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CPS Paper

Modelling consumer preferences in Multilateral Method for CPIs

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Brief Description

The ideal session for this paper deals with one or more of the following topics: consumer preferences, multilateral price indexes, cost-of living indexes, inflation measurement

Abstract

Multilateral indexes have been increasingly used by National Statistical Institutes to incorporate scanner data in the publication of Consumer Price Index due to their ability to control for chain drift bias. Nevertheless, some issues have arisen about which multilateral method should be used as the true index is not known. Diewert and Fox (2018) investigate this issue in a simulation study that assumes purchases to have known CES preferences. Knowing the exact cost of the living index, they simulate and compare the trajectories of the chained Fisher, chained Tornqvist, Weighted Time Product Dummy, Geary-Khamis, GEKS and CCDI price levels with the true CES price level according to different values of the elasticity of substitution parameter. Our proposal is to investigate these issues further by imposing a statistical model over the consumer-preferences parameters. These parameters reflect the quality differences across the products as perceived by consumers. For a set of N commodities, a consumer preference is a vector of size N of positive values such that their sum is constrained to be 1. By noticing that this is the geometry of a simplex, the natural statistical model that we may put over the preferences is the Dirichlet or the Logistic Normal. The usual conditional cost-of-living index holds constant all effects other than those of relative price changes, and so the taste parameters are kept fixed. Having a model of both the consumer preferences and the elasticities, we can study the multilateral methods in terms of the most likely trajectories of the indexes resulting from different consumer preferences. Our simulations contribute to the previous work of Martin (2020) that suggests taste parameter changes to have a small impact on the CES index. In the end, the literature on the CES index does not discuss the estimation of the quality parameters at great length. De Hann (2020) tackles this issue suggesting an econometric model to estimate consumer preferences based on TV data. By means of simulations, we offer some new insights on this issue as well.