Handling seasonal breaks in monthly or quarterly time series

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Outline

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Seasonal Adjustment Diagnostics Criteria

Model Info

Coded Outliers
LS1991.2[t6.84] AO2022.3[t5.72] AO2022.4[t3.97] LS2023.2[t6.32]
LS1991.2[t5.97] AO2022.3[t5.57] AO2022.4[t3.45] LS2023.2[t6.02]
LS1991.2[t3.04] AO2022.3[t10.60] AO2022.4[t6.53] LS2023.2[t13.28]

Model Info | Model Diagnostics | x11 | Spectrum & QS | Stability Diagnostics |

Series Name	il	Regressors	Trading Day	Holiday	Seasonal	Constant	User	Coded Outliers	Auto Outliers	Variance	Phi1	Sum NS AR	Theta1	Sum NS MA	Sum Seas AR	Sum Seas MA
ANLW		Trading Day + Leap Year	TDNoLpyear[f-p0.89][Lpyear[t1.94]							0.96783753141737E+08			0.298	0.298	-0.118	0.619
GZSL		LS1991.2 + AO2022.3 + AO2022.4 + LS2023.2						LS1991.2[t3.05] AO2022.3[t10.48] AO2022.4[t6.58] LS2023.2[t13.39]		0.53864733191145E+06	-0.983	-2.95	0.033	0.002	-0.354	0.355
EX_SA_0_V_NSA_Q		Trading Day + LS2007.1 + LS2009.1 + AO2010.4	TD[f-p0.16]					LS2007.1[t-5.67] LS2009.1[t2.77] AO2010.4[t5.42]		0.16405904713622E-01			0.227	0.227		0.657

Seasonal Adjustment Diagnostics Criteria

Model Diagnostics

Series Name	AICC	aa FcE (3-yr)	Normal?	# LBQ Fail	Sig LBQ	Sig Seas LBQ	# BPQ Fail	Sig BPQ	Sig Seas BPQ	Sig ACF	Sig Seas ACF	Sig PACF	Sig Seas PACF	Resid Peaks	QS Resid	QSS Resid
NLW	2814.28613	11.9018	failed	0			0								1.000	1.000
NLW	2809.91675	7.328	failed	0			0			6		6			1.000	1.000
NLW	2812.02759	7.4286	failed	0			0								1.000	1.000
NLW	2814.40918	7.4363	failed	1	6		1	6				6			1.000	1.000
NLW	2805.22656	6.8789	ok	0			0								0.392	1.000
NLW	2821.36621	7.5492	ok	0			0								0.543	1.000
NLW	2827.46362	8.0693	ok	0			0								0.447	1.000
NLW	2831.311	12.0994	ok	0			0								0.260	1.000
NLW	2820.54541	14.2893	failed	0			0								1.000	1.000
NLW	2824.219	14.1069	failed	0			0								1.000	1.000
NLW	3072.782	76.6014	skewed -	0			0					5			1.000	1.000

Series Name	AICC	aa FcE (3-yr)	Normal?	# LBQ Fail	Sig LBQ	Sig Seas LBQ	# BPQ Fail	Sig BPQ	Sig Seas BPQ	Sig ACF	Sig Seas ACF	Sig PACF	Sig Seas PACF	Resid Peaks	QS Resid	QSS Resid	Avg Sq Fcst Err 1 Period	Avg Sq Fcst Err 1 Year
T_O_K66_V_F_S12_	4610.227	5.2546	failed	19	6–24	s12s24	19	6–24	s12s24	2-3 9		2-3 8-9 16		t1	1.000	0.171		
T_O_K66_V_F_S12_	4609.302	5.3881	failed	18	7–24	s12s24	18	7–24	s12s24	1-2 8-9		1 3 8-9		t1	0.968	0.101		
T_O_K66_V_F_S12_	4493.36865	5.9239	failed	18	7–24	s12s24	18	7–24	s12s24	5 9		5			1.000	1.000		

Seasonal Adjustment Diagnostics Criteria

x11

Series Name	Sigma Lim	Seasonal MA	Trend MA	I/S Ratio	I/C Ratio	D8F	D8F p-val	D11F	D11F 3 yr	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	Q	Q2	MCD
ANLW	1.50 2.50	3x3	5	2.38	0.64	65.147	0.000	0.791	0.897	0.102	0.064	0.465	0.986	0.684	0.649	0.355	0.733	0.418	1.503	1.238	0.52	0.59	2
ANNV	1.50 2.50	3x3	5	1.53	0.73	142.187	0.000	0.434	0.108	0.050	0.201	0.602	1.517	0.766	0.989	0.273	0.711	0.367	1.635	1.635	0.61	0.67	2
GZSL	1.50 2.50	3x3	5	2.21	0.34	80.208	0.000	0.306	0.480	0.087	0.019	0.009	0.834	0.200	0.715	0.337	0.598	0.282	0.570	0.570	0.30	0.34	1
T_O_K66_V_F_S12_	1.50 2.50	3x3	5	1.77	0.81	14.222	0.000	1.000	0.951	0.030	0.012	0.000	1.504	0.000	0.890	1.358	1.856	0.350	1.502	1.423	0.71	0.81	1

Spectrum & QS

Series Name	Sig Ori Peaks	QS Ori	QSS Ori	QS Ori Adj Ext	QSS Ori Adj Ext	Tukey Ori Peaks	Sig SAdj Peaks	Sig Irr Peaks	Nonsig Seasonal Peaks	Nonsig TD Peaks	QS Sadj	QSS Sadj	QS Sadj Adj Ext	QSS Sadj Adj Ext	QS Irr	QSS Irr	QS Irr Adj Ext	QSS Irr Adj Ext	Tukey Sadj Peaks	Tukey Irr Peaks	Tukey Rsd Peaks
T_O_B09_V_F_S1V_	s1 s5	0.203	1.000	0.000	0.832	(p>.90)[s1 s5]					0.655	1.000	1.000	1.000	1.000	1.000	1.000	1.000			(p>.90)[s4 s5]
T_O_K66_V_F_S12_		0.000	0.000	0.000	0.000	(p>.90)[s2]			sa irr [3.5]		1.000	1.000	1.000	1.000	0.000	0.376	1.000	1.000			
T_O_K66_V_F_S12_		0.000	0.000	0.000	0.000	(p>.90)[s2]			sa irr [2]		1.000	1.000	1.000	1.000	0.000	0.449	1.000	1.000			

Seasonal Adjustment Diagnostics Criteria

Colour:

- White: The SPEC file does not produce any warnings (ideal).
- *Yellow: The SPEC file produces minor warnings (e.g., at least one insignificant regressor or failure of residuals to pass normality tests).*
- **Red: The SPEC file produces large warnings (e.g., visual trading day peaks).**

When there are errors, Win-X13 doesn't run!

Seasonal Adjustment Diagnostics Criteria

T-values of regressors:

- **|t| < 1.96:** Not acceptable.
- **1.96 <= |t| < 3.00:** Acceptable.
- **|t|>=3.00:** Ideal.

P-values of regressors:

- **P > 0.05:** Not acceptable.
- **0.00 < P <= 0.05:** Acceptable.
- **P = 0.00:** Ideal.

Both T-values and P-values depend on the length of the series

Seasonal Adjustment Diagnostics Criteria

Model Diagnostics

Aa FcE (3-yr): Average absolute percentage error of forecasts in the last 3 years – We try to **minimize** it.

Normal?: Indicates whether residuals pass normality tests.
- OK (ideal)
- *Failed*
- *Skewed-*
- *Skewed+*

Seasonal Adjustment Diagnostics Criteria

The following columns ideally should contain a zero (**0**) (*but if it's not possible, we try to* **minimize** *this number*):

- **# LBQ Fail:** Number of the lags (*1-24 for monthly series and 1-8 for quarterly series*) with significant Ljung-Box Q statistic.

- **# BPQ Fail:** Number of the lags with significant Box-Pierce Q statistic.

Seasonal Adjustment Diagnostics Criteria

The following columns ideally should be **empty**:

- **Sig LBQ:** List of lags with significant LBQ.

- **Sig Seas LBQ:** Seasonal lags with significant LBQ.

- **Sig PBQ:** List of lags with significant BPQ.

- **Sig Seas PBQ:** Seasonal lags with significant PBQ.

- **Sig ACF:** List of lags with significant autocorrelation in the residuals.

Seasonal Adjustment Diagnostics Criteria

- **Sig Seas ACF:** Seasonal lags with significant autocorrelation in the residuals.

- **Sig PACF:** List of lags with significant partial autocorrelation in the residuals.

- **Sig Seas PACF:** Seasonal lags with significant partial autocorrelation in the residuals.

- **Resid Peaks:** Indicates the visually significant seasonal and trading day peaks in the spectrum of the model residuals.

Seasonal Adjustment Diagnostics Criteria

Spectrum & QS

- **Tukey Ori Peaks:** Lists the statistically significant seasonal frequencies of the Tukey spectrum of the original series (*at 1% and 10% level*).
- **Sig SAdj Peaks:** Indicates the visually significant seasonal and trading day peaks in the spectrum of the seasonally adjusted series.
- **Sig Irr Peaks:** Indicates the visually significant seasonal and trading day peaks in the spectrum of the modified irregular.

Seasonal Adjustment Diagnostics Criteria

Model Diagnostics

The following columns can take values between **0.000** and **1.000** (*they should be at least 0.050, but the higher the better*):

- **QS Resid**: P-value for the QS statistic of the residuals.

- **QSS Resid:** P-value for the QS statistic of the residuals on the last 8 years (*96 observations for monthly series and 32 observations for quarterly series*).

Seasonal Adjustment Diagnostics Criteria

x11

- **D11F:** The p-value of D11F statistic for residual seasonality.
- **D11F 3yr:** The p-value of D11F statistic for residual seasonality in the last 3 years.

Seasonal Adjustment Diagnostics Criteria

Spectrum & QS

- **QS Sadj:** The p-value for the QS statistic of the seasonally adjusted series.

- **QSS Sadj:** The p-value for the QS statistic of the seasonally adjusted series calculated using the spectrum span.

- **QS Sadj Adj Ext:** The p-value for the QS statistic of the seasonally adjusted series adjusted for extreme values.

Seasonal Adjustment Diagnostics Criteria

- **QSS Sadj Adj Ext:** The p-value for the QS statistic of the seasonally adjusted series adjusted for extreme values calculated using the spectrum span.

- **QS Irr:** The p-value for the QS statistic of the irregular component.

- **QSS Irr:** The p-value for the QS statistic of the irregular component calculated using the spectrum span.

Seasonal Adjustment Diagnostics Criteria

- **QS Irr Adj Ext:** The p-value for the QS statistic of the irregular component adjusted for extreme values.

- **QSS Irr Adj Ext:** The p-value for the QS statistic of the irregular component adjusted for extreme values calculated using the spectrum span.

Seasonal Adjustment Diagnostics Criteria

The following columns ideally should be **empty** (*but if it's not possible, we try to make the number in the bracket **smaller than or equal to 3.0***):

- **Nonsig Seasonal Peaks:** Indicates whether there is a nonsignificant peak at any of the S1, S2, S3, or S4 in the spectrum of the seasonally adjusted series ("*sadj*"), irregular ("*irr*"), or residuals ("*rsd*"). Also gives the heights in "*stars*" of the tallest of these peaks.

- **Nonsig TD Peaks:** Indicates whether there is a nonsignificant peak at T1 in the spectrum of the seasonally adjusted series ("*sadj*"), irregular ("*irr*"), or residuals ("*rsd*"). Also gives the heights in "*stars*" of the tallest of these peaks.

Seasonal Adjustment Diagnostics Criteria

x11

The **M1-M11** columns can take values between 0.000 and 3.000. Values higher than **1.000** suggest a potential problem.

Diagnostics for seasonality and seasonal breaks

X11

- **M7:** The amount of moving seasonality present relative to the amount of stable seasonality.

Out file

- **Identifiable Seasonality Test**
- **Moving Seasonality Test**

Diagnostics for seasonality and seasonal breaks

Seasonally adjust when:

- M7 is lower than 0.800.

- Identifiable seasonality present.

- No evidence of moving seasonality at the 5% level.

Do not seasonally adjust when:

- M7 is higher than 1.200.

- Identifiable seasonality not present.

- No evidence of moving seasonality at the 5% level.

Diagnostics for seasonality and seasonal breaks

Investigate potential **seasonal breaks** when:

- M7 lies between 0.800 and 1.200.

- Identifiable seasonality probably not present.

- Moving seasonality present at the 1% or at the 5% level.

Decisions based on SI Ratios

2018 Q2: Potentially Significant Additive Outlier
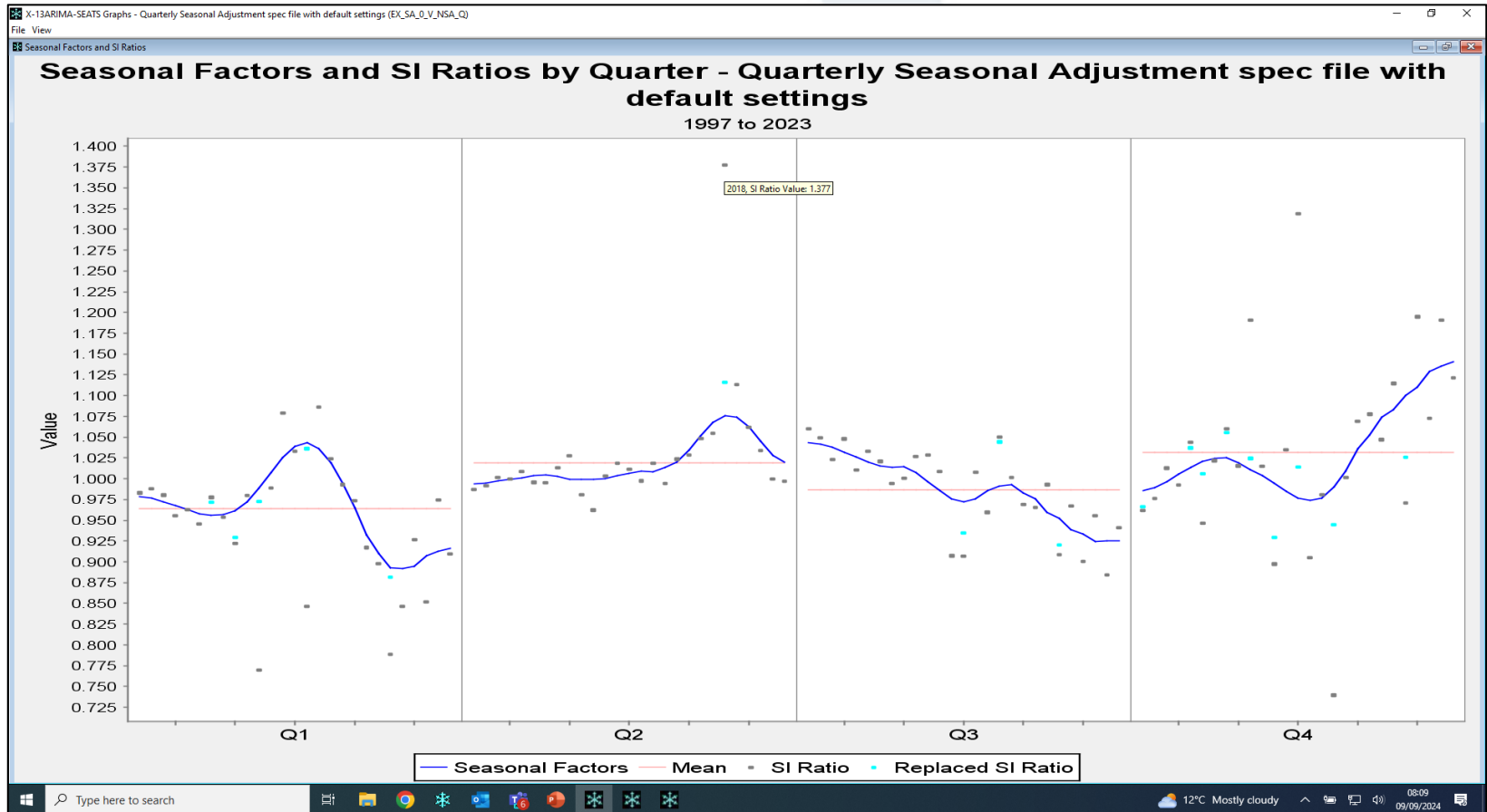
Decisions based on SI Ratios

2015 Q4: Potentially Significant Seasonal Break
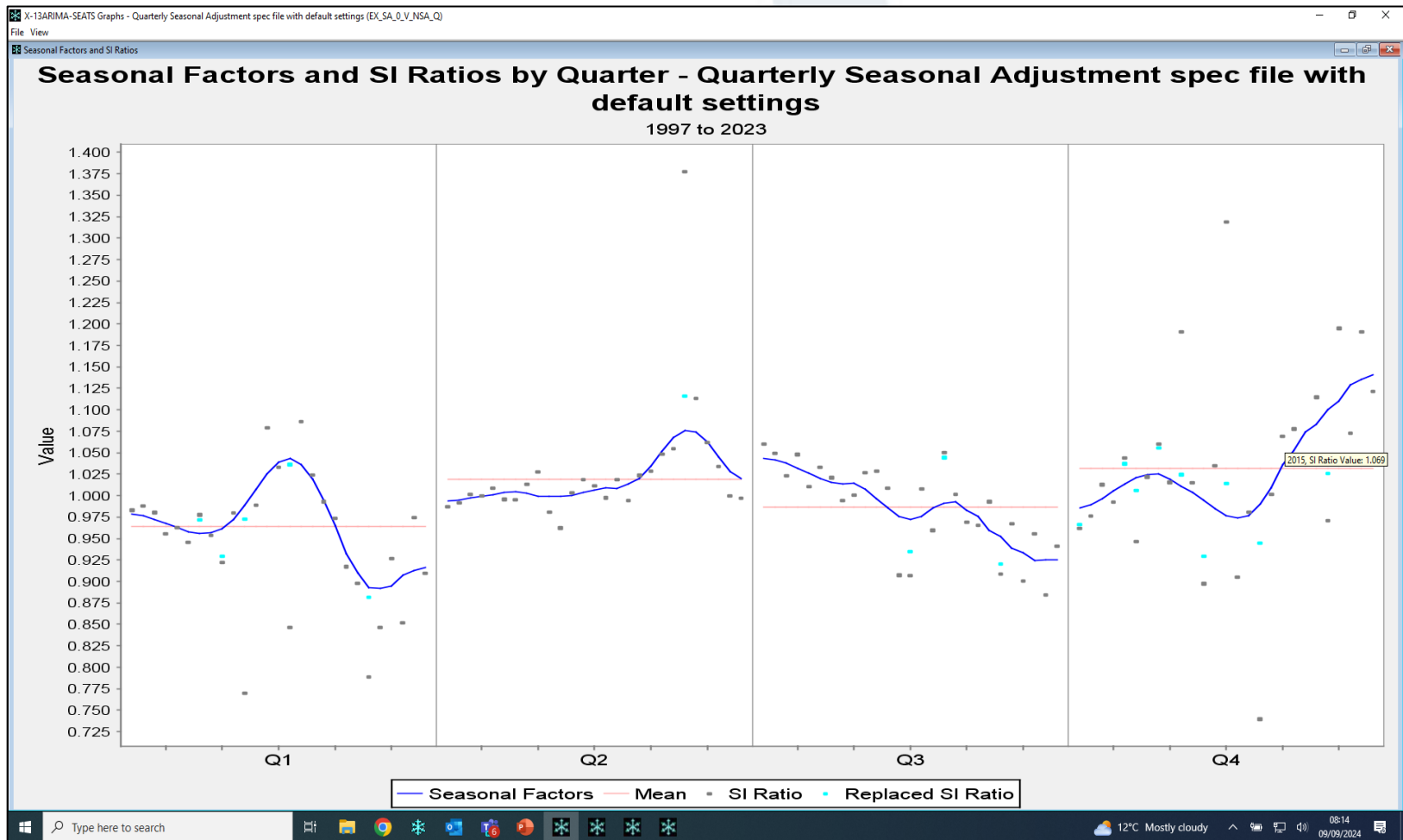
Decisions based on SI Ratios

2016 Q1: Potentially Significant Seasonal Break
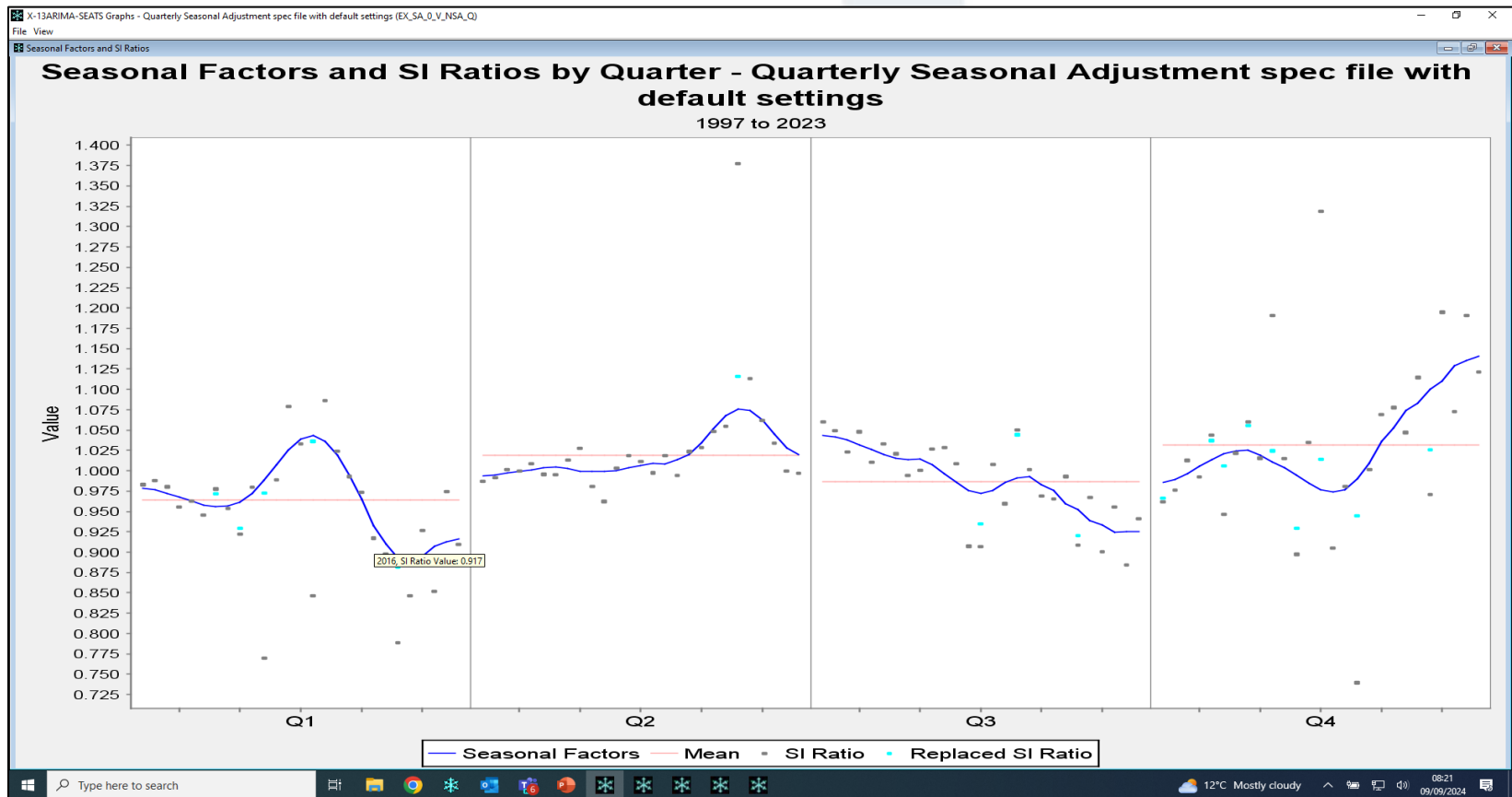
Decisions based on Overlay Graphs

2012 Q1: Potentially Significant Level Shift
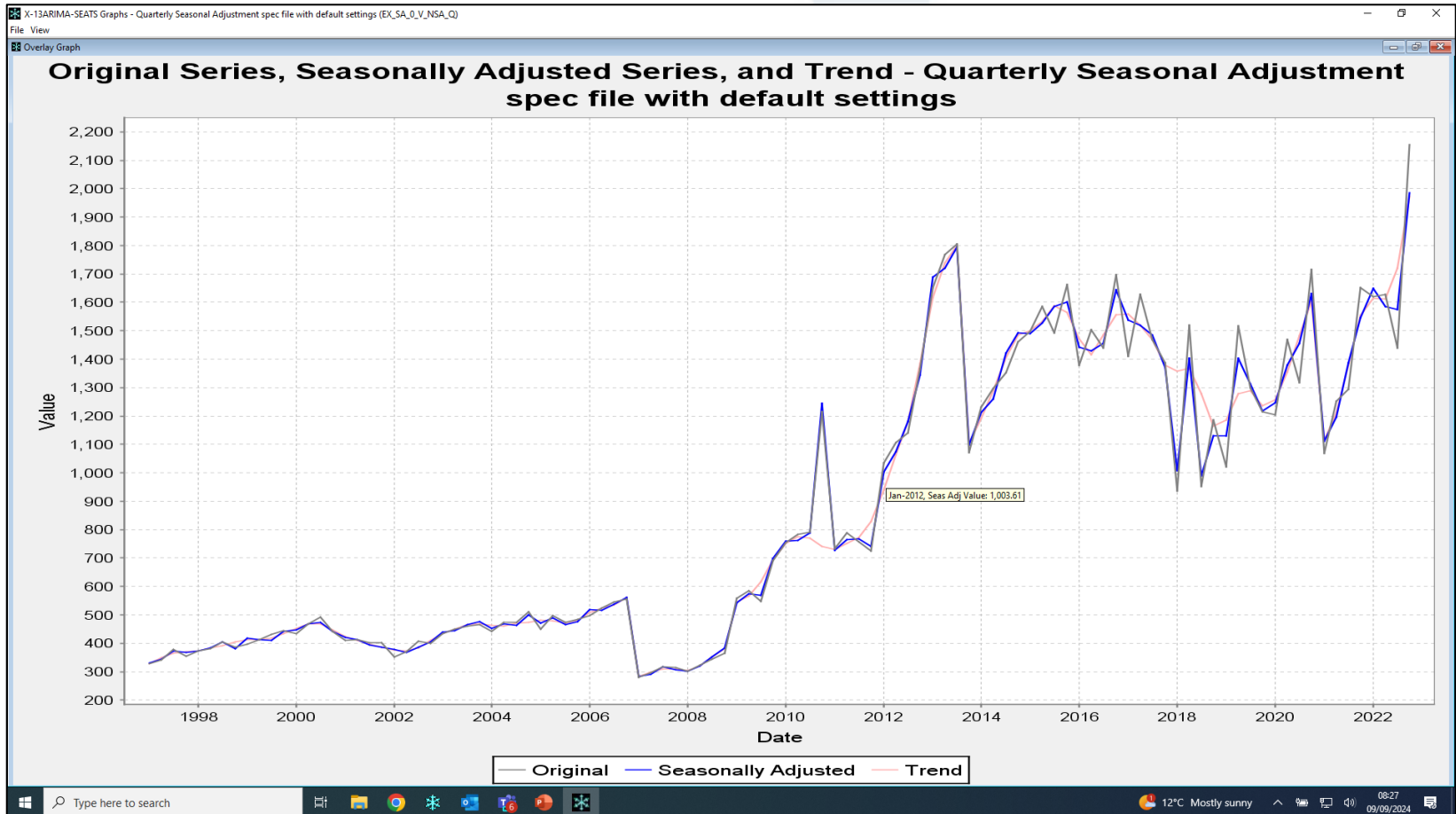
Decisions based on Overlay Graphs

2022 Q4: Potentially Significant Additive Outlier
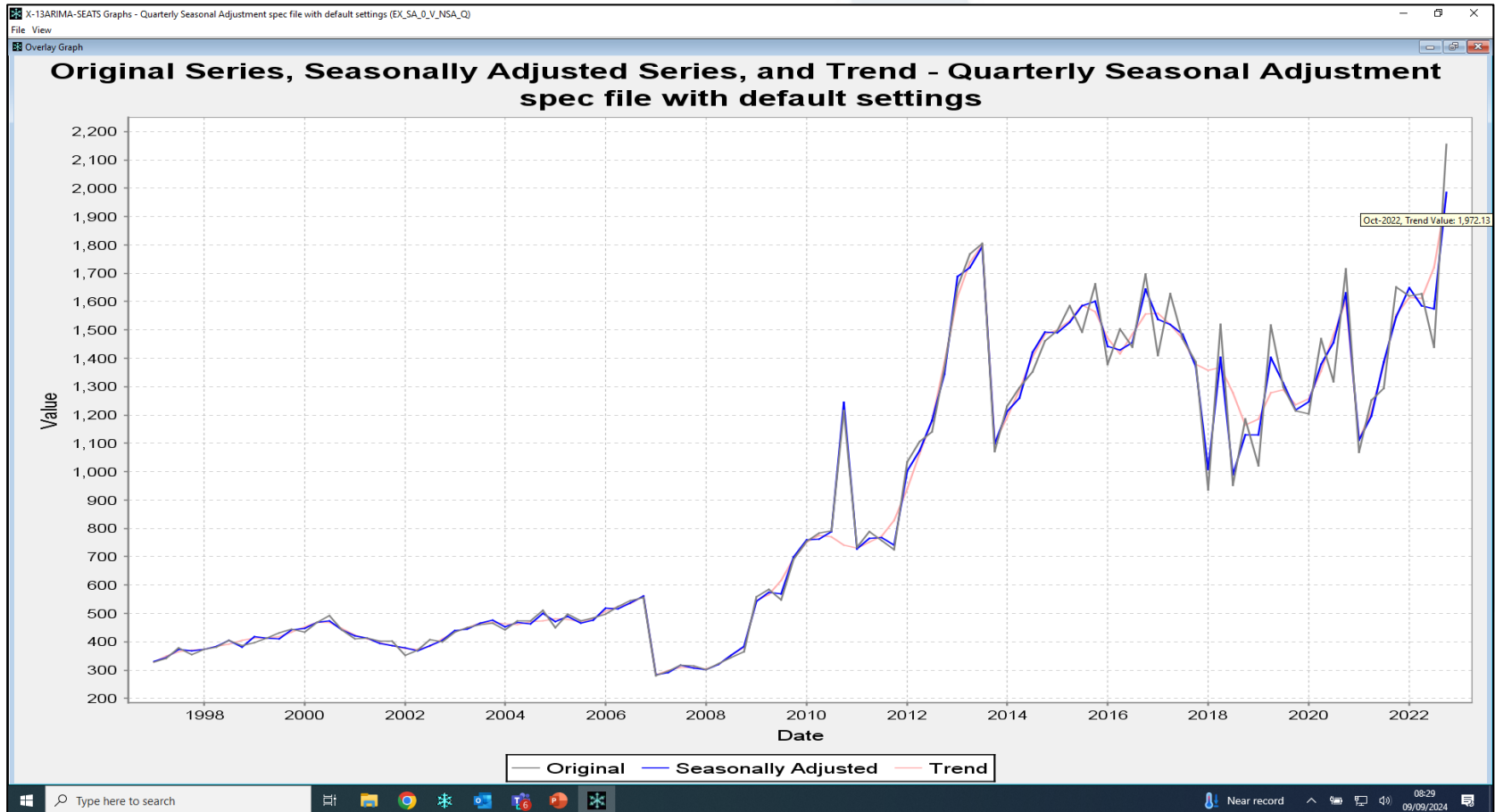
Decisions based on Overlay Graphs

2007 Q1: A non-seasonal to seasonal break
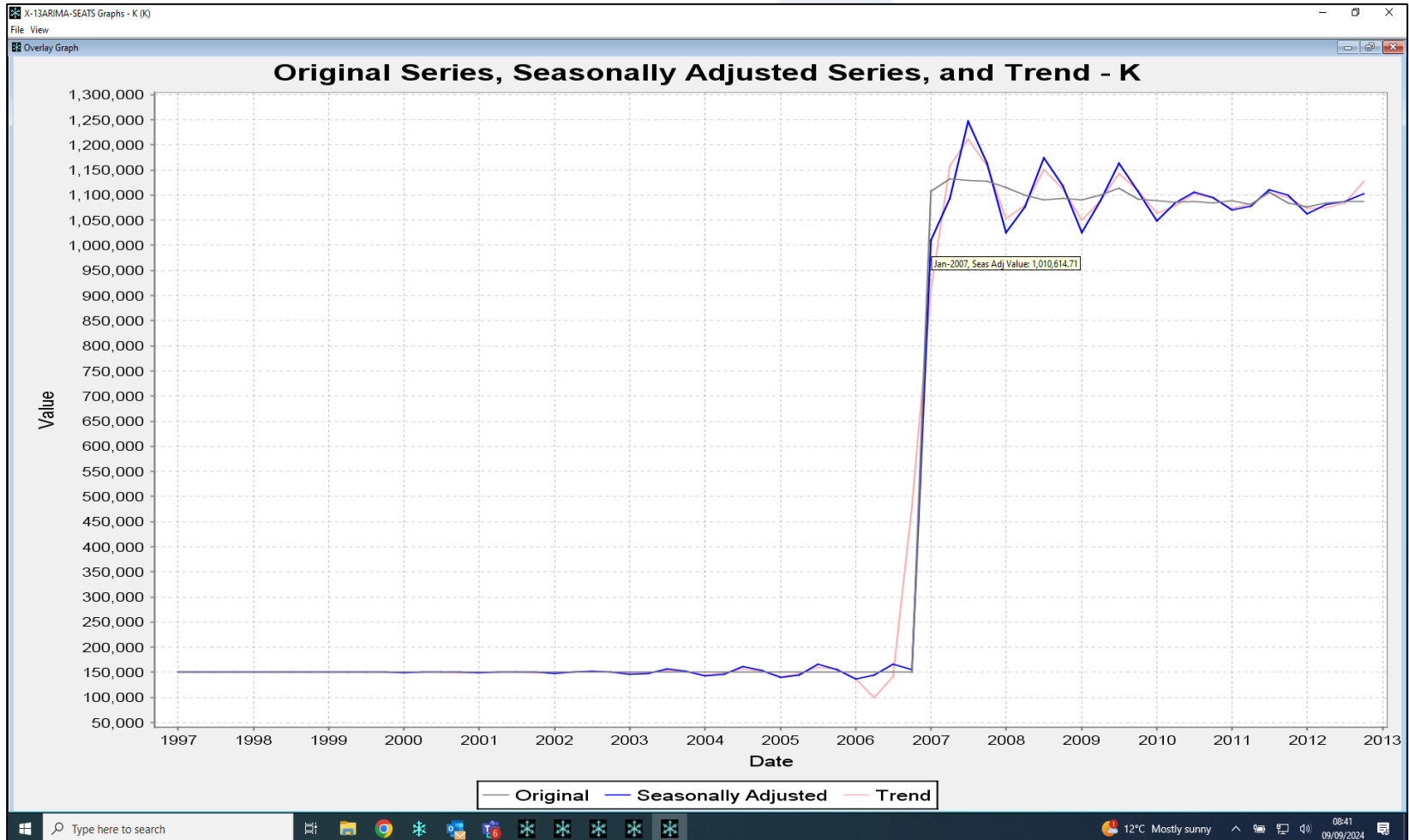
How to introduce a seasonal break – Example 1

Let assume that based on SI Ratios, 2012 Q2 is a potential data point for a seasonal break.

The seasonal break is statistically significant.

How to introduce a seasonal break – Example 1

How to decide the type of seasonal break


```
View File: C18_GOSSE_R4_1_Q_NSA.spc

Comment   Uncomment   Run  ▼   Save

#Time stamp 2019-06-21 09:45:57 ping
series{
title="12976115"
file="C18_GOSSE_R4_1_Q_NSA.dat"
format="datevalue"
period=4
decimals=2
span=(,2012.2)
}

transform{
function=auto}

automdl{}

regression{
aictest=(easter td)
}

outlier{}

force{
type=denton
rho=1
lambda=1
round=no
usefcst=no
mode=ratio
save=saa
}

x11{
appendfcst=yes
save=(d10 d11 d12 d13)
}
```

```
View File: C18_GOSSE_R4_1_Q_NSA.spc

Comment   Uncomment   Run  ▼   Save

#Time stamp 2019-06-21 09:45:57 ping
series{
title="12976115"
file="C18_GOSSE_R4_1_Q_NSA.dat"
format="datevalue"
period=4
decimals=2
span=(2012.2,)
}

transform{
function=auto}

automdl{}

regression{
aictest=(easter td)
}

outlier{}

force{
type=denton
rho=1
lambda=1
round=no
usefcst=no
mode=ratio
save=saa
}

x11{
appendfcst=yes
save=(d10 d11 d12 d13)
}
```
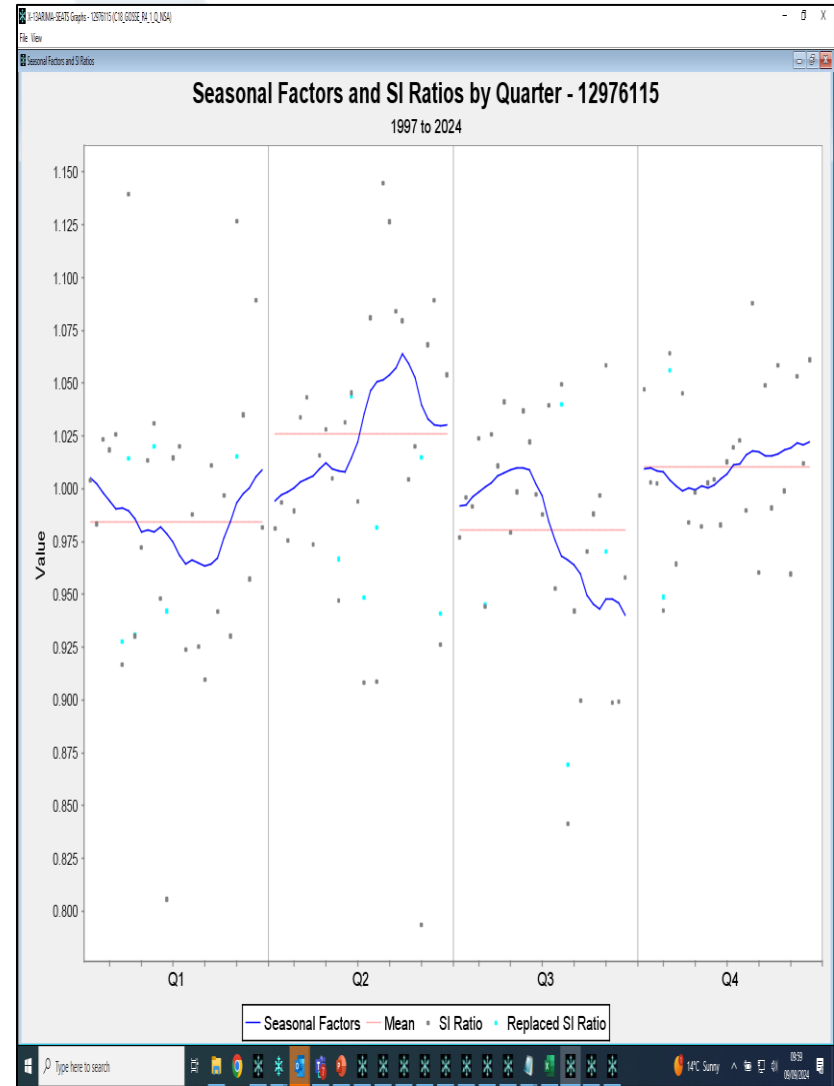
Span	M7
(,2012.2)	0.571
(2012.2,)	1.766

A seasonal to non-seasonal break seems reasonable.

How to introduce a seasonal break – Example 1

How to introduce a seasonal break – Example 1

Since the default transformation suggests a log transformation -> **1**s from 201202 and onwards.

	A	B
48	200802	1.00411
49	200803	1.03857
50	200804	1.00590
51	200901	0.94876
52	200902	1.01429
53	200903	1.02709
54	200904	1.00820
55	201001	0.94885
56	201002	1.02345
57	201003	1.01561
58	201004	1.00995
59	201101	0.94821
60	201102	1.03681
61	201103	0.99922
62	201104	1.01345
63	201201	1.00001
64	201202	1.00000
65	201203	1.00000
66	201204	1.00000
67	201301	1.00000
68	201302	1.00000
69	201303	1.00000
70	201304	1.00000
71	201401	1.00000
72	201402	1.00000
73	201403	1.00000
74	201404	1.00000
75	201501	1.00000
76	201502	1.00000
77	201503	1.00000
78	201504	1.00000
79	201601	1.00000
80	201602	1.00000
81	201603	1.00000
82	201604	1.00000
83	201701	1.00000

Sheet1 Sheet2 Sheet3

	A	B
100	202102	1.00000
101	202103	1.00000
102	202104	1.00000
103	202201	1.00000
104	202202	1.00000
105	202203	1.00000
106	202204	1.00000
107	202301	1.00000
108	202302	1.00000
109	202303	1.00000
110	202304	1.00000
111	202401	1.00000
112	202402	1.00000
113	202403	1.00000
114	202404	1.00000
115	202501	1.00000
116	202502	1.00000
117	202503	1.00000
118	202504	1.00000
119	202601	1.00000
120	202602	1.00000
121	202603	1.00000
122	202604	1.00000
123	202701	1.00000
124	202702	1.00000
125	202703	1.00000
126	202704	1.00000
127	202801	1.00000
128	202802	1.00000
129	202803	1.00000
130	202804	1.00000
131		

PPP files need to be extended by at least 2 years to avoid future errors.

How to introduce a seasonal break – Example 1

Copy/Paste the updated Excel columns in a Notepad and save as "**Series Name.ppp**".

How to introduce a seasonal break – Example 1

How to introduce a seasonal break – Example 2

Let assume that based on SI Ratios, 2012 Q4 and 2020 Q1 are potential data points for a seasonal break.

	Series Name	Model Span	ARIMA Model	Regressors	Trading Day	Holiday	Seasonal	Constant	User	Coded Outliers	Auto Outliers
▶	P_3_S_1311_59_TO	1997.01 to 2023.02	(2 0 0)(0 1 1)**	Seasonal (before 2012.4) + Constant			SR[f-p0.00]	C[t1.87]			
	P_3_S_1311_59_TO	1997.01 to 2023.02	(2 1 0)(0 1 1)	Seasonal (before 2012.4)			SR[f-p0.00]				
	P_3_S_1311_59_TO	1997.01 to 2023.02	(1 0 1)(0 1 1)**	Seasonal (before 2020.1)			SR[f-p0.01]				

Diagnostics — File Help — General | Model Info | Model Diagnostics | x11 | Spectrum & QS | Stability Diagnostics

Both seasonal breaks are statistically significant.

```
transform{function=auto}
automdl{}
regression{
variables=(seasonal/2012.4//)
}
```

```
transform{function=auto}
arima{model=(2 1 0)(0 1 1)}
regression{
variables=(seasonal/2012.4//)
}
```

```
transform{function=auto}
automdl{}
regression{
variables=(seasonal/2020.1//)
}
```

How to introduce a seasonal break – Example 2

How to decide the type of seasonal break

How to introduce a seasonal break – Example 2

Span	M7
(,2012.4)	0.504
(2012.4,2020.1)	0.489
(2018.1,)	0.729

Last data point: 2023 Q2. We can't test the **span=(2020.1,)** because we need at least 5 years.

A seasonal to seasonal to seasonal break seems reasonable.

The type of break is also obvious from the overlay graph.

How to introduce a seasonal break – Example 2

Initially, create an RMX file with the latest break.

How to introduce a seasonal break – Example 2

Left table:

	A	B	C	D	E	F	G
1	Date	1st I	2nd I	3rd I	1st II	2nd II	3rd II
2	----	------------------	------------------	------------------	------------------	------------------	------------------
3	199701	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
4	199702	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
5	199703	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
6	199704	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
7	199801	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
8	199802	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
9	199803	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
10	199804	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
11	199901	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
12	199902	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
13	199903	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
14	199904	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
15	200001	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
16	200002	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
17	200003	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
18	200004	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
19	200101	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
20	200102	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
21	200103	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
22	200104	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
23	200201	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
24	200202	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
25	200203	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
26	200204	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
27	200301	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
28	200302	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
29	200303	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
30	200304	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
31	200401	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
32	200402	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
33	200403	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
34	200404	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
35	200501	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
36	200502	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00

Right table:

	A	B	C	D	E	F	G
63	201201	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
64	201202	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
65	201203	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
66	**201204**	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
67	201301	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
68	201302	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
69	201303	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
70	201304	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
71	201401	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
72	201402	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
73	201403	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
74	201404	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
75	201501	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
76	201502	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
77	201503	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
78	201504	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
79	201601	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80	201602	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
81	201603	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
82	201604	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
83	201701	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
84	201702	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
85	201703	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
86	201704	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
87	201801	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
88	201802	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
89	201803	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
90	201804	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
91	201901	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
92	201902	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
93	201903	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00
94	201904	-1.00E+00	-1.00E+00	-1.00E+00	0.00E+00	0.00E+00	0.00E+00
95	**202001**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
96	202002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
97	202003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
98	202004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Columns **1st I; 2nd I; 3rd I**: Seasonal break in 2020 Q1 -> 0s from 202001 and onwards.

Columns **1st II; 2nd II; 3rd II**: Seasonal break in 2012 Q4 -> 0s from 201204 and onwards.

How to introduce a seasonal break – Example 2

RMX files need to be extended by at least 2 years to avoid future errors.

How to introduce a seasonal break – Example 2

Copy/Paste the updated Excel columns into the RMX file.

P_3_S_1311_59_TOTAL_CP_NSA_R4_2_Q_V.rmx - Notepad

File Edit Format View Help

Date	1st I	2nd I	3rd I	1st II	2nd II	3rd II
199701	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
199702	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
199703	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
199704	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
199801	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
199802	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
199803	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
199804	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
199901	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
199902	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
199903	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
199904	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200001	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200002	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200003	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200004	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200101	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200102	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200103	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200104	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200201	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200202	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200203	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200204	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200301	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200302	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200303	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200304	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200401	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200402	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200403	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200404	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200501	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200502	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200503	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200504	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200601	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200602	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200603	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200604	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200701	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200702	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00
200703	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00
200704	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00	-1.00E+00
200801	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
200802	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00

View File: P_3_S_1311_59_TOTAL_CP_NSA_R4_2_Q_V.spc

Comment Uncomment Run ▼ Save Save As Font

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automdl{}

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usertype=(seasonal)
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outlier{}

forecast{
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save=fct
}

force{
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rho=1
lambda=1
round=no
usefcst=no
mode=ratio
save=saa
}

x11{
appendfcst=yes
save=(d8 d9 d10 d11 d12 d13 d18)
}
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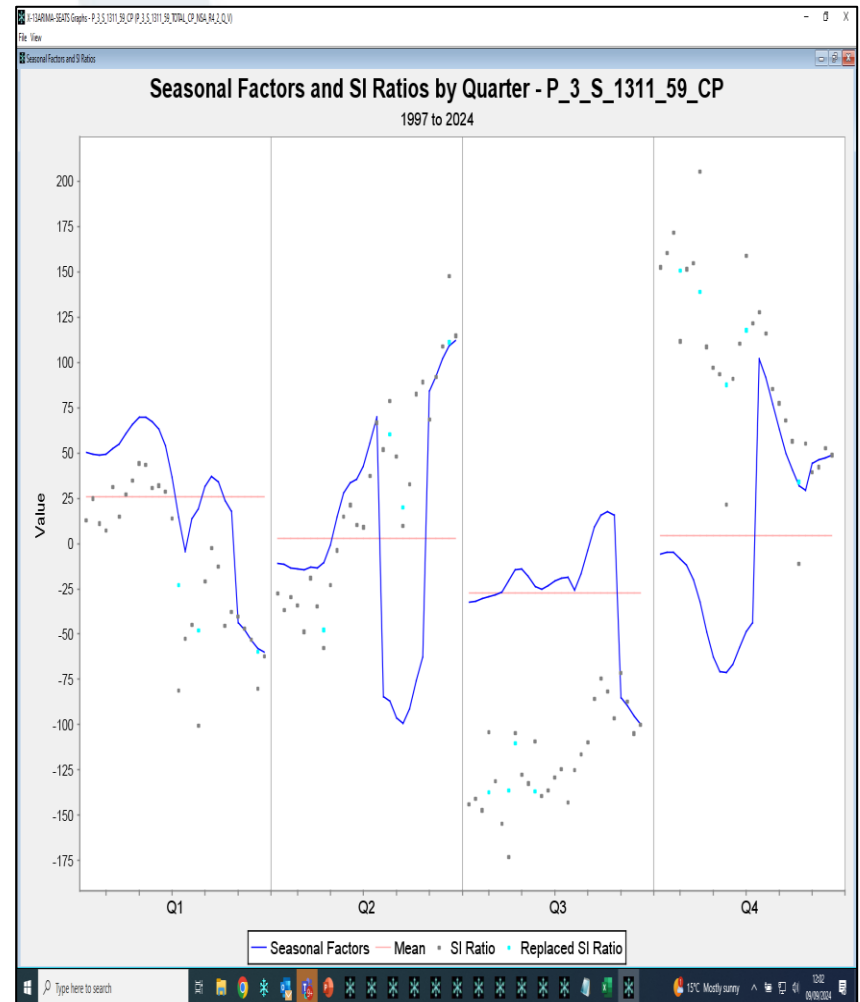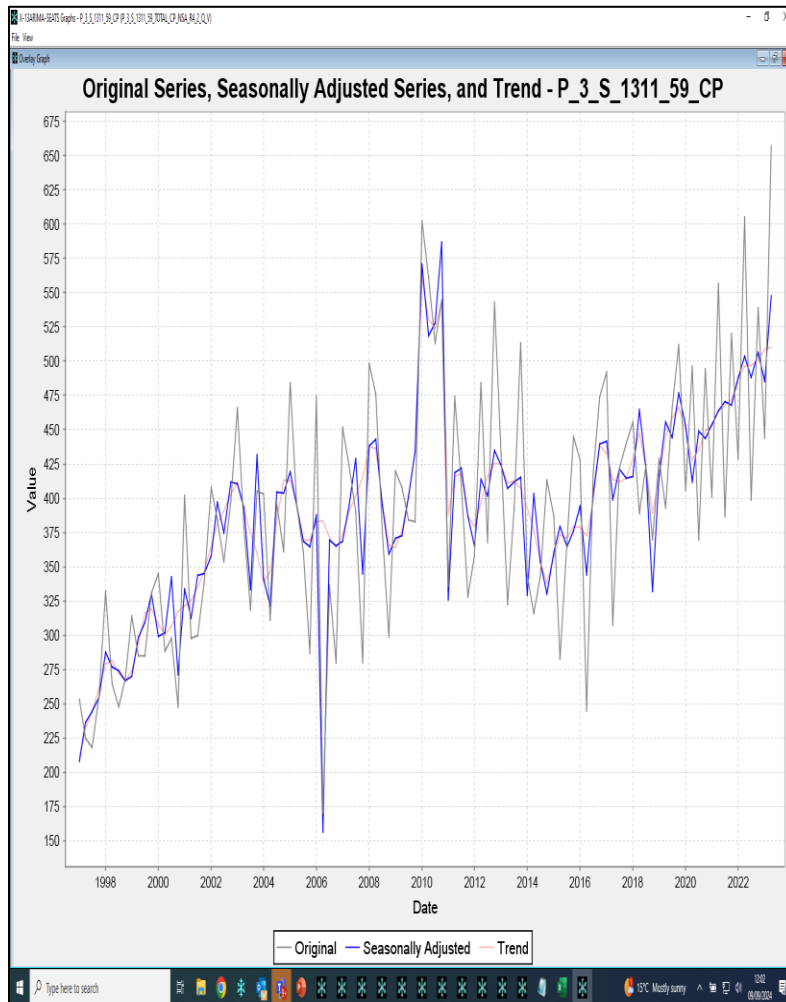
How to introduce a seasonal break – Example 2

Change the data point of a seasonal break – Example 3 (*demonstration in Win-X13*)

Questions?