Stationary Time Series

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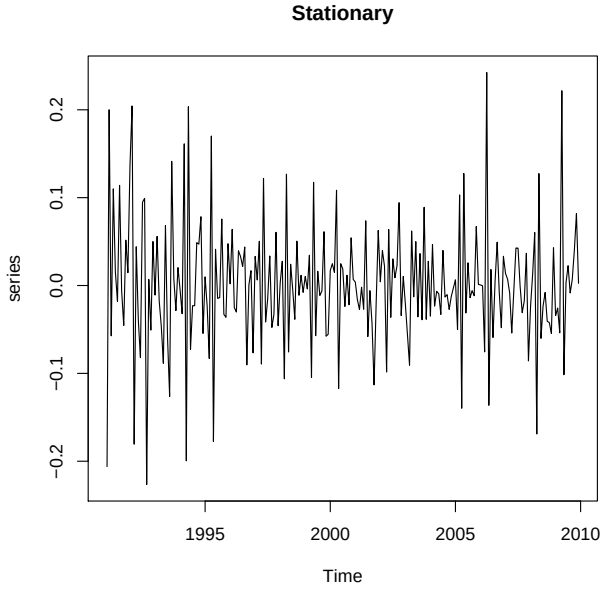
A Time Series is stationary if has the following conditions:

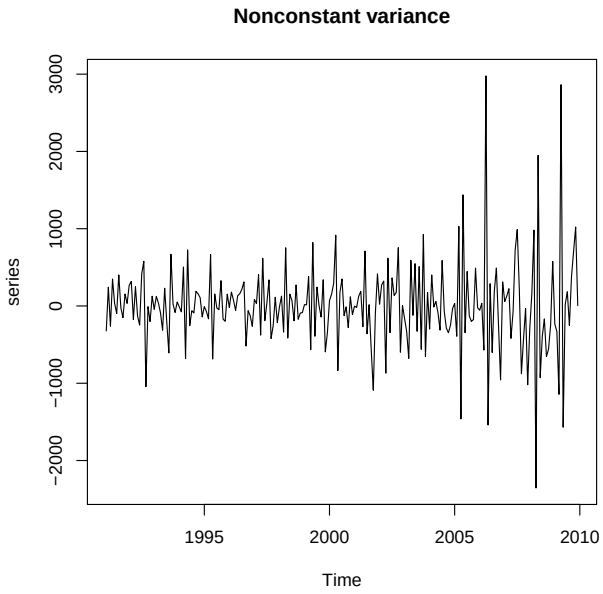
1. Constant μ (mean) for all `t`.
2. Constant σ (variance) for all `t`.
3. The autocovariance function between X_{t_1} and X_{t_2} only depends on the interval t_1 and t_2.

In the following graphic you can observe the typical form of an stationary time series, commonly known as white noise.

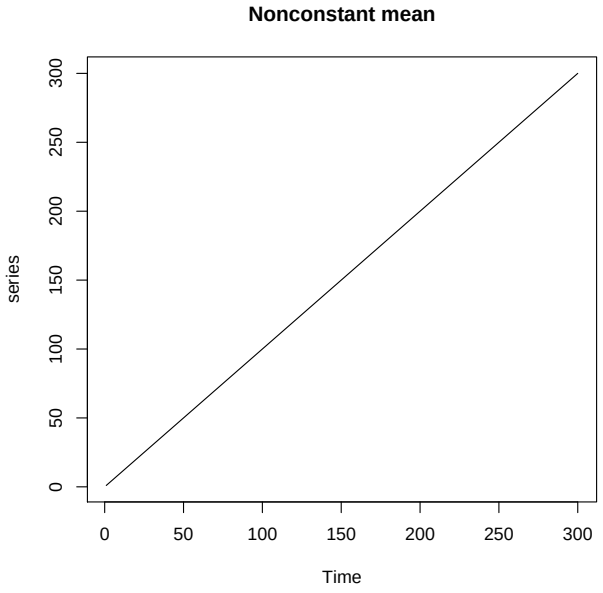


Below shows some examples of the different types of series that can exists and that it can be transformed to obtain an stationary series.

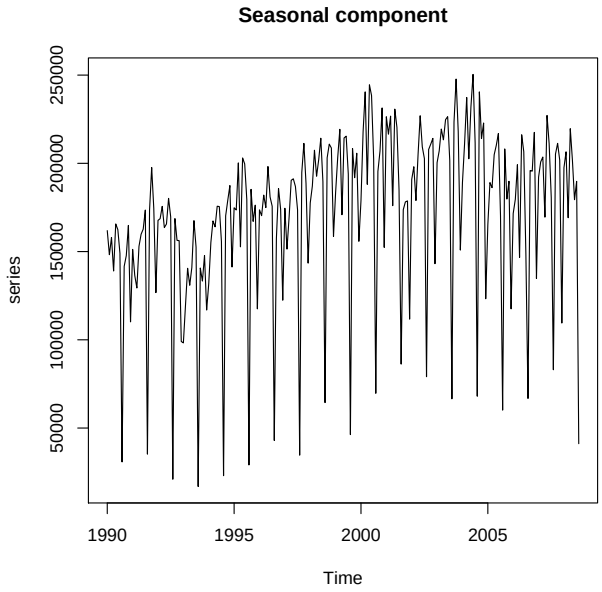
1. Nonconstant variance series (Heterocedasticity)



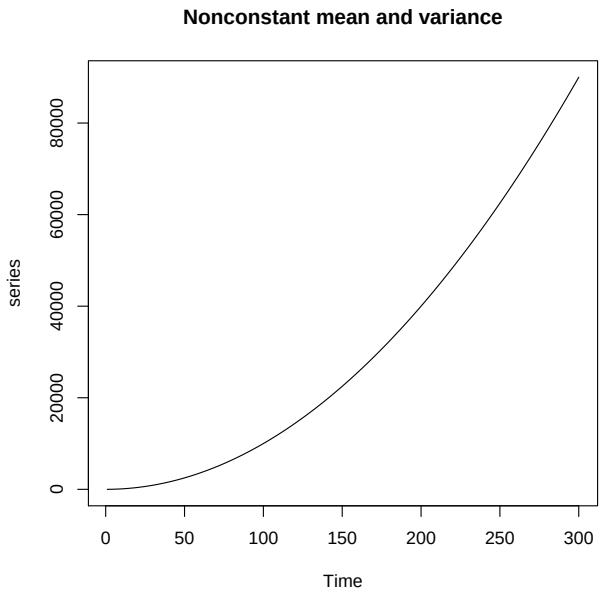
2. Nonconstant mean series (trend)



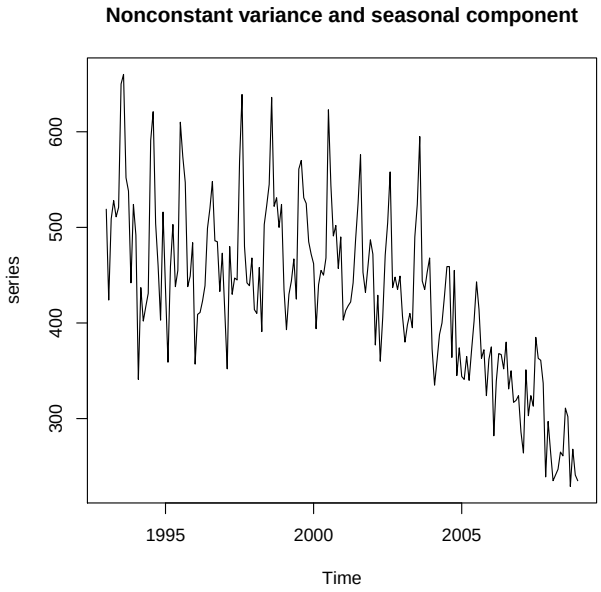
3. Seasonal component series



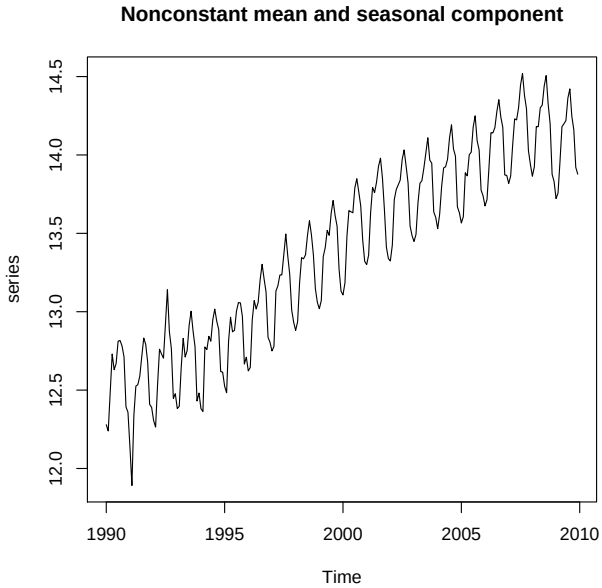
4. Nonconstant mean and variance series



5. Nonconstant variance and seasonal component series



6. Nonconstant mean and seasonal component series



7. Nonconstant mean and variance, and seasonal component series