

# **Benchmarking Seasonal Adjustment Softwares using Frankenstein's Series**

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## **Abstract**

Seasonal adjustment is a complex statistical process aiming at improving the readability and the comparability of time series by removing seasonality and/or other calendar effects, such as trading day and moving holiday effects. The time series components - usually the trend-cycle, seasonality, calendar effects, outliers and irregular - are of course not directly observable and their estimation strongly relies on hypotheses on the time series and/or on its components. As the real components are unknown, it is difficult to assess the quality of the decomposition proposed by the various seasonal adjustment softwares. Traditional simulation studies, usually based on an ARIMA modeling of the components, are interesting but quite unfair with nonparametric methods such as X-12-ARIMA which only requires the components to locally behave as a polynomial function, or parametric methods such as TRAMO-SEATS which is based on a global modeling of the series. The paper proposes a methodology to construct a benchmark dataset of time series, the "Frankenstein's series", which are rebuilt from estimated components, themselves obtained by seasonally adjusting a very large number of real economic time series. The selection of "representative" components is done using a cluster analysis of the components. The benchmark dataset could then be used for example to check the relevance of the default parameter values used by various seasonal adjustment softwares. As the simulations are not yet completed, the paper will focus on the construction of the benchmark dataset and on the methodology used to perform the benchmarking exercise. Partial results, for example on the many faces of seasonality, will be presented during the conference.

**Keywords:** Time series, seasonal adjustment softwares, cluster analysis.