Statistics for Decision Making: Broad Introduction

STL method for Decomposing and Forecasting Time Series

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## [1] "UNRATE"
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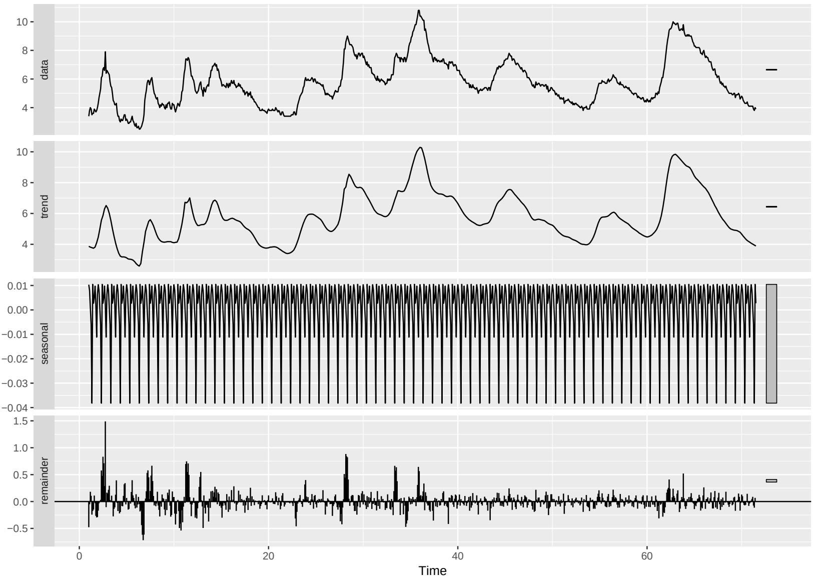
What is STL

STL is a versatile and robust method for decomposing time series.

STL is an acronym for **Seasonal and Trend decomposition using Loess**}, while **Loess** is a method for estimating nonlinear relationships.

Advantages

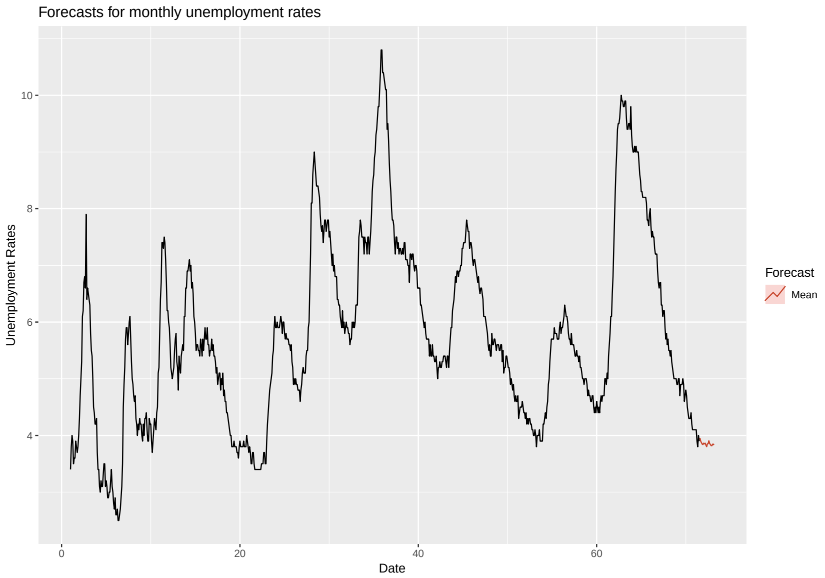
1. The seasonal component is allowed to change over time, and the rate of change can be controlled by the user.
2. The smoothness of the trend-cycle can also be controlled by the user.
3. It can be robust to outliers



data
trend
seasonal
remainder
10
8
6
4
0.01
0.00
−0.01
−0.02
−0.03
−0.04
1.5
1.0
0.5
0.0
−0.5
0
20
40
60
Time

Both `t.window` and `s.window` should be odd numbers and refer to **the number of consecutive years** to be used when estimating the trend-cycle and seasonal components respectively.

The user must specify `s.window` as there is no default. Setting it to be infinite is equivalent to forcing the seasonal component to be **periodic** (i.e., **identical across years**).


Forecasts for monthly unemployment rates
Unemployment Rates
Date
10
8
6
4
0
20
40
60
Forecast
Mean