

Completing Excel Instructions.

It is expected that Excel is installed on your computer. The data to be analyzed must be on an Excel sheet that may contain from one to any number of time series.

The procedure opens with a short instruction on what your data sheet is expected to look like:

Datasheet should contain 1 row labels and 1 column labels

Data is expected from cell B2. Empty leading and trailing cells are allowed.

	A	B	C	D	E	F
1	time	label_1	label_2	label_3	label_4	label_5
2	1998-10					30,51499939
3	1998-11					23,81500053
4	1998-12					20,03000069
5	1999-01					17,18000031
6	1999-02	13,81999969	28,53000069	9,779999733	30,64999962	25,96999931
7	1999-03	16,79000092	17,98999977	20,52000046	36,27999878	24,18000031
8	1999-04	38,29000092	28,65999985	27,78000069	22,98999977	36,63999939

- Row 1 must contain the labels of each series.
- Column A is selected for the dates of each observation. Therefore column A will not be adjusted.
- The procedure starts reading data from cell B2 and downwards, followed by cell C2 and downwards, etc.
- Leading and trailing empty cells, or cells with text like “NA” for ‘Not Available’ will be skipped by the procedure (and counted, to place the processed series after the appropriate dates).
- There must be no empty (or text) cells in the course of the series, because the procedure will stop reading there. If in-between data are missing, we advise to fill in the space by interpolated data. (Not zero, because zero is also a value, that may have impact on the decomposition of the series.)

If your Excel sheet conforms to these instructions, press the START button.

In the next sheet, first select the periodicity of the time series, 4 for quarterly data and 12 for monthly data. Then select the excel data file you want to adjust and next press Analyze. A window shows the progress of the analyzation and ends with the message “Analyzation Done”. Press the OK button that appears at this point and the results are shown in five sheets:

- **Raw** reproduces the input sheet,
- **SA** quotes the seasonally adjusted values for each observation of each time series,
- **Season** lists the seasonal components,
- **Accuracy** states, for each time series, the Accuracy (a volatility measure) followed by the setting of the five parameters the procedure ends with. Accuracy and the setting are explained below.
- **Chart**, this is an inter active sheet that the presentation of results opens with.

The **Chart** sheet:

The Chart sheet shows the results of the analyzation of one series at the time. Here any series to be presented can be selected and the setting of its parameters can be altered.

Selecting the time series presented:

On top, in Columns H-I, the depicted series is identified by its column number and name. Click the small arrow in this column to select any of the other time series by their column number. It may be easier to replace the column labels in letters by labels in numbers, to do this click on the small square on top of the chart-sheet labeled "R1C1-style".

Resetting Parameters.

In the top row there is also a selection bar labeled "Show Reset series". This option allows you to reset the 5 parameters of the Camplet adjustment procedure, for the time series that is presently selected in the Chart sheet. In the opening session the decomposition of each series has started with the default values of the parameters. Depending on the volatility of each series, the parameters applied to this series are automatically reset at every next observation, with the primary objective to include a maximum number of observations in the determination of the seasonal components. During the course of analyzation of each series the parameters are raised and lowered depending on the number of outliers found so far. The outcomes, after the last observation of each series has been analyzed, are quoted in the sheet **Accuracy** (see below).

After you click "Show Reset series" a number of selection panels open, with on top "Parameter Check". When you click on it, a window opens, where the parameter settings can be changed. Each setting can be changed or, when clicking on 'Defaults', all default settings are shown. Next press 'OK' to return to the Chart sheet, where columns have been added of the series adjusted in the selected settings (shift the window to the right). Also the % extrapolation error (not larger than LE+20) and the % outliers (errors larger than LE+20) are quoted.

Four selection panels allow you to depict:

Series, the raw and adjusted values and seasonal components as originally calculated,

Adjusted Values, the same after recalculation by reset parameters,

Mix: Raw SA, depicts two graphs, on top the originally calculated series and below it (scroll) the series with the parameters reset.

Mix: season, depicts the seasonal components of both parameter settings in two graphs.

Adjustment sheets:

If you are interested in following the adjustment procedure of individual series observation by observation, click on the small square called "Show Adj. Sheets" and a separate sheet will be installed for each series. They are all quoted on the bar at the bottom of the Charts window and labeled as "Adj. x", where "x" is the series number. Click on the label of the Adj. series you want to see.

The numbers in column 1 correspond to the dates in the sheet Raw. The next 5 columns quote the setting of the 5 parameters as they change in the course of the adjustment procedure. Every series begins with the parameters in default setting, then, in the initial phase of three years, the settings change according to the volatility of the time series, to restart with revised settings at the first observation. The Adj.x sheet begins after the initial phase, when the parameters have been reset.

How to read the adjustment length for each period?

The adjustment length is quoted in years , column 8. If the extrapolation error (%e) is not higher than the Limit to Error (LE) in column 5, the Common Adjustment length (CA) is applied. If %e is higher than LE, the multiplier (Mu) is applied, incrementing the applied length to 50 times %e, that is $50 \times e/100 = e/2$ (in years). From this length the 'graduator' , mostly 1.5 (years) is subtracted.

For example:

If %e is 16 and LE is 6: Mu increments the length to $16/2 = 8$ years. Subtract the graduator of 1.5 years and multiply by the periodicity (4 for quarterly series). The result: $(8 - 1.5) \times 4 = 26$, is quoted under 'weight' in column 9. To the corresponding seasonal component will go $1.5 \times e/26$ and to the non-seasonal component $4.5 \times e/26$.

The Accuracy sheet:

An indication of the efficacy of extrapolations is given by the "**% Accuracy**". Accuracy is calculated as 100 minus the % *extrapolation error*, minus the % *outliers >20*, minus ½ of the set tolerance '*Limit to Error*'(see below). This accuracy is also a guide line to improve on the adjustment by resetting the parameters. The objective is to get as high an accuracy percentage as possible. As a rule of thumb an accuracy over 60% gives reliable short extrapolations.

The Accuracy figure for each series is followed by numbers, separated by slashes: **2/100/1/6/1**.

These numbers quote the setting of the 5 parameters. CAMPLET is an acronym of these parameters:

CA, *common adjustment*, is the length of the series (in years) applied to calculate average values if a new observation in the time series does not deviate beyond set limits.

M, for *multiplier*, increases the length of the applied series in years to a 50 fold of the % deviation if the new observation is an outlier.

P for *pattern*, decreases the length of the applied series to p years if the new observation is found to indicate a shift in the seasonal pattern.

LE, for *limit to error*, sets a criterion as a percentage value. This is the tolerance of deviation beyond the series' path that decides whether a new observation is an outlier.

T for *times* indicates how often an outlier must return in corresponding periods to be dubbed a shift of pattern.

For example: in **59 2/50/1/6/1** , CA =2 (years), M = 50 (applied length is 50 times the % deviation of the extrapolation from the measured value), P = 1 (year), LE = 6(%), T =1. The % Accuracy then is $100 - 7 - 28 - 6 = 59$.

Ending a session:

The session can be ended by clicking on the 'x' in the top right of the window and the option to save the results will be given. After that the program returns to the Camplet Excel opening window and a new procedure can be started or the program ends by clicking 'x' again.

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