Denton PFD and GRP benchmarking are friends. An empirical evaluation on Dutch Quarterly Supply and Use Tables

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Author: Jacco Daalmans
Co-Authors: Tommaso Di Fonzo

Temporal benchmarking according to Denton (1971) is widely used in the production process of statistical offices.

Statistics Netherlands has been using a multivariate Denton method for the compilation of large, fully consistent, quarterly and annual supply and use tables.

The purpose of Denton methods is to achieve consistency between high and low frequency data (e.g. quarterly with annual data). The high frequency data are adjusted to align with the low frequency data, while preserving as much as possible the short-term movements of the preliminary high frequency data.

It is often claimed that the Proportionate First Differences (PFD) variant of Denton's benchmarking, which is the most used in practice, is a close approximation of the Growth Rates Preservation (GRP) benchmarking, which is considered as an 'ideal' benchmarking procedure to preserve short term movements of the indicator series. In addition, the PFD criterion is more often applied, because the resulting mathematical problem is easier to solve.

In this paper we will search for empirical examples, from Dutch Supply and Use Tables, in which PFD does not work as expected. Examples are shown in which the dynamics of the indicator series are not preserved well by Denton PFD benchmarking, whereas GRP benchmarking works better.

A second aim of the paper is to present a simple heuristic procedure that approximates the GRP criterion in the multivariate case, whose implementation involves the solution of a standard quadratic-linear problem instead of a linearly constrained non-linear one. The heuristic will be empirically compared with PFD and GRP in order to evaluate its possible ability to preserve the preliminary growth rates better than the PFD procedure.