

A comparison of index extension methods for multilateral methods

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Abstract

Multilateral methods have gained a lot of attention in the past five years, as national statistical institutes (NSIs) are getting wider access to transaction (scanner) data. Multilateral methods can be used to calculate transitive index series and have other advantages, such as processing complete large data sets and including new products in the first sales period.

The choice of index formula is just one aspect from a broad spectrum of decisions that have to be made when compiling price indices. Multilateral indices are transitive on a fixed time interval, but an essential question is how the drift-free properties can be preserved when data from the next period become available. The time window has to be adjusted in order to include new data. The indices calculated on the adjusted window may differ from the previously calculated indices, which, however, cannot be revised in the CPI.

This paper presents the results of a comparative study of extension methods for index series that are known to this date: splicing methods and methods that use a fixed base period. Price indices are calculated for transaction data of a supermarket chain, pharmacy products and a department store chain. The results show significant drift for window splice and movement splice even at aggregate chain level. The fixed base methods are drift-free by definition and therefore perform much better than the splicing methods.

Alternative splicing methods are proposed, which link year on year indices of rolling windows to published indices instead of following the classical approach of linking on recalculated indices. The alternative methods have no drift over the length of the time window. The results for window splice and half splice, with a 25-month window in the latter case, are indeed much better than for classical splicing. The half splice method in particular emerges as a very promising, accurate and stable method.

Keywords: CPI, multilateral methods, index extension, splicing, transitivity, chain drift.