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RJDemetra: A R Interface To JDemetra+ Seasonal Adjustment Software

Anna Michalek
European Central Bank

Alain Quartier-La-Tente
Insee

Abstract

The abstract of the article.

Keywords: R, seasonal adjustment, time series.

1. Introduction

This template demonstrates some of the basic latex you'll need to know to create a JSS article.

1.1. Code formatting

Don't use markdown, instead use the more precise latex commands:

- Java
- **plyr**
- `print("abc")`

2. R code

Can be inserted in regular R markdown blocks.

```
R> library(RJDemetra)
R> y <- structure(c(90.5, 92.6, 101.9, 95.2, 92.1, 103.3, 91.8, 65.5,
R+ 99, 102.8, 94.3, 93.1, 90.9, 89.6, 99.9, 93.3, 88.3, 103, 89.7,
```

```
R+ 65.1, 98.2, 100.8, 95.8, 93.2, 89.4, 89, 99.5, 93, 89.1, 101.3,
R+ 89.4, 64.1, 94.9, 98.6, 92.2, 90.5, 85.3, 84.3, 93.2, 87.8, 83.5,
R+ 95.4, 86.2, 60.1, 92.1, 95.8, 88.1, 88.3, 84.9, 84, 94.1, 90.1,
R+ 86.8, 100.4, 90.8, 64.5, 96.8, 101, 96.6, 96.3, 90.4, 90.5, 100.4,
R+ 94.5, 89.7, 103.7, 93.8, 65.5, 99.7, 101.8, 94.6, 98.1, 90.3,
R+ 88.8, 100.7, 93.8, 91.2, 104.4, 92.3, 67.2, 100.2, 102.3, 96.9,
R+ 97.2, 90.5, 91.6, 104, 99.7, 93.9, 108.8, 98.2, 73.4, 105.8,
R+ 111.8, 102.4, 105.4, 99.2, 99, 109.4, 103, 100.7, 114.8, 104.9,
R+ 73.3, 109.6, 112.7, 105.9, 105.1, 100.5, 98.6, 111.8, 104.3,
R+ 101.3, 117.4, 106.6, 74.9, 113.4, 118.2, 110.9, 109.8, 104.8,
R+ 104.9, 118.9, 110.2, 108, 122.5, 111.8, 80.5, 117.5, 121.7, 114.3,
R+ 115.5, 108.8, 109.2, 123.7, 111.8, 108.4, 124.7, 111.1, 84.2,
R+ 117.8, 121, 111.6, 109.2, 106.6, 107, 121.4, 112.8, 106.4, 122.2,
R+ 109.7, 82.3, 117.1, 118.7, 113, 106.4, 105.4, 105.7, 120.1, 111.1,
R+ 102.8, 118.3, 108.8, 78.7, 115.9, 119.9, 110.8, 107.9, 105.8,
R+ 107, 120, 112.1, 105.8, 123.6, 112, 78.4, 120, 122, 112, 108.4,
R+ 109.1, 106.7, 117.9, 113.5, 106.8, 122.3, 110.3, 80, 121.4, 118.4,
R+ 115.2, 109.8, 107.3, 106.3, 121.9, 112.5, 110.8, 126.7, 112.5,
R+ 82.5, 122.2, 121.9, 113.7, 111.7, 109.5, 110, 123.8, 114.2, 112.6,
R+ 127, 115.2, 85.7, 121.2, 124.7, 115.2, 111, 111.4, 112.2, 123,
R+ 116.8, 108.4, 122.1, 112.6, 81.9, 117.3, 116.3, 102.4, 97.8,
R+ 91.7, 90.4, 100.1, 93.2, 91.4, 105.5, 96.8, 71.6, 104.5, 104.8,
R+ 99.3, 92.9, 93.7, 93.5, 106.8, 99.9, 96.9, 108.9, 101.7, 73.2,
R+ 107.2, 108.2, 102.5, 97.9, 100.4, 102, 112, 103.7, 102.9, 111.3,
R+ 105, 76.6, 108.4, 109.7, 106, 98.4, 97.8, 97.6, 110.2, 102.3,
R+ 97, 108.8, 102.5, 77.5, 106.6, 105.2, 99.3, 95.7, 94.3, 95.9,
R+ 106.3, 102.5, 96.8, 108.2, 100.7, 74.3, 104.6, 106.1, 101, 95.2,
R+ 95, 97.2, 107.4, 101.7, 93.6, 107.7, 100.6, 74.3, 105.5, 105.3,
R+ 98.5, 96.8, 95.3, 96.6, 108.8, 101.9, 96.5, 110, 99.9, 76.9,
R+ 107.1, 108, 101.8, 97.3, 98.5, 97.9, 107.4, 103.4, 96.9, 107.8,
R+ 99.6, 77.5, 106.2, 106.5, 104.2, 97.1, 97.4, 97.5, 112, 103,
R+ 100.4, 111.2, 103.4, 79.3, 109.7, 114, 107.7, 101.4), .Tsp = c(1990,
R+ 2017.91666666667, 12), class = "ts")
R> myspec1 <- x13_spec_def(spec = c("RSA5c"))
R> myspec1

$regarima
$estimate
           span tolerance
Predefined  All     1e-07
User_modif <NA>        NA
Final       All     1e-07

$transform
           tfunction adjust aicdiff
Predefined      Auto   None      -2
User_modif      <NA>   <NA>      NA
```

```
Final           Auto   None      -2

$regression
$regression$userdef
$regression$userdef$specification
           outlier outlier.coef variables variables.coef
Predefined   FALSE        FALSE     FALSE          FALSE
User_modif      NA           NA        NA             NA
Final        FALSE        FALSE     FALSE          FALSE

$regression$userdef$outliers
$regression$userdef$outliers$Predefined
[1] NA

$regression$userdef$outliers$Final
[1] NA


$regression$userdef$variables
$regression$userdef$variables$Predefined
$regression$userdef$variables$Predefined$series
[1] NA

$regression$userdef$variables$Predefined$description
[1] NA


$regression$userdef$variables$Final
$regression$userdef$variables$Final$series
[1] NA

$regression$userdef$variables$Final$description
[1] NA




$regression$trading.days
                option autoadjust leapyear stocktd   test
Predefined TradingDays       TRUE LeapYear       0 Remove
User_modif        <NA>         NA     <NA>      NA   <NA>
Final      TradingDays       TRUE LeapYear       0 Remove

$regression$easter
           enabled julian duration test
Predefined    TRUE  FALSE        8  Add
User_modif      NA     NA       NA <NA>
```

```
Final         TRUE  FALSE        8  Add


$outliers
           enabled span   ao   tc   ls    so usedefcv cv method tcrate
Predefined    TRUE  All TRUE TRUE TRUE FALSE     TRUE  4 AddOne    0.7
User_modif      NA <NA>   NA   NA   NA    NA       NA NA   <NA>     NA
Final         TRUE  All TRUE TRUE TRUE FALSE     TRUE  4 AddOne    0.7

$arima
$arima$specification
           enabled automdl.acceptdefault automdl.cancel automdl.ub1
Predefined    TRUE                 FALSE            0.1    1.041667
User_modif      NA                    NA             NA          NA
Final         TRUE                 FALSE            0.1    1.041667
           automdl.ub2 automdl.mixed automdl.balanced automdl.armalimit
Predefined        0.88          TRUE            FALSE                 1
User_modif          NA            NA               NA                NA
Final             0.88          TRUE            FALSE                 1
           automdl.reducecv automdl.ljungboxlimit automdl.ubfinal arima.mu
Predefined          0.14286                  0.95            1.05    FALSE
User_modif               NA                    NA              NA       NA
Final               0.14286                  0.95            1.05    FALSE
           arima.p arima.d arima.q arima.bp arima.bd arima.bq arima.coef
Predefined       0       1       1        0        1        1      FALSE
User_modif      NA      NA      NA       NA       NA       NA         NA
Final            0       1       1        0        1        1      FALSE

$arima$coefficients
$arima$coefficients$Predefined
[1] NA

$arima$coefficients$Final
[1] NA



$forecast
           horizon
Predefined      -2
User_modif      NA
Final           -2

$span
         type         d0         d1 n0 n1
estimate  All 1900-01-01 2020-12-31  0  0
outlier   All 1900-01-01 2020-12-31  0  0
```

```
attr(,"class")
[1] "regarima_spec" "X13"

$x11
            x11.mode x11.seasonalComp x11.lsigma x11.usigma x11.trendAuto
Predefined Undefined             TRUE        1.5        2.5           TRUE
User_modif      <NA>               NA         NA         NA             NA
Final      Undefined             TRUE        1.5        2.5           TRUE
           x11.trendma x11.seasonalma x11.fcasts x11.bcasts
Predefined          13            Msr         -1          0
User_modif          NA           <NA>         NA         NA
Final               13            Msr         -1          0
           x11.excludeFcasts
Predefined             FALSE
User_modif                NA
Final                  FALSE

attr(,"class")
[1] "SA_spec" "X13"
```

R> myreg1 <- x13(y, spec = myspec1)
R> print(myreg1, enable_print_style = FALSE)

```
RegARIMA
y = regression model + arima (0, 1, 1, 0, 1, 1)
Log-transformation: no
Coefficients:
          Estimate Std. Error
Theta(1)   -0.5270      0.048
BTheta(1)  -0.4865      0.051

              Estimate Std. Error
Monday       -0.133839      0.164
Tuesday      -0.002384      0.163
Wednesday     0.241712      0.163
Thursday     -0.531275      0.163
Friday        0.432474      0.164
Saturday      0.152956      0.163
Leap year    -0.045977      0.501
Easter [1]   -1.094082      0.335
LS (11-2008) -8.441602      1.307
LS (1-2009)  -7.274012      1.306
LS (5-2008)  -5.020079      1.257
```

```
Residual standard error: 1.665 on 323 degrees of freedom
Log likelihood = -624.7, aic =  1277 aicc =  1279, bic(corrected for length) = 1.252



Decomposition
Monitoring and Quality Assessment Statistics:
      M stats
M(1)    0.061
M(2)    0.033
M(3)    0.840
M(4)    0.420
M(5)    0.697
M(6)    0.236
M(7)    0.075
M(8)    0.206
M(9)    0.055
M(10)   0.166
Q       0.272
Q-M2    0.301

Final filters:
Seasonal filter:  3x5
Trend filter:  13 terms Henderson moving average


Final
Last observed values
             y       sa        t            s          i
Jan 2017  97.4 100.8114 100.6915  -3.41138724  0.1198412
Feb 2017  97.5 100.3129 101.0507  -2.81292129 -0.7377402
Mar 2017 112.0 102.3507 101.5023   9.64931855  0.8483317
Apr 2017 103.0 101.2637 101.9608   1.73628825 -0.6971084
May 2017 100.4 103.0054 102.3694  -2.60542262  0.6359951
Jun 2017 111.2 102.4641 102.7599   8.73585142 -0.2957736
Jul 2017 103.4 103.4507 103.1325  -0.05071812  0.3182150
Aug 2017  79.3 103.3966 103.5091 -24.09656399 -0.1125714
Sep 2017 109.7 103.2231 103.8871   6.47686943 -0.6640036
Oct 2017 114.0 106.9659 104.2566   7.03410972  2.7093305
Nov 2017 107.7 105.4628 104.5657   2.23724550  0.8970898
Dec 2017 101.4 104.4099 104.8237  -3.00989466 -0.4138486

Forecasts:
               y_f     sa_f      t_f         s_f         i_f
Jan 2018 102.00877 104.9065 105.0038  -2.8977705 -0.09720660
Feb 2018 102.14378 105.0529 105.1506  -2.9091625 -0.09761841
```

```
Mar 2018 113.92764 105.4072 105.3021   8.5204140  0.10515354
Apr 2018 107.88844 105.4548 105.4869   2.4336221 -0.03210021
May 2018 102.83006 105.7518 105.7343  -2.9217368  0.01749135
Jun 2018 115.26921 105.9309 106.0232   9.3383460 -0.09234653
Jul 2018 106.09888 106.4237 106.3248  -0.3248322  0.09889228
Aug 2018  82.95525 106.5440 106.6390 -23.5887165 -0.09503822
Sep 2018 112.41847 106.6179 106.9320   5.8005883 -0.31411494
Oct 2018 115.41327 107.8929 107.1812   7.5203393  0.71172901
Nov 2018 109.88167 107.2964 107.3766   2.5852407 -0.08013772
Dec 2018 103.58107 107.2605 107.5126  -3.6794200 -0.25212937


Diagnostics
 Relative contribution of the components to the stationary portion of the variance in the
 Trend computed by Hodrick-Prescott filter (cycle length = 8.0 years)
           Component
 Cycle         1.646
 Seasonal     49.667
 Irregular     0.411
 TD & Hol.     0.057
 Others       49.814
 Total       101.596

 Residual seasonality tests
                                      P.value
 qs test on sa                          0.955
 qs test on i                           1.000
 f-test on sa (seasonal dummies)        0.966
 f-test on i (seasonal dummies)         0.923
 Residual seasonality (entire series)   0.987
 Residual seasonality (last 3 years)    0.897
 f-test on sa (td)                      0.006
 f-test on i (td)                       0.093

 Combined test in the entire series
 Non parametric tests for stable seasonality
                                                          P.value
   Kruskall-Wallis test                                     0.000
   Test for the presence of seasonality assuming stability  0.000
   Evolutive seasonality test                               0.013

 Identifiable seasonality present

 Combined test in the last 3 years
 Non parametric tests for stable seasonality
                                                          P.value
   Kruskall-Wallis test                                     0.000
```

```
   Test for the presence of seasonality assuming stability   0.000
   Evolutive seasonality test                                0.373

 Identifiable seasonality present


Additional output variables
```

Affiliation:

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