grid = FALSE,
  do_background = FALSE,
  line_color = NULL,
  this_palette = "Dark2",
  line_label = NULL,
  this_scale = "fixed",
  remove_legend = FALSE
)
```

## Arguments

comp_df	data frame composed of time series objects of components from a UCM signal extraction from regCMPNT. The data frame should have entries for month, year, trend, seasonal, irregular, and could contain one other element. This is a required entry.
this_ori	Time series object of the original series Default is NULL, which means that the original series is not included in the plot.
this_sadj_type	Character string; type of seasonal adjustment used in plot. Default is sadj, the original series minus the seasonal factor. Additonal option is sadj_minus_se, which is the seasonally adjusted series minus the sampling error component, if it exists.



main_title	Character string; title for the plot. By default, the routine will generate a title based on the type of adjustment (X-11 and SEATS) done.
sub_title	Subtitle for the plot. Optional entry.
this_x_label	Label for X-axis. Default is "Time"
this_y_label	Label for Y-axis. Default is " "
do_grid	Logical scalar; indicates if certain plots will have grid lines. Default is no grid lines.
do_background	Logical scalar; indicates grey background included in plot. Default is no grey background;
line_color	Character vector of length 2 (if plot_ori is FALSE) or 3 (if plot_ori is TRUE); color used for lines in the plot, in the order of original series (if specified), seasonally adjusted series, trend. Default is generated from the RColorBrewer palette "Dark2".
this_palette	Character string; default RColorBrewer palette. Default is "Dark2".
line_label	Character vector of length 2; labels used for lines in the plot, in the order of original series, seasonally adjusted series. Default is c("Ori", "SA", "Trend") (if original series plotted) or c("SA", "Trend").
this_scale	Character scalar; set the scale for the y-axis of the facet plots. Default is "fixed". To set axis to be different for the different plots, set this_scale = "free_y".
remove_legend	Logical scalar; if TRUE, plot legend will be removed. Default is FALSE.

## Details

Version 2.0 4/2/2025

## Value

A ggplot object that generates a facet plot comparing a seasonally adjusted series with the trend generated from the same regCMPNT signal extraction.

## Author(s)

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

## Examples

```
n000019_sadj_and_trend_facet_p <-
  plot_sadj_and_trend_facet(n3000019.comp.df, this_ori = n3000019,
    main_title = "n3000019 - Unemployed Black teens (16-19)",
    sub_title = "regCMPNT signal extraction",
    this_palette = "Set2")
n000019_sadj_minus_se_and_trend_facet_p <-
  plot_sadj_and_trend_facet(n3000019.comp.df, this_sadj_type = "sadj_minus_se",
    main_title = "n3000019 - Unemployed Black teens (16-19)",
    sub_title = "regCMPNT signal extraction",
    line_color = c("steelblue", "forestgreen"),
    this_scale = "fixed")
```

---

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

x	Time series used to generate QS statistic. This is a required entry.
freq	Integer scalar; frequency of the time series specified in x. This is a required entry.
log_trans	Logical scalar; takes log of time series before computing QS. Default is TRUE.
first_diff	Logical scalar; takes first difference of time series before computing QS. Default is TRUE.
full_span	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

## \* datasets

- n3000019, [9](#)
- n3000019.acf.matrix, [10](#)
- n3000019.comp.df, [10](#)
- n3000019.pacf.matrix, [11](#)
- n3000019.udg, [11](#)
- n3008396.udg, [15](#)

convert\_date\_string, [2](#)

get\_arima\_estimates\_matrix, [3](#)

get\_component\_model\_list, [4](#)

get\_regression\_estimates\_matrix, [4](#)

import\_acf, [5](#)

import\_est, [6](#)

import\_inn, [7](#)

import\_udg, [8](#)

import\_var, [8](#)

n3000019, [9](#)

n3000019.acf.matrix, [10](#)

n3000019.comp.df, [10](#)

n3000019.pacf.matrix, [11](#)

n3000019.udg, [11](#)

n3008396.udg, [15](#)

plot\_acf\_innov, [19](#)

plot\_component\_facet, [21](#)

plot\_sadj\_and\_trend, [22](#)

plot\_sadj\_and\_trend\_facet, [24](#)

qs, [26](#)

save\_component\_model\_list, [27](#)