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Transformations and Seasonal Adjustment

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Abstract

We address the problem of seasonal adjustment of a nonlinear transformation of the original time series, such as the Box-Cox transformation of a time series measured on a ratio scale, or the Aranda-Ordaz transformation of proportions, which aims at enforcing two essential features: additivity and orthogonality of the components. The posterior mean of the seasonally adjusted series is no longer available in closed form, but it can be evaluated numerically or by Monte-Carlo simulation, using the algorithm known as the simulation smoother. We present an illustration dealing with the adjustment of the Italian index of industrial production, under the square root transformation.

Keywords: Structural Time Series Models; Seasonal Models; Simulation Smoother.