Package: rjdqa (via r-universe)

November 5, 2024

Type Package

Title Quality Assessment for Seasonal Adjustment

Version 0.1.6

Description Add-in to the 'RJDemetra' package on seasonal adjustments.
It allows to produce dashboards to summarise models and quickly
check the quality of the seasonal adjustment.

License EUPL

SystemRequirements Java (>= 8)

Depends R (>= 3.1.1), RJDemetra (>= 0.2.5),

Imports plotrix, ggdemetra (>= 0.2.5), utils, graphics, stats

Encoding UTF-8

URL `https://aqlt.github.io/rjdqa/`, `https://github.com/AQLT/rjdqa`

BugReports `https://github.com/AQLT/rjdqa/issues`

RoxygenNote 7.3.2

Config/pak/sysreqs make default-jdk

Repository https://aqlt.r-universe.dev

RemoteUrl https://github.com/AQLT/rjdqa

RemoteRef HEAD

RemoteSha 4afd5c72156627d3d7c50e055a1180914e5a1843

Contents

plot.sc_dashboard *Plot a Statistics Canada seasonal adjustment dashboard*

Description

Function to plot Statistics Canada dashboard of a seasonal adjustment model.

Usage

```
## S3 method for class 'sc_dashboard'
plot(
  x,
  main = "Seasonal Adjustment Dashboard",
  subtitle = "",
  reference_date = TRUE,
  raw_color = "#33A02C",
  sa_color = "#E31A1C",
  trend_color = "black",
  ...
)
```

Arguments

`x`	a `"sc_dashboard"` object.
`main`	main title.
`subtitle`	subtitle.
`reference_date`	boolean indicating if the reference date should be printed.
`raw_color`	color for the raw series.
`sa_color`	color for the seasonal adjusted series.
`trend_color`	color for the trend.
`...`	other parameters (unused).

Details

`sa_model()` reproduces Statistics Canada dashboard used to provide a snapshot snapshot of an single seasonal adjustment model at a point in time and to point out some possible problems (see references).

The dashboard is divided into four sections:

- Recent History (top left panel): plot of the raw series, the seasonal adjusted series and the trend for the most recent periods (`n_recent_obs` last observations: 24 by default). It is intended to identify trendF direction, overall volatility and obvious outliers.
- Summary of Key Diagnostics (top right panel):
  - Adjustability (only for X13 models): M7 statistic. Colors: red if M7 > 1.75, yellow if 1.25 < M7 < 1.75 and green if M7 < 1.25.

  - Residual seasonality: qs (auto-correlations at seasonal lags) and f (Friedman) test on seasonal adjusted series. Colors: red if p-value < 0.01, yellow if 0.01 < p-value < 0.05 and green if p-value > 0.05.
  - Residual trading-days effects: f (Friedman) test on seasonal adjusted serie. Colors: red if p-value < 0.01, yellow if 0.01 < p-value < 0.05 and green if p-value > 0.05.
  - Independence of RegARIMA residuals: Ljung-Box test. Colors: red if p-value < 0.01, yellow if 0.01 < p-value < 0.05 and green if p-value > 0.05.
  - Recent outliers on last (t) and penultimate (t-1) observation. Colors: Red if there is an extreme value (only for X13: when table C17 equals to 0), yellow if there is an outlier in the RegARIMA model and green otherwise.
- Estimated Patterns and Anticipated Movements (middle panel): estimated trading day, moving holiday and seasonal pattern. It presents expected movement in unadjusted series based on the current and previous period.
- Net Effect of Seasonal Adjustment (bottom panel): movement in the raw series, compared to typical ranges centered around “neutral” value (when the seasonal adjusted series of the last period is equal to the penultimate period). It also shows the movement in the seasonally adjusted series, compared to typical ranges.

References

KIRCHNER R., LADIRAY D., MAZZI G. L. (2018), "Quality Measures and Reporting for Seasonal Adjustment", edited by G. L. Mazzi, co-edited by D. Ladiray, European Union, Luxembourg. https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-18-001

MATTHEWS S. (2016), "Quality Assurance of Seasonal Adjustment for a Large System of Time Series", 36th International Symposium on Forecasting Santander, Spain.

See Also

sc_dashboard.

Examples

```
data <- window(RJDemetra::ipi_c_eu[, "FR"], start = 2003)
sa_model <- RJDemetra::x13(data, "RSA5c")
dashboard_data <- sc_dashboard(sa_model)
plot(dashboard_data, main = "My first seasonal adjustment dashboard",
     subtitle = "SA with X13")
```

---

plot.simple_dashboard *Plot a simple seasonal adjustment dashboard*

Description

Functions to plot a simple dashboard of a seasonal adjustment model.

Usage

```
## S3 method for class 'simple_dashboard'
plot(
  x,
  main = "Simple Dashboard with outliers”,
  subtitle = NULL,
  color_series = c(y = "#F0B400", t = "#1E6C0B", sa = "#155692"),
  reference_date = TRUE,
  ...
)
```

Arguments

`x`	a "sc_dashboard" object.
`main`	main title.
`subtitle`	subtitle.
`color_series`	Color of the raw time series, the trend and the seasonally adjusted component.
`reference_date`	boolean indicating if the reference date should be printed.
`...`	other parameters (unused).

See Also

`simple_dashboard`.

Examples

```
data <- window(RJDemetra::ipi_c_eu[, "FR”], start = 2003)
sa_model <- RJDemetra::jx13(data, "RSA5c”)
dashboard_data <- simple_dashboard(sa_model)
plot(dashboard_data, main = "Simple dashboard IPI - FR”)
dashboard_data2 <- simple_dashboard2(sa_model)
plot(dashboard_data2, main = "Simple dashboard with outliers IPI - FR”)
```

`sc_dashboard` *Compute data for the Statistics Canada seasonal adjustment dashboard*

Description

Function to compute the data to produce the Statistics Canada seasonal adjustment dashboard

Usage

```
sc_dashboard(x, n_recent_obs = 24)
```

Arguments

`x` a seasonal adjustment model made by 'RJDemetra' (object of class `"SA"`).

`n_recent_obs` number of observation in the recent history panel (see details). By default `n_recent_obs = 24` (last 2 years for monthly data).

Details

`sa_model()` reproduces Statistics Canada dashboard used to provide a snapshot snapshot of an single seasonal adjustment model at a point in time and to point out some possible problems (see references).

The dashboard is divided into four sections:

- Recent History (top left panel): plot of the raw series, the seasonal adjusted series and the trend for the most recent periods (`n_recent_obs` last observations: 24 by default). It is intended to identify trend direction, overall volatility and obvious outliers.
- Summary of Key Diagnostics (top right panel):
  - Adjustability (only for X13 models): M7 statistic. Colors: red if M7 $\geq$ 1.75, yellow if 1.25 $\leq$ M7 < 1.75 and green if M7 < 1.25.
  - Residual seasonality: qs (auto-correlations at seasonal lags) and f (Friedman) test on seasonal adjusted series. Colors: red if p-value $\leq$ 0.01, yellow if 0.01 < p-value $\leq$ 0.05 and green if p-value > 0.05.
  - Residual trading-days effects: f (Friedman) test on seasonal adjusted serie. Colors: red if p-value $\leq$ 0.01, yellow if 0.01 < p-value $\leq$ 0.05 and green if p-value > 0.05.
  - Independence of RegARIMA residuals: Ljung-Box test. Colors: red if p-value $\leq$ 0.01, yellow if 0.01 < p-value $\leq$ 0.05 and green if p-value > 0.05.
  - Recent outliers on last (t) and penultimate (t-1) observation. Colors: Red if there is an extreme value (only for X13: when table C17 equals to 0), yellow if there is an outlier in the RegARIMA model and green otherwise.
- Estimated Patterns and Anticipated Movements (middle panel): estimated trading day, moving holiday and seasonal pattern. It presents expected movement in unadjusted series based on the current and previous period.
- Net Effect of Seasonal Adjustment (bottom panel): movement in the raw series, compared to typical ranges centered around "neutral" value (when the seasonal adjusted series of the last period is equal to the penultimate period). It also shows the movement in the seasonally adjusted series, compared to typical ranges.

References

KIRCHNER R., LADIRAY D., MAZZI G. L. (2018), "Quality Measures and Reporting for Seasonal Adjustment", edited by G. L. Mazzi, co-edited by D. Ladiray, European Union, Luxembourg. `https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-18-001`

MATTHEWS S. (2016), "Quality Assurance of Seasonal Adjustment for a Large System of Time Series", 36th International Symposium on Forecasting Santander, Spain.

See Also

`plot.sc_dashboard`.

Examples

```
data <- window(RJDemetra::ipi_c_eu[, "FR"], start = 2003)
sa_model <- RJDemetra::x13(data, "RSA5c")
sc_dashboard_data <- sc_dashboard(sa_model)
plot(sc_dashboard_data, main = "My first seasonal adjustment dashboard",
     subtitle = "SA with X13")
```

simple_dashboard *Compute data for a simple seasonal adjustment*

Description

Functions to compute the data to produce a simple seasonal adjustment dashboard. ‘simple_dashboard2()‘ is a slightly variation of ‘simple_dashboard()‘ with smaller description text to include a table with last outliers.

Usage

```
simple_dashboard(
  x,
  digits = 2,
  scale_var_decomp = FALSE,
  remove_others_contrib = FALSE,
  add_obs_to_forecast = TRUE,
  td_effect = NULL
)

simple_dashboard2(
  x,
  digits = 2,
  scale_var_decomp = FALSE,
  remove_others_contrib = FALSE,
  digits_outliers = digits,
  columns_outliers = c("Estimate", "T-stat"),
  n_last_outliers = 4,
  order_outliers = c("AO", "LS", "TC", "SO"),
  add_obs_to_forecast = TRUE,
  td_effect = NULL
)
```

Arguments

x a seasonal adjustment model made by ’RJDemetra’ (object of class "SA").

digits number of digits used in the tables.

scale_var_decomp boolean indicating if the variance decomposition table should be rescaled to 100.

`remove_others_contrib`
: boolean indication if the "Others" contribution (i.e.: the pre-adjustment contribution) should be removed from the variance decomposition table.

`add_obs_to_forecast`
: Boolean indicating if the last observed values should be added to the forecast table (for the plot).

`td_effect`
: Boolean indicating if the residual trading days effect test should be printed. By default (‘td_effect = NULL‘) the test is only printed for monthly series.

`digits_outliers`
: number of digits used in the table of outliers.

`columns_outliers`
: informations about outliers that should be printed in the summary table. Can be either a vector of characters among ‘c("Estimate", "Std. Error", "T-stat", "Pr(>|t|)")‘; or an vector of integer: ‘1‘ corresponding to the estimate coefficient (‘"Estimate"‘), ‘2‘ corresponding to the standard deviation error (‘"Std. Error"‘), ‘3‘ corresponding to the t-statistic (‘"T-stat"‘) or ‘4‘ corresponding to the p-value (‘"Pr(>|t|)"‘). By default only the estimate coefficients and the t-statistics are printed (‘columns_outliers = c("Estimate", "T-stat")‘).

`n_last_outliers`
: number of last outliers to be printed (by default ‘n_last_outliers = 4‘).

`order_outliers`
: order of the outliers in case of several outliers at the same date.

See Also

`plot.simple_dashboard`.

Examples

```
data <- window(RJDemetra::ipi_c_eu[, "FR"], start = 2003)
sa_model <- RJDemetra::jx13(data, "RSA5c")
dashboard_data <- simple_dashboard(sa_model)
plot(dashboard_data, main = "Simple dashboard IPI - FR")
dashboard_data2 <- simple_dashboard2(sa_model)
plot(dashboard_data2, main = "Simple dashboard with outliers IPI - FR")
```

Index