JDemetra+ online documentation

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This is a Quarto book.

To learn more about Quarto books visit https://quarto.org/docs/books.

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Objective: present JDemetra+ capabilities by category

3.1 Seasonal adjustment algorithms

below: pieces of old pages to edit and update

3.1.1 Data frequencies

The seasonal adjustment methods available in JDemetra+ aim to decompose a time series into components and remove seasonal fluctuations from the observed time series. The X-11 method considers monthly and quarterly series while SEATS is able to decompose series with 2, 3, 4, 6 and 12 observations per year.

3.1.2 X-13

X-13ARIMA is a seasonal adjustment program developed and supported by the U.S. Census Bureau. It is based on the U.S. Census Bureau's earlier X-11 program, the X-11-ARIMA program developed at Statistics Canada, the X-12-ARIMA program developed by the U.S. Census Bureau, and the SEATS program developed at the Banco de España. The program is now used by the U.S. Census Bureau for a seasonal adjustment of time series.

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4 Seasonal Adjustment

4.1 Motivation

The primary aim of the seasonal adjustment process is to remove seasonal fluctuations from the time series. To achieve this goal, seasonal adjustment methods decompose the original time series into components that capture specific movements. These components are: trend-cycle, seasonality and irregularity. The trend-cycle component includes long-term and medium-term movements in the data. For seasonal adjustment purposes there is no need to divide this component into two parts. JDemetra+ refers to the trend-cycle as trend and consequently this convention is used here.

This section presents the options of the seasonal adjustment processes performed by the methods implemented in JDemetra+ (X-12-ARIMA/X-13ARIMA-SEATS and TRAMO/SEATS) and discusses the output displayed by JDemetra+. As these seasonal adjustment methods use different approach to the decomposition, the output produced for both of them has different structure and content. Therefore, the results for both methods are discussed separately. However, in contrast to the original programs, in JDemetra+ some quality indicators have been implemented for both methods, allowing for an easier compaison of the results.

4.2 Unobserved Components (UC)

The main components, each representing the impact of certain types of phenomena on the time series (X_t), are:

- The trend (T_t) that captures long-term and medium-term behaviour;
- The seasonal component (S_t) representing intra-year fluctuations, monthly or quarterly, that are repeated more or less regularly year after year;
- The irregular component (I_t) combining all the other more or less erratic fluctuations not covered by the previous components.

In general, the trend consists of 2 sub-components:

- The long-term evolution of the series;