16. Once the output settings are introduced, click the *OK* button.

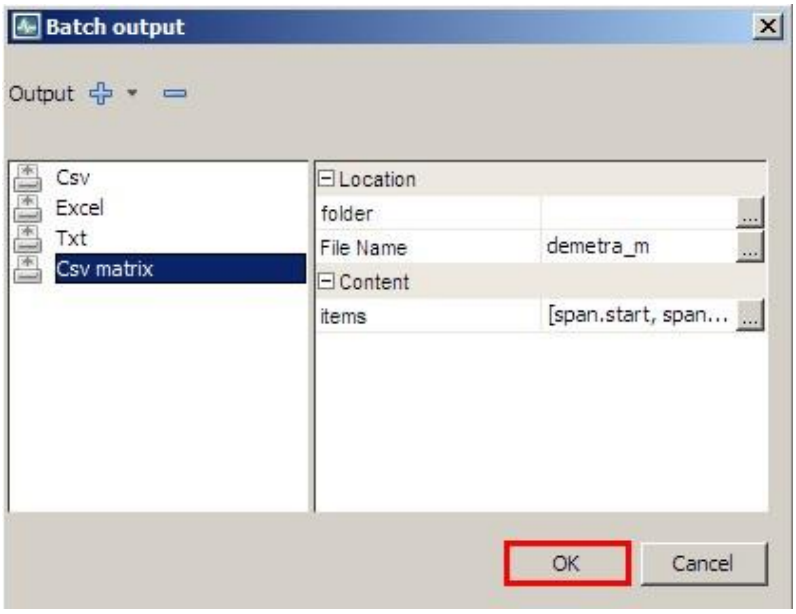


Figure 3.106: Options for the *Csv matrix* output.

17. For each output format JDemetra+ informs about the status of the operation. An exemplary message in presented below.

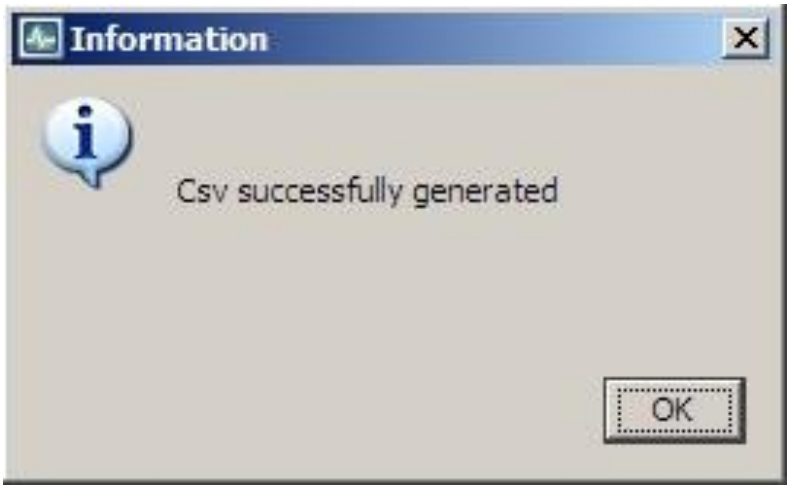


Figure 3.107: Generating output process result.

3.2.2.2. Revision policies

The saved results from the seasonal adjustment multi-process can be refreshed when new or modified observations are available. JDemetra+ offers several options for refreshing the output, which are in line with the *ESS Guidelines on Seasonal Adjustment* (2015) requirements.

1. To refresh the results open previously saved workspace using the path *File → Open Workspace*. Choose the multi-document from the *Workspace* window (see 2.1.1) and double click on it to display the multi-document menu (*SAProcessing*).

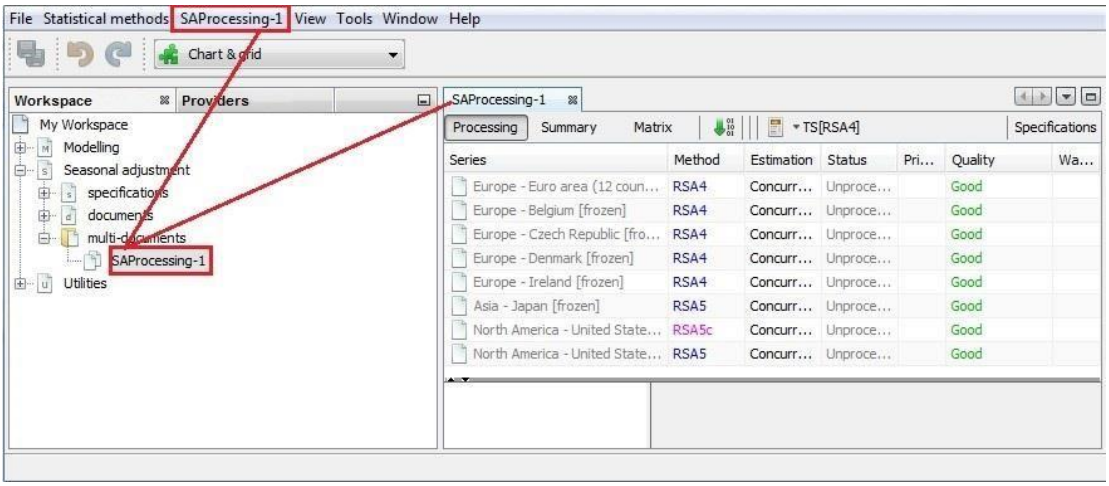


Figure 3.108: Opening a multi-document.

2. Several refreshment options are available.

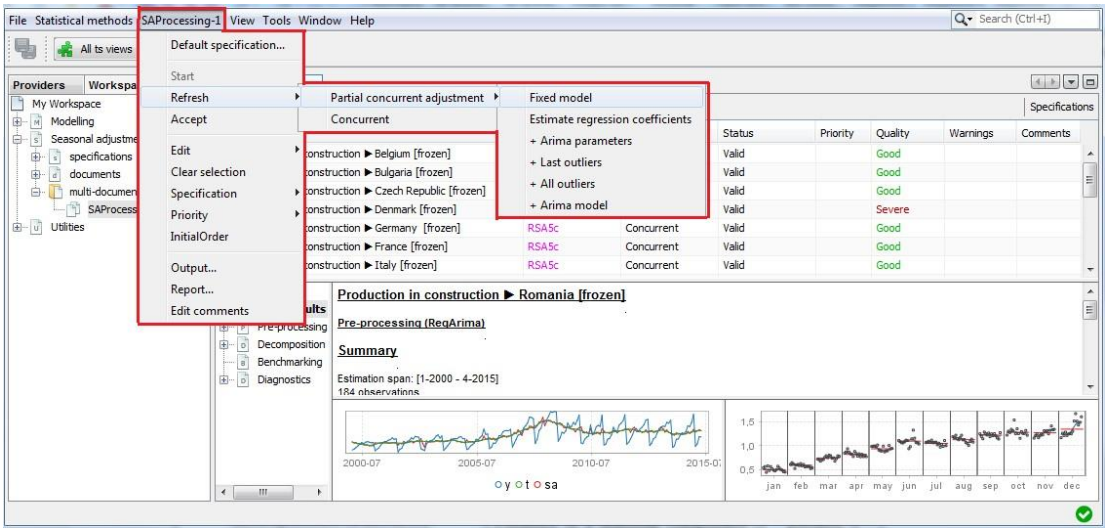


Figure 3.109: The *Refresh* menu.

The meaning of the consecutive options is presented in the following table.

Option	Meaning
Partial concurrent adjustment → Fixed model	The ARIMA model, outliers and other regression parameters are not re-identified and the values of all parameters are fixed. The transformation type remains unchanged.

Partial concurrent adjustment → Estimate regression coefficients	The ARIMA model, outliers and other regression parameters are not re-identified. The coefficients of the ARIMA model are fixed, other coefficients are re-estimated. The transformation type remains unchanged.
Partial concurrent adjustment → Estimate regression coefficients + Arima parameters	The ARIMA model, outliers and other regression parameters are not re-identified. All parameters of the RegARIMA model are re-estimated. The transformation type remains unchanged.
Partial concurrent adjustment → Estimate regression coefficients + Last outliers	The ARIMA model, outliers (except from the outliers in the last year of the sample) and other regression parameters are not re-identified. All parameters of the RegARIMA model are re-estimated. The outliers in the last year of the sample are re-identified. The transformation type remains unchanged.
Partial concurrent adjustment → Estimate regression coefficients + all outliers	The ARIMA model and regression parameters, except from outliers) are not re-identified. All parameters of the RegARIMA model are re-estimated. All outliers are re-identified. The transformation type remains unchanged.
Partial concurrent adjustment → Estimate regression coefficients + Arima model	Re-identification of the ARIMA model, outliers and regression variables, except from the calendar variables. The transformation type remains unchanged.
Concurrent	Re-identification of all the RegARIMA model.

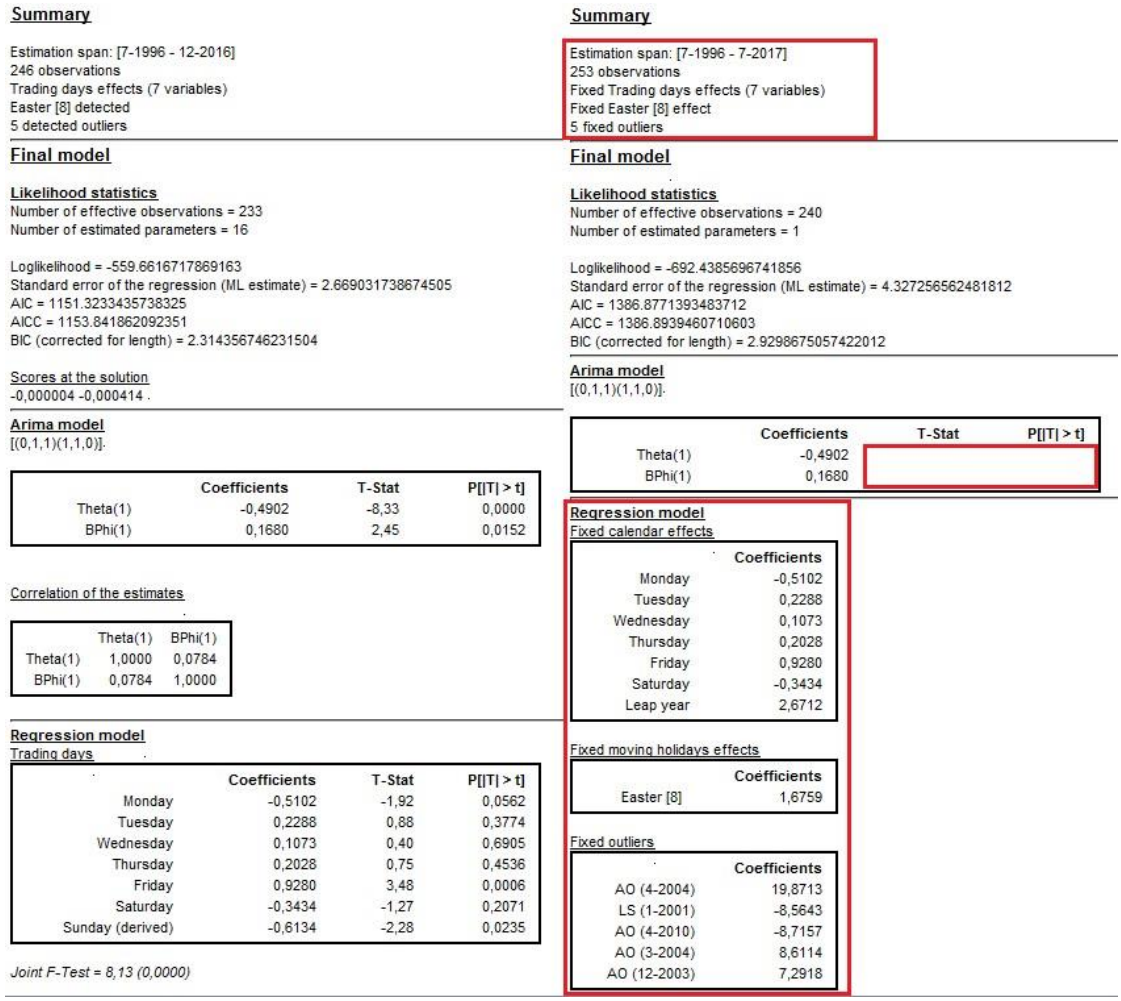
3.2.2.2.1. Partial concurrent adjustment

According to the *ESS Guidelines on Seasonal Adjustment* (2015), partial concurrent adjustment is the strategy in which the model, filters, outliers and calendar regressors are re-identified once a year and the respective parameters and factors re-estimated every time a new or revised data become available. JDemetra+ offers several types of partial concurrent adjustment.

3.2.2.2.1.1. Partial concurrent adjustment → Fixed model

The *Partial concurrent adjustment → Fixed model* strategy means that the ARIMA model, outliers and other regression parameters are not re-identified and the values of the parameters are fixed. In particular, no new outliers or calendar variables are added to the model as well as no changes neither in the calendar variables nor in the outliers' types are allowed. The transformation type remains unchanged.

The picture below presents the initial model (on the left) and the results of the refreshment procedure with the *Partial concurrent adjustment → Fixed model* option (on the right). The parameters of the ARIMA part are not estimated and their values are the same as before. The trading days and outliers are fixed too and no new regression effects are identified.



Summary

Estimation span: [7-1996 - 12-2016]
246 observations
Trading days effects (7 variables)
Easter [8] detected
5 detected outliers

Final model

Likelihood statistics
Number of effective observations = 233
Number of estimated parameters = 16

Loglikelihood = -559.6616717869163
Standard error of the regression (ML estimate) = 2.669031738674505
AIC = 1151.3233435738325
AICC = 1153.841862092351
BIC (corrected for length) = 2.314356746231504

Scores at the solution
-0,000004 -0,000414 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902	-8,33	0,0000
BPhi(1)	0,1680	2,45	0,0152

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0784
BPhi(1)	0,0784	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5102	-1,92	0,0562
Tuesday	0,2288	0,88	0,3774
Wednesday	0,1073	0,40	0,6905
Thursday	0,2028	0,75	0,4536
Friday	0,9280	3,48	0,0006
Saturday	-0,3434	-1,27	0,2071
Sunday (derived)	-0,6134	-2,28	0,0235

Joint F-Test = 8,13 (0,0000)

Summary

Estimation span: [7-1996 - 7-2017]
253 observations
Fixed Trading days effects (7 variables)
Fixed Easter [8] effect
5 fixed outliers

Final model

Likelihood statistics
Number of effective observations = 240
Number of estimated parameters = 1

Loglikelihood = -692.4385696741856
Standard error of the regression (ML estimate) = 4.327256562481812
AIC = 1386.8771393483712
AICC = 1386.8939460710603
BIC (corrected for length) = 2.9298675057422012

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902		
BPhi(1)	0,1680		

Regression model
Fixed calendar effects

	Coefficients
Monday	-0,5102
Tuesday	0,2288
Wednesday	0,1073
Thursday	0,2028
Friday	0,9280
Saturday	-0,3434
Leap year	2,6712

Fixed moving holidays effects

	Coefficients
Easter [8]	1,6759

Fixed outliers

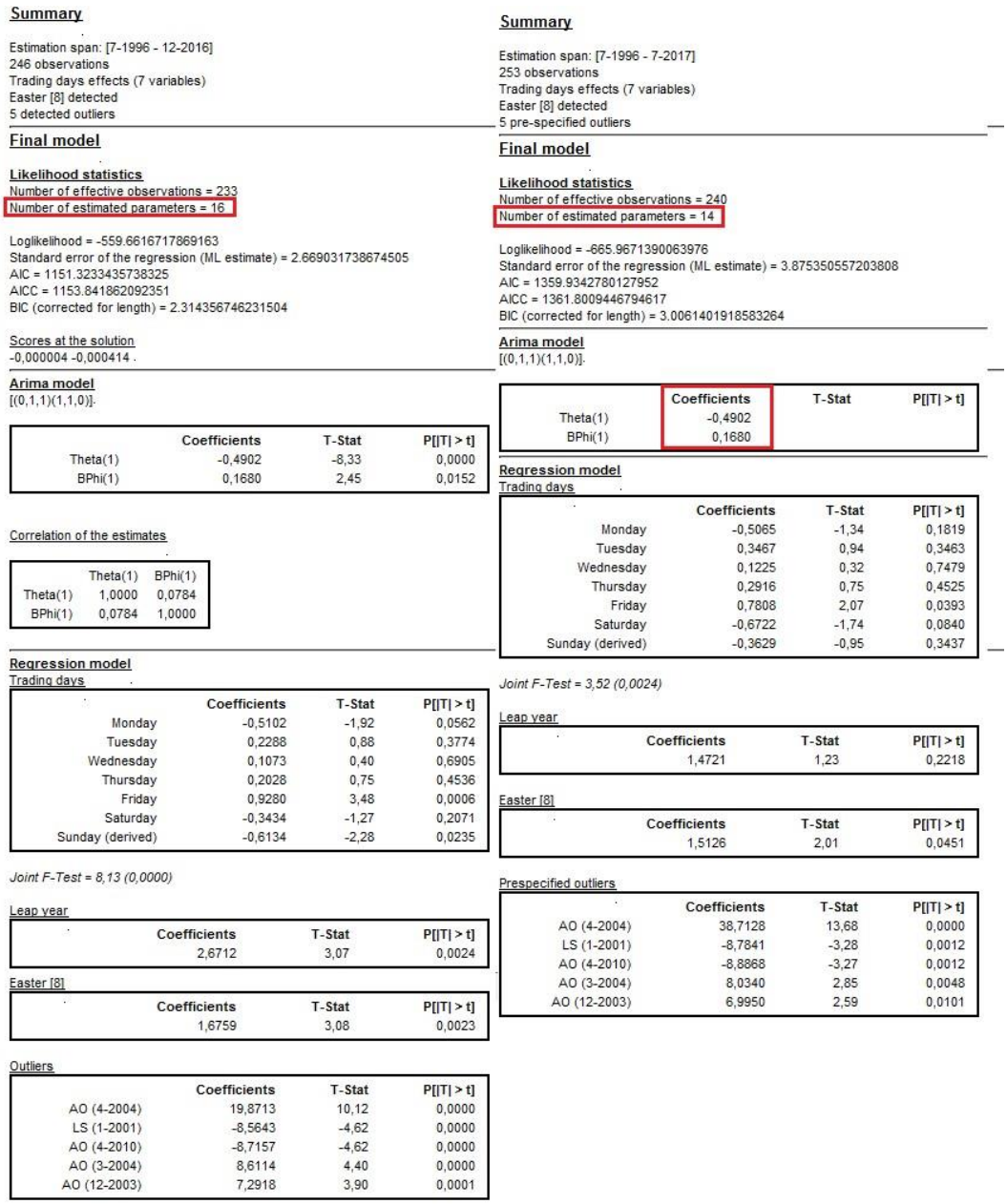
	Coefficients
AO (4-2004)	19,8713
LS (1-2001)	-8,5643
AO (4-2010)	-8,7157
AO (3-2004)	8,6114
AO (12-2003)	7,2918

Figure 3.110: A *Partial concurrent adjustment → fixed model* revision policy results.

3.2.2.2.1.2. Partial concurrent adjustment → Estimate regression coefficients

The *Partial current adjustment → Estimate regression coefficients* option means that the ARIMA model, outliers and other regression parameters are not re-identified. The coefficients of the ARIMA model are fixed, other coefficients are re-estimated. In particular, no new outliers or calendar variables are added to the model as well as no changes neither in the calendar variables nor in the outliers' types are allowed. The transformation type remains unchanged.

The picture below presents the initial model (on the left) and the results of the refreshment procedure with the *Partial concurrent adjustment → Estimate regression coefficients* option (on the right). The number of estimated parameters is 16 in the initial model and 14 in the revised model (the parameters of the ARIMA model are not estimated.



Summary

Estimation span: [7-1996 - 12-2016]
246 observations
Trading days effects (7 variables)
Easter [8] detected
5 detected outliers

Final model

Likelihood statistics
Number of effective observations = 233
Number of estimated parameters = 16

Loglikelihood = -559.6616717869163
Standard error of the regression (ML estimate) = 2.669031738674505
AIC = 1151.3233435738325
AICC = 1153.841862092351
BIC (corrected for length) = 2.314356746231504

Scores at the solution
-0,000004 -0,000414 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902	-8,33	0,0000
BPhi(1)	0,1680	2,45	0,0152

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0784
BPhi(1)	0,0784	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5102	-1,92	0,0562
Tuesday	0,2288	0,88	0,3774
Wednesday	0,1073	0,40	0,6905
Thursday	0,2028	0,75	0,4536
Friday	0,9280	3,48	0,0006
Saturday	-0,3434	-1,27	0,2071
Sunday (derived)	-0,6134	-2,28	0,0235

Joint F-Test = 8,13 (0,0000)

Leap year

	Coefficients	T-Stat	P[|T| > t]
	2,6712	3,07	0,0024

Easter [8]

	Coefficients	T-Stat	P[|T| > t]
	1,6759	3,08	0,0023

Outliers

	Coefficients	T-Stat	P[|T| > t]
AO (4-2004)	19,8713	10,12	0,0000
LS (1-2001)	-8,5643	-4,62	0,0000
AO (4-2010)	-8,7157	-4,62	0,0000
AO (3-2004)	8,6114	4,40	0,0000
AO (12-2003)	7,2918	3,90	0,0001

Summary

Estimation span: [7-1996 - 7-2017]
253 observations
Trading days effects (7 variables)
Easter [8] detected
5 pre-specified outliers

Final model

Likelihood statistics
Number of effective observations = 240
Number of estimated parameters = 14

Loglikelihood = -665.9671390063976
Standard error of the regression (ML estimate) = 3.875350557203808
AIC = 1359.9342780127952
AICC = 1361.8009446794617
BIC (corrected for length) = 3.0061401918583264

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902		
BPhi(1)	0,1680		

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5065	-1,34	0,1819
Tuesday	0,3467	0,94	0,3463
Wednesday	0,1225	0,32	0,7479
Thursday	0,2916	0,75	0,4525
Friday	0,7808	2,07	0,0393
Saturday	-0,6722	-1,74	0,0840
Sunday (derived)	-0,3629	-0,95	0,3437

Joint F-Test = 3,52 (0,0024)

Leap year

	Coefficients	T-Stat	P[|T| > t]
	1,4721	1,23	0,2218

Easter [8]

	Coefficients	T-Stat	P[|T| > t]
	1,5126	2,01	0,0451

Prespecified outliers

	Coefficients	T-Stat	P[|T| > t]
AO (4-2004)	38,7128	13,68	0,0000
LS (1-2001)	-8,7841	-3,28	0,0012
AO (4-2010)	-8,8868	-3,27	0,0012
AO (3-2004)	8,0340	2,85	0,0048
AO (12-2003)	6,9950	2,59	0,0101

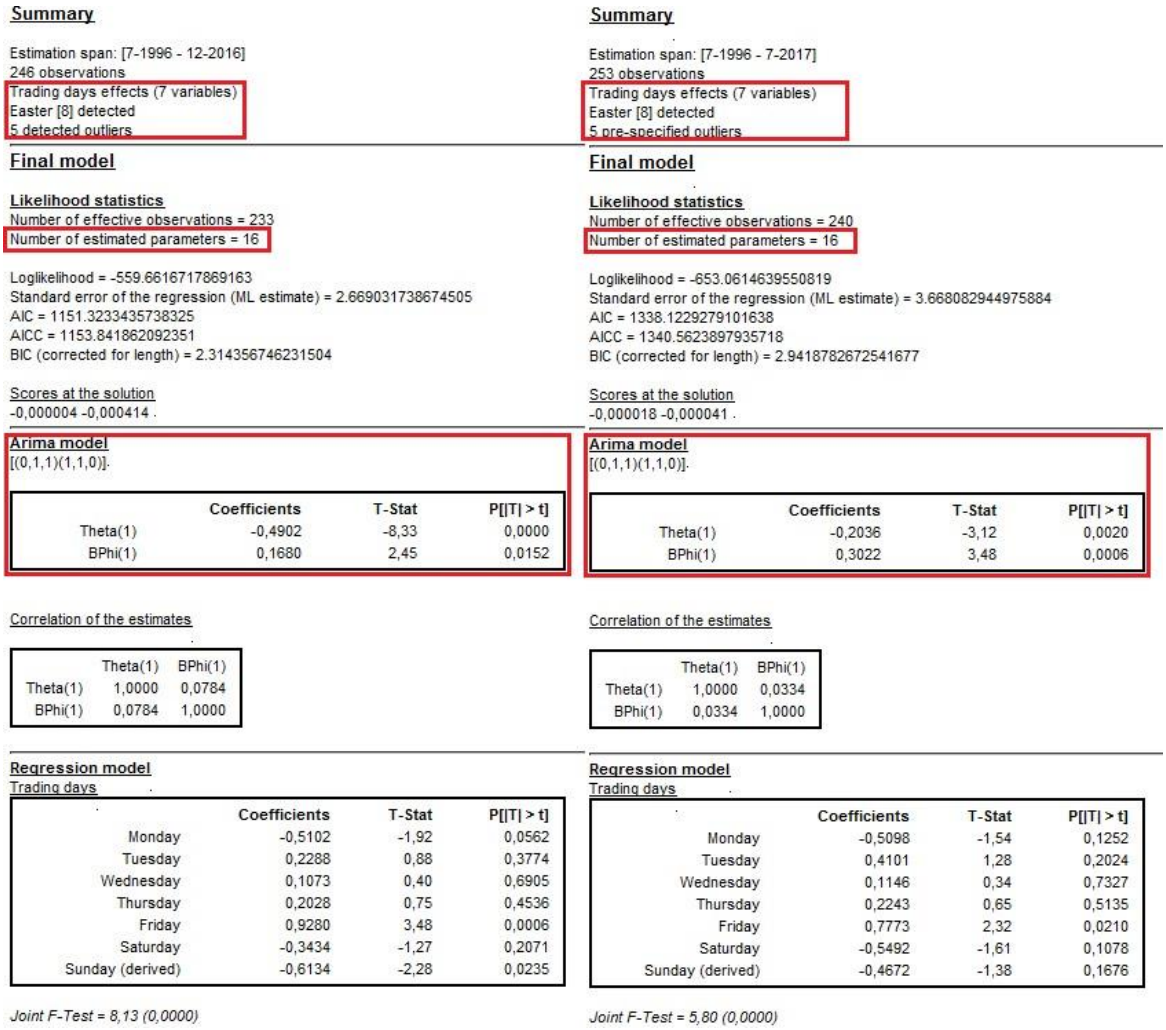
Figure 3.111: The *Partial concurrent adjustment → Estimate regression coefficients* revision policy results.

3.2.2.2.1.3. Partial concurrent adjustment → Estimate regression coefficient + Arima parameters

The *Partial concurrent adjustment → Estimate regression coefficient + Arima parameters* strategy means that the ARIMA model, outliers and other regression parameters are not re-identified. All

parameters of the RegARIMA model are re-estimated but the explanatory variables remain the same. The transformation type remains unchanged.

The picture below presents the initial model (on the left) and the results of the refreshment procedure with the *Partial concurrent adjustment → Estimate regression coefficient + Arima parameters* option (on the right). The parameters of the ARIMA part have been re-estimated and their values have been updated. Also regression coefficients have been re-estimated and the number of estimated coefficients in the revised model is the same as in the initial model (i.e. 16 estimated coefficients).
The structure of the model remains unchanged while all coefficients have been updated.



Summary

Estimation span: [7-1996 - 12-2016]
246 observations
Trading days effects (7 variables)
Easter [8] detected
5 detected outliers

Final model

Likelihood statistics
Number of effective observations = 233
Number of estimated parameters = 16

Loglikelihood = -559.6616717869163
Standard error of the regression (ML estimate) = 2.669031738674505
AIC = 1151.3233435738325
AICC = 1153.841862092351
BIC (corrected for length) = 2.314356746231504

Scores at the solution
-0,000004 -0,000414 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902	-8,33	0,0000
BPhi(1)	0,1680	2,45	0,0152

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0784
BPhi(1)	0,0784	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5102	-1,92	0,0562
Tuesday	0,2288	0,88	0,3774
Wednesday	0,1073	0,40	0,6905
Thursday	0,2028	0,75	0,4536
Friday	0,9280	3,48	0,0006
Saturday	-0,3434	-1,27	0,2071
Sunday (derived)	-0,6134	-2,28	0,0235

Joint F-Test = 8,13 (0,0000)

Summary

Estimation span: [7-1996 - 7-2017]
253 observations
Trading days effects (7 variables)
Easter [8] detected
5 pre-specified outliers

Final model

Likelihood statistics
Number of effective observations = 240
Number of estimated parameters = 16

Loglikelihood = -653.0614639550819
Standard error of the regression (ML estimate) = 3.668082944975884
AIC = 1338.1229279101638
AICC = 1340.5623897935718
BIC (corrected for length) = 2.9418782672541677

Scores at the solution
-0,000018 -0,000041 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,2036	-3,12	0,0020
BPhi(1)	0,3022	3,48	0,0006

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0334
BPhi(1)	0,0334	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5098	-1,54	0,1252
Tuesday	0,4101	1,28	0,2024
Wednesday	0,1146	0,34	0,7327
Thursday	0,2243	0,65	0,5135
Friday	0,7773	2,32	0,0210
Saturday	-0,5492	-1,61	0,1078
Sunday (derived)	-0,4672	-1,38	0,1676

Joint F-Test = 5,80 (0,0000)

Figure 3.112: The *Partial concurrent adjustment → Estimate regression coefficient + Arima parameters* revision policy results.

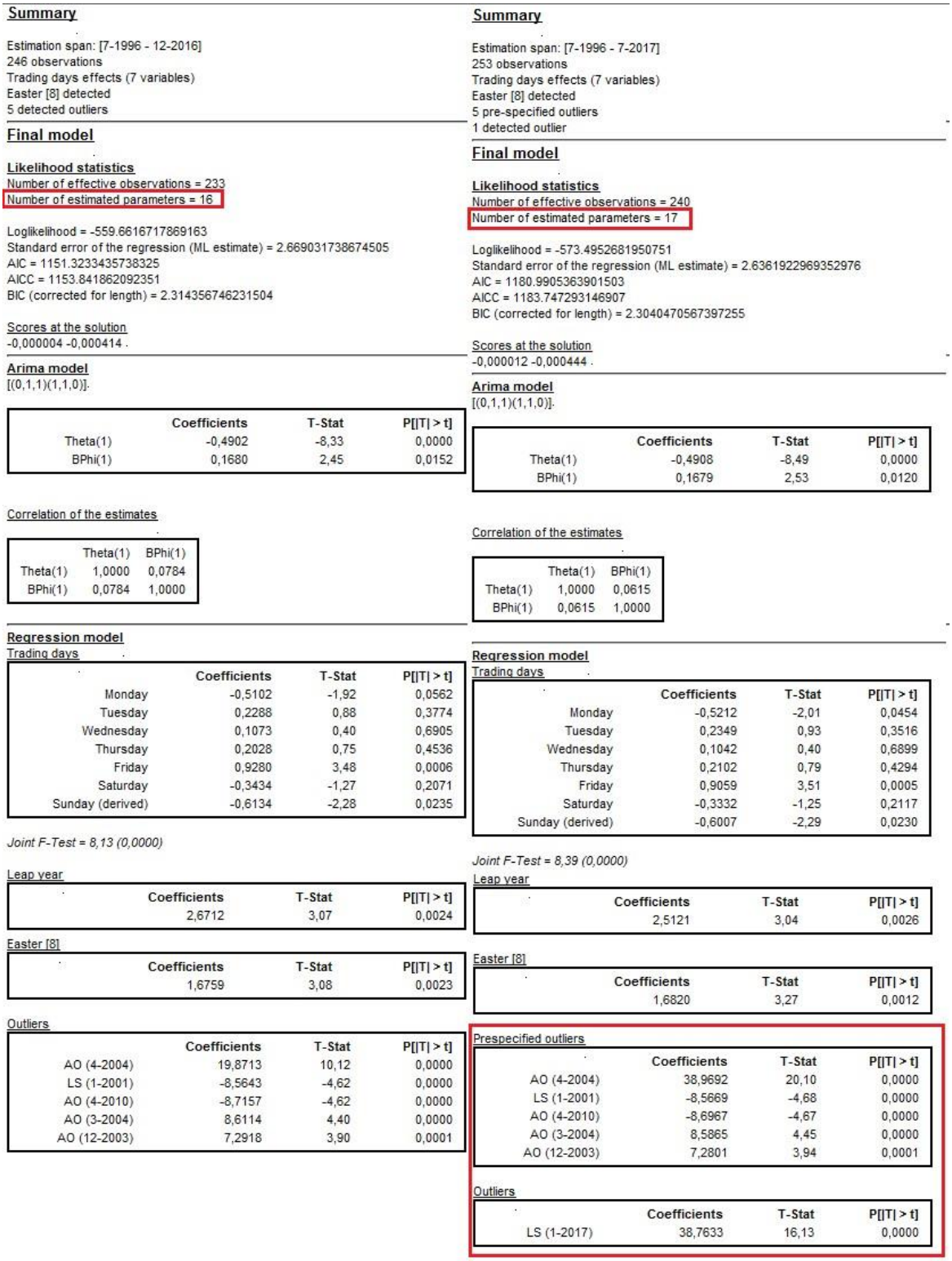
Partial concurrent adjustment →

Partial concurrent adjustment

3.2.2.2.1.4. Estimate regression coefficient + Last outliers

The → *Estimate regression coefficient + Last outliers* strategy means that the ARIMA model, outliers (except from the outliers in the last year of the sample) and other regression parameters are not re-identified. All parameters of the RegARIMA model are re-estimated. Software tests for the outliers in the last year of a data span and include in the model those which are statistically significant. The transformation type remains unchanged.

The picture below presents the initial model (on the left) and the results of the refreshment procedure with the *Partial concurrent adjustment → Estimate regression coefficient + Last outliers* option (on the right). The parameters of the ARIMA part have been re-estimated and their values have been updated. Also regression coefficients have been re-estimated. The number of estimated coefficients in the revised model is larger than the initial model because an additional outlier has been identified in the last year of a data span.



Summary

Estimation span: [7-1996 - 12-2016]
246 observations
Trading days effects (7 variables)
Easter [8] detected
5 detected outliers

Final model

Likelihood statistics
Number of effective observations = 233
Number of estimated parameters = 16

Loglikelihood = -559.6616717869163
Standard error of the regression (ML estimate) = 2.669031738674505
AIC = 1151.3233435738325
AICC = 1153.841862092351
BIC (corrected for length) = 2.314356746231504

Scores at the solution
-0,000004 -0,000414 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902	-8,33	0,0000
BPhi(1)	0,1680	2,45	0,0152

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0784
BPhi(1)	0,0784	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5102	-1,92	0,0562
Tuesday	0,2288	0,88	0,3774
Wednesday	0,1073	0,40	0,6905
Thursday	0,2028	0,75	0,4536
Friday	0,9280	3,48	0,0006
Saturday	-0,3434	-1,27	0,2071
Sunday (derived)	-0,6134	-2,28	0,0235

Joint F-Test = 8,13 (0,0000)

Leap year

Coefficients	T-Stat	P[|T| > t]
2,6712	3,07	0,0024

Easter [8]

Coefficients	T-Stat	P[|T| > t]
1,6759	3,08	0,0023

Outliers

	Coefficients	T-Stat	P[|T| > t]
AO (4-2004)	19,8713	10,12	0,0000
LS (1-2001)	-8,5643	-4,62	0,0000
AO (4-2010)	-8,7157	-4,62	0,0000
AO (3-2004)	8,6114	4,40	0,0000
AO (12-2003)	7,2918	3,90	0,0001

Summary

Estimation span: [7-1996 - 7-2017]
253 observations
Trading days effects (7 variables)
Easter [8] detected
5 pre-specified outliers
1 detected outlier

Final model

Likelihood statistics
Number of effective observations = 240
Number of estimated parameters = 17

Loglikelihood = -573.4952681950751
Standard error of the regression (ML estimate) = 2.6361922969352976
AIC = 1180.9905363901503
AICC = 1183.747293146907
BIC (corrected for length) = 2.3040470567397255

Scores at the solution
-0,000012 -0,000444 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4908	-8,49	0,0000
BPhi(1)	0,1679	2,53	0,0120

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0615
BPhi(1)	0,0615	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5212	-2,01	0,0454
Tuesday	0,2349	0,93	0,3516
Wednesday	0,1042	0,40	0,6899
Thursday	0,2102	0,79	0,4294
Friday	0,9059	3,51	0,0005
Saturday	-0,3332	-1,25	0,2117
Sunday (derived)	-0,6007	-2,29	0,0230

Joint F-Test = 8,39 (0,0000)

Leap year

Coefficients	T-Stat	P[|T| > t]
2,5121	3,04	0,0026

Easter [8]

Coefficients	T-Stat	P[|T| > t]
1,6820	3,27	0,0012

Prespecified outliers

	Coefficients	T-Stat	P[|T| > t]
AO (4-2004)	38,9692	20,10	0,0000
LS (1-2001)	-8,5669	-4,68	0,0000
AO (4-2010)	-8,6967	-4,67	0,0000
AO (3-2004)	8,5865	4,45	0,0000
AO (12-2003)	7,2801	3,94	0,0001

Outliers

	Coefficients	T-Stat	P[|T| > t]
LS (1-2017)	38,7633	16,13	0,0000

Figure 3.113: The *Partial concurrent adjustment → Estimate regression coefficient + Last outliers* revision policy results.

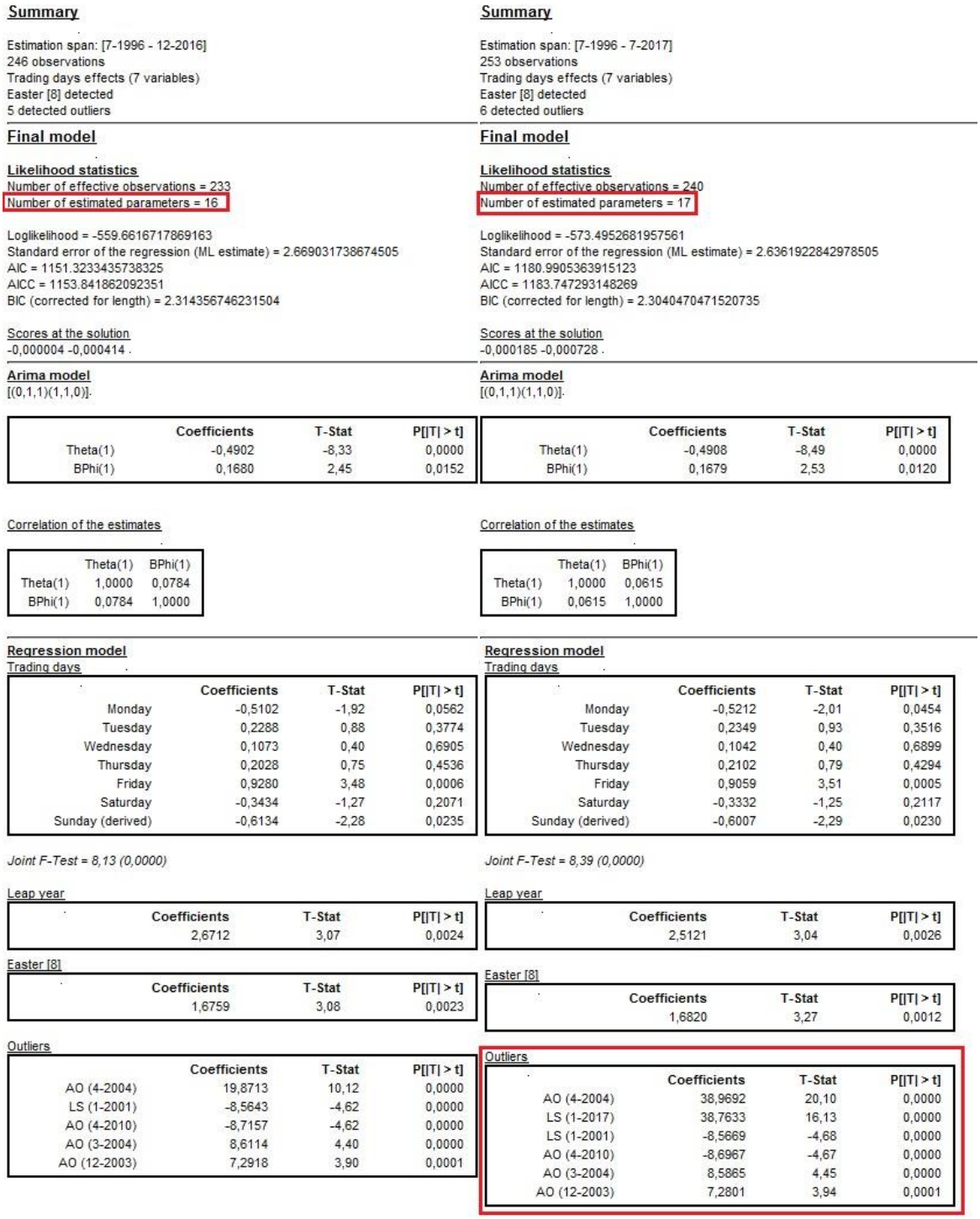
Partial concurrent adjustment →

Partial concurrent adjustment

3.2.2.2.1.5. Estimate regression coefficient + outliers

The → *Estimate regression coefficient + outliers* option means that the ARIMA model and regression parameters, except from the parameters for the outliers, are not reidentified. The parameters of these variables are re-estimated. All outliers are re-identified, i.e. the previous outcome of the outlier detection procedure is not taken into account and all outliers are identified and estimated once again. The transformation type remains unchanged.

The picture below presents the initial model (on the left) and the results of the refreshment procedure with the *Partial concurrent adjustment → Estimate regression coefficient + outliers* option (on the right). The parameters of the ARIMA part have been re-estimated and their values have been updated. Also regression coefficients for the calendar variables have been re-estimated. In the revised model there is no *Prespecified outliers* section. Instead, the outliers were re-identified.



Summary

Estimation span: [7-1996 - 12-2016]
246 observations
Trading days effects (7 variables)
Easter [8] detected
5 detected outliers

Final model

Likelihood statistics
Number of effective observations = 233
Number of estimated parameters = 16

Loglikelihood = -559.6616717869163
Standard error of the regression (ML estimate) = 2.669031738674505
AIC = 1151.3233435738325
AICC = 1153.841862092351
BIC (corrected for length) = 2.314356746231504

Scores at the solution
-0,000004 -0,000414 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902	-8,33	0,0000
BPhi(1)	0,1680	2,45	0,0152

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0784
BPhi(1)	0,0784	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5102	-1,92	0,0562
Tuesday	0,2288	0,88	0,3774
Wednesday	0,1073	0,40	0,6905
Thursday	0,2028	0,75	0,4536
Friday	0,9280	3,48	0,0006
Saturday	-0,3434	-1,27	0,2071
Sunday (derived)	-0,6134	-2,28	0,0235

Joint F-Test = 8,13 (0,0000)

Leap year

	Coefficients	T-Stat	P[|T| > t]
	2,6712	3,07	0,0024

Easter [8]

	Coefficients	T-Stat	P[|T| > t]
	1,6759	3,08	0,0023

Outliers

	Coefficients	T-Stat	P[|T| > t]
AO (4-2004)	19,8713	10,12	0,0000
LS (1-2001)	-8,5643	-4,62	0,0000
AO (4-2010)	-8,7157	-4,62	0,0000
AO (3-2004)	8,6114	4,40	0,0000
AO (12-2003)	7,2918	3,90	0,0001

Summary

Estimation span: [7-1996 - 7-2017]
253 observations
Trading days effects (7 variables)
Easter [8] detected
6 detected outliers

Final model

Likelihood statistics
Number of effective observations = 240
Number of estimated parameters = 17

Loglikelihood = -573.4952681957561
Standard error of the regression (ML estimate) = 2.6361922842978505
AIC = 1180.9905363915123
AICC = 1183.747293148269
BIC (corrected for length) = 2.3040470471520735

Scores at the solution
-0,000185 -0,000728 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4908	-8,49	0,0000
BPhi(1)	0,1679	2,53	0,0120

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0615
BPhi(1)	0,0615	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5212	-2,01	0,0454
Tuesday	0,2349	0,93	0,3516
Wednesday	0,1042	0,40	0,6899
Thursday	0,2102	0,79	0,4294
Friday	0,9059	3,51	0,0005
Saturday	-0,3332	-1,25	0,2117
Sunday (derived)	-0,6007	-2,29	0,0230

Joint F-Test = 8,39 (0,0000)

Leap year

	Coefficients	T-Stat	P[|T| > t]
	2,5121	3,04	0,0026

Easter [8]

	Coefficients	T-Stat	P[|T| > t]
	1,6820	3,27	0,0012

Outliers

	Coefficients	T-Stat	P[|T| > t]
AO (4-2004)	38,9692	20,10	0,0000
LS (1-2017)	38,7633	16,13	0,0000
LS (1-2001)	-8,5669	-4,68	0,0000
AO (4-2010)	-8,6967	-4,67	0,0000
AO (3-2004)	8,5865	4,45	0,0000
AO (12-2003)	7,2801	3,94	0,0001

Figure 3.114: The *Partial concurrent adjustment → Estimate regression coefficient + outliers* revision policy results.

3.2.2.2.1.6. Estimate regression coefficient + Arima model

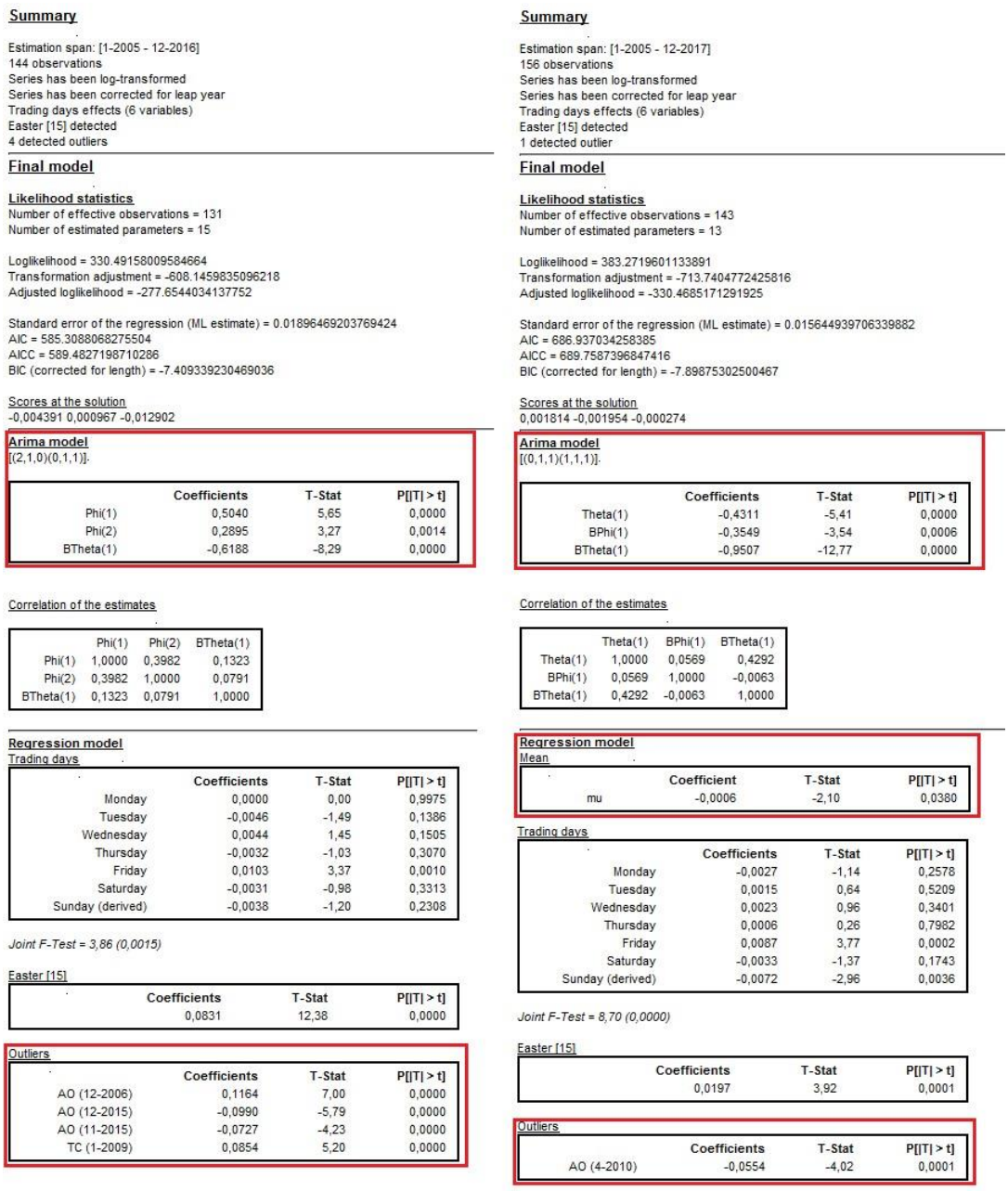
The → *Estimate regression coefficient + Arima model* option means that

Partial concurrent adjustment →

Partial concurrent adjustment
the ARIMA model, outliers and regression variables, except from the calendar variables are reidentified. All parameters are re-estimated. The transformation type remains unchanged.

The picture below presents the initial model (on the left) and the results of the refreshment procedure with the *Partial concurrent adjustment → Estimate regression coefficient + Arima model* option (on the right). The parameters of the ARIMA part have been re-estimated and their values have been updated. Also regression coefficients for the calendar variables have been re-estimated. In the revised model there is no *Prespecified outliers* section. Instead, the outliers were re-identified.

The picture below presents the initial model (on the left) and the results of the refreshment procedure for the *concurrent adjustment → Estimate regression coefficient + Arima model* option (on the right). The ARIMA part have been re-identified (a change from (2,1,0)(0,1,1) to (0,1,1)(1,1,1)). In contrast to the initial model, in the updated model the mean effect was detected and estimated. Also the results of the automatic outlier identification are not the same in both models.



Summary

Estimation span: [1-2005 - 12-2016]
144 observations
Series has been log-transformed
Series has been corrected for leap year
Trading days effects (6 variables)
Easter [15] detected
4 detected outliers

Final model

Likelihood statistics
Number of effective observations = 131
Number of estimated parameters = 15

Loglikelihood = 330.49158009584664
Transformation adjustment = -608.1459835096218
Adjusted loglikelihood = -277.6544034137752

Standard error of the regression (ML estimate) = 0.01896469203769424
AIC = 585.3088068275504
AICC = 589.4827198710286
BIC (corrected for length) = -7.409339230469036

Scores at the solution
-0,004391 0,000967 -0,012902

Arima model
[(2,1,0)(0,1,1)].

	Coefficients	T-Stat	P[|T| > t]
Phi(1)	0,5040	5,65	0,0000
Phi(2)	0,2895	3,27	0,0014
BTheta(1)	-0,6188	-8,29	0,0000

Correlation of the estimates

	Phi(1)	Phi(2)	BTheta(1)
Phi(1)	1,0000	0,3982	0,1323
Phi(2)	0,3982	1,0000	0,0791
BTheta(1)	0,1323	0,0791	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	0,0000	0,00	0,9975
Tuesday	-0,0046	-1,49	0,1386
Wednesday	0,0044	1,45	0,1505
Thursday	-0,0032	-1,03	0,3070
Friday	0,0103	3,37	0,0010
Saturday	-0,0031	-0,98	0,3313
Sunday (derived)	-0,0038	-1,20	0,2308

Joint F-Test = 3,86 (0,0015)

Easter [15]

Coefficients	T-Stat	P[|T| > t]
0,0831	12,38	0,0000

Outliers

	Coefficients	T-Stat	P[|T| > t]
AO (12-2006)	0,1164	7,00	0,0000
AO (12-2015)	-0,0990	-5,79	0,0000
AO (11-2015)	-0,0727	-4,23	0,0000
TC (1-2009)	0,0854	5,20	0,0000

Summary

Estimation span: [1-2005 - 12-2017]
156 observations
Series has been log-transformed
Series has been corrected for leap year
Trading days effects (6 variables)
Easter [15] detected
1 detected outlier

Final model

Likelihood statistics
Number of effective observations = 143
Number of estimated parameters = 13

Loglikelihood = 383.2719601133891
Transformation adjustment = -713.7404772425816
Adjusted loglikelihood = -330.4685171291925

Standard error of the regression (ML estimate) = 0.015644939706339882
AIC = 686.937034258385
AICC = 689.7587396847416
BIC (corrected for length) = -7.89875302500467

Scores at the solution
0,001814 -0,001954 -0,000274

Arima model
[(0,1,1)(1,1,1)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4311	-5,41	0,0000
BPhi(1)	-0,3549	-3,54	0,0006
BTheta(1)	-0,9507	-12,77	0,0000

Correlation of the estimates

	Theta(1)	BPhi(1)	BTheta(1)
Theta(1)	1,0000	0,0569	0,4292
BPhi(1)	0,0569	1,0000	-0,0063
BTheta(1)	0,4292	-0,0063	1,0000

Regression model
Mean

	Coefficient	T-Stat	P[|T| > t]
mu	-0,0006	-2,10	0,0380

Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,0027	-1,14	0,2578
Tuesday	0,0015	0,64	0,5209
Wednesday	0,0023	0,96	0,3401
Thursday	0,0006	0,26	0,7982
Friday	0,0087	3,77	0,0002
Saturday	-0,0033	-1,37	0,1743
Sunday (derived)	-0,0072	-2,96	0,0036

Joint F-Test = 8,70 (0,0000)

Easter [15]

Coefficients	T-Stat	P[|T| > t]
0,0197	3,92	0,0001

Outliers

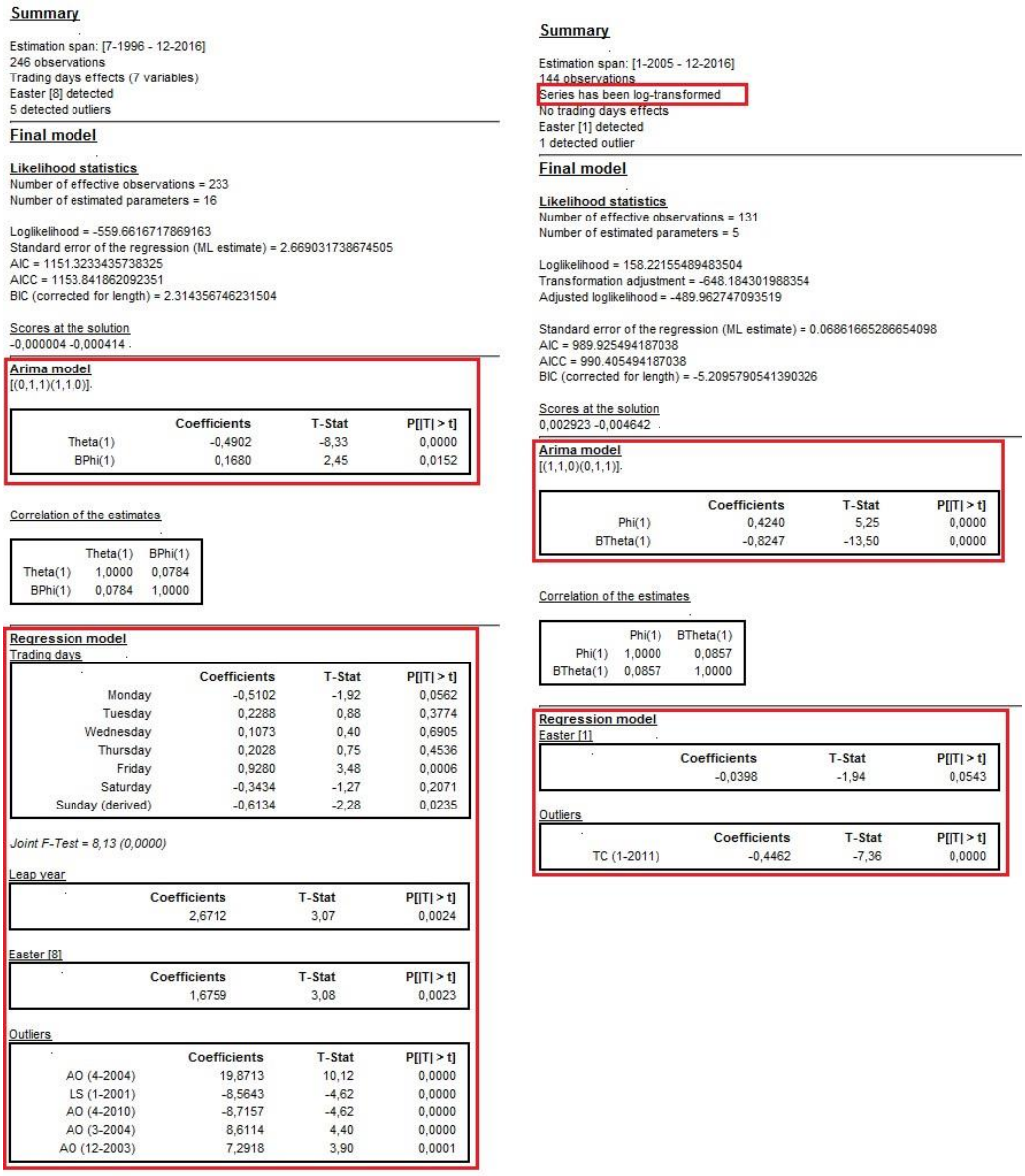
	Coefficients	T-Stat	P[|T| > t]
AO (4-2010)	-0,0554	-4,02	0,0001

Figure 3.115: The *Partial concurrent adjustment → Estimate regression coefficient + Arima model* revision policy results.

3.2.2.2.2. Concurrent adjustment

According to the *ESS Guidelines on Seasonal Adjustment* (2015), concurrent adjustment means that the model, filters, outliers, regression parameters and transformation type are re-identified and the respective parameters and factors re-estimated every time new observation is available. This option in JDemetra+ means that the completely new model is identified, and the previous results are not taken into account.

The picture below presents the initial model (on the left) and the results of the refreshment procedure with the *Concurrent adjustment* option (on the right). The transformation type has changed from none to log. The ARIMA part have been re-identified (a change from (0,1,1)(1,1,0) to (1,1,0)(0,1,1)). In contrast to the initial model, in the updated model the trading days and a leap year effect have been not estimated. Also the results of the automatic outlier identification are not the same in both models.



Summary

Estimation span: [7-1996 - 12-2016]
246 observations
Trading days effects (7 variables)
Easter [8] detected
5 detected outliers

Final model

Likelihood statistics
Number of effective observations = 233
Number of estimated parameters = 16

Loglikelihood = -559.6616717869163
Standard error of the regression (ML estimate) = 2.669031738674505
AIC = 1151.3233435738325
AICC = 1153.841862092351
BIC (corrected for length) = 2.314356746231504

Scores at the solution
-0,000004 -0,000414 .

Arima model
[(0,1,1)(1,1,0)].

	Coefficients	T-Stat	P[|T| > t]
Theta(1)	-0,4902	-8,33	0,0000
BPhi(1)	0,1680	2,45	0,0152

Correlation of the estimates

	Theta(1)	BPhi(1)
Theta(1)	1,0000	0,0784
BPhi(1)	0,0784	1,0000

Regression model
Trading days

	Coefficients	T-Stat	P[|T| > t]
Monday	-0,5102	-1,92	0,0562
Tuesday	0,2288	0,88	0,3774
Wednesday	0,1073	0,40	0,6905
Thursday	0,2028	0,75	0,4536
Friday	0,9280	3,48	0,0006
Saturday	-0,3434	-1,27	0,2071
Sunday (derived)	-0,6134	-2,28	0,0235

Joint F-Test = 8,13 (0,0000)

Leap year

Coefficients	T-Stat	P[|T| > t]
2,6712	3,07	0,0024

Easter [8]

Coefficients	T-Stat	P[|T| > t]
1,6759	3,08	0,0023

Outliers

	Coefficients	T-Stat	P[|T| > t]
AO (4-2004)	19,8713	10,12	0,0000
LS (1-2001)	-8,5643	-4,62	0,0000
AO (4-2010)	-8,7157	-4,62	0,0000
AO (3-2004)	8,6114	4,40	0,0000
AO (12-2003)	7,2918	3,90	0,0001

Summary

Estimation span: [1-2005 - 12-2016]
144 observations
Series has been log-transformed
No trading days effects
Easter [1] detected
1 detected outlier

Final model

Likelihood statistics
Number of effective observations = 131
Number of estimated parameters = 5

Loglikelihood = 158.22155489483504
Transformation adjustment = -648.184301988354
Adjusted loglikelihood = -489.962747093519

Standard error of the regression (ML estimate) = 0.06861665286654098
AIC = 989.925494187038
AICC = 990.405494187038
BIC (corrected for length) = -5.2095790541390326

Scores at the solution
0,002923 -0,004642 .

Arima model
[(1,1,0)(0,1,1)].

	Coefficients	T-Stat	P[|T| > t]
Phi(1)	0,4240	5,25	0,0000
BTheta(1)	-0,8247	-13,50	0,0000

Correlation of the estimates

	Phi(1)	BTheta(1)
Phi(1)	1,0000	0,0857
BTheta(1)	0,0857	1,0000

Regression model
Easter [1]

Coefficients	T-Stat	P[|T| > t]
-0,0398	-1,94	0,0543

Outliers

	Coefficients	T-Stat	P[|T| > t]
TC (1-2011)	-0,4462	-7,36	0,0000

Figure 3.116: The *Concurrent adjustment* revision policy results.

3.3. Time series modelling

Time series modelling scenarios are designed for a time series analysis that includes identification and estimation of an ARIMA model as well as abnormal values and calendar effects. It is done by