Comments on Linking Regions for Reference PPPs – Robert Hill

The formula being used to link regions for reference PPPs is the same one I considered in Hill (2016) – see attachment. I refer to it there as the least squares fixity (LSF) method. It can be used to aggregate either above or below BH level.

One attractive feature of this method, that I demonstrate in my paper, is that it alters the global GEKS results by the logarithmic least squares amount necessary to obtain within-region fixity. In this sense it is a very natural extension of GEKS (which alters intransitive Fisher indexes by the logarithmic least squares amount necessary to obtain transitivity).

In my paper I recommend LSF as an alternative to CAR for linking regions above BH level. The LSF linking factors, as shown in (5) in the paper, are calculated as follows:

$$\hat{\lambda}_K = \left[\prod_{k=1}^{N_K} \left(\frac{P_{Kk}^{\text{Global-GEKS}}}{P_{Kk}^{\text{Region-GEKS}}} \right)^{1/N_K} \right],$$

where K indexes a region, and $k = 1, \ldots, N_K$ indexes the countries in that region.

As noted above, this is exactly the same formula that is being recommended for linking reference PPPs, as explained on slide 8 of the **OT COTT Meeting_rev1** document. The only difference is that for a reference PPP the aggregation is done only over the source BHs relevant to that reference PPP.

Essentially the same method (i.e., LSF) is also used to construct the linking factors for the PAFs. as follows:

$$\hat{\lambda}_K = \left[\prod_{k=1}^{N_K} \left(\frac{P_{Kk}^{\text{Global-PAF}}}{P_{Kk}^{\text{Region-PAF}}} \right)^{1/N_K} \right].$$

The same formula could likewise be used instead of RPD to compute BH linking factors as follows:

$$\hat{\lambda}_K = \left[\prod_{k=1}^{N_K} \left(\frac{P_{Kk}^{\text{Global-CPD}}}{P_{Kk}^{\text{Region-CPD}}} \right)^{1/N_K} \right].$$

In this case, we would make a global CPD comparison as well as the standard within-region CPD comparisons. I think this method of linking regions at BH level may have better properties than RPD. This is a topic I want to explore further. But it is not something to worry about now in ICP 2017.