JDemetra+ online documentation

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Preface

Welcome to the JDemetra+ online documentation.

JDemetra+ is a software for seasonal adjustment and other time series functions, developed in Eurostat's "Centre of Excellence on Statistical Methods and Tools".

To learn more about this project https://ec.europa.eu/eurostat/cros/content/centre-excellence-statistical-methods-and-tools.

1 JDemetra+ Software

ressources for descrption - R tools WP - desp in esp

1.1 A library of algorithms for time series related functions ? needs ?

You can learn more about the history of the project here (link to below)

1.2 Structure of this book

This book is divided in four parts, each being an entry point for the user.

1.2.1 Algorithms

This part provides a step by step description of all the algorithms featured in JD+, grouped by purpose - seasonal adjstement - benchmarking - temporal disaggregation - ... links

1.2.2 Tools

Jdemetra+ offers 3 kind of tools

1.2.3 Underlying Statistical Methods

This part gives details about the underlying statistical methods to foster a more in-depth understanding of the algorithms.Those methods are described in the light and spirit of their use as buliding blocks of the algorithms presented above, not aiming at all at their comprehensive coverage.

1.3 How to use this book

audience: book targets the beginner as well as seasoned (pun moethodlogist. The beginner is advised to use the quick start chapter as an etrey point, it's presneted like a decsion tree which will point directly to the the part it's useful to review.

the seasoned methodologist will benefit from the detailed chapter ad part strucutre to quickly find the needed information.

2 Quick start with...

objective: describe key steps + provide useful liks to relevant code

2.1 Seasonal Adjustment

2.2 Seasonal Adjustment of High-Frequency Data

2.3 Use of JD+ algorithms in R

2.4 Use of JD+ graphical interface

3 Main functions overview

link to key references * 2 handbooks * sets of guidelines

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.

3.1.3 Tramo-Seats

3.1.4 STL

3.1.5 Basic Structural Models

3.2 Trend-cycle estimation

3.3 Nowacsting

3.4 Temporal Disaggregation

4 Seasonal Adjustment

4.1 Chapter building process

4.1.1 Edit content

- much less text than current doc (too long)
- method details -> to method chapters
- tools details in tools: GUI or R

4.2 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 comparison of the results.

4.3 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;

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