Pricing seasonal products: imputation techniques

Meeting Ottawa Group – Rio de Janeiro 2019
The starting point of this paper

+ 20% or -10% ?
True price change in 10 years?

Shoes sold in Switzerland are imported.
Increase of the Swiss franc since 2009
Imports should be cheaper.
Swiss IPI: - 7.7%
Swiss PPI: - 3.6%
Price change in Europe in the last 10 years?
Price change in Europe in the last 10 years?

Germany
Austria
Switzerland
Price change in Europe in the last 10 years?
Price change in Europe in the last 10 years?
Price change in Europe in the last 10 years?
Three questions to be answered when facing seasonality

1. What do you do when the season ends?

- Carry forward the last collected price
- Bring back to a «typical» normal price (HICPs)
- Directly impute the price change of other items in the same elementary product groups: all season, counter seasonal, all year.
Three questions to be answered when facing seasonality

2. What do you do until the season reappears?

- Impute a zero price change
- Impute the price change of other items in the same elementary product groups: all season, counter seasonal, all year.
Three questions to be answered when facing seasonality

3. What do you do when the season reappears?

- Collect and register the price in season, which usually corresponds to the arrival of new collections (high price level)
The carry forward technique smooths the volatility

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Carry forward method

A lower number of imputation during the sales period combined with a higher number of imputation during the new collections period (price increase) tends to drive the results down

and vice versa
What about the other imputation methods? Any trend?
What about the other imputation methods? What is right?

Impute sandals with winter boots, or with high heel shoes, or with all available shoes?

What appears in the simulations is that the results differ mainly between the counter-seasonal technique and all-season technique.

Thus, if two countries recorded the same prices but applied a different imputation technique, the results would be different.
Another basket, other results

![Graph showing development of footwear prices between 2008 and 2018, December 2007=100. The graph compares Footwear HICP reconciled (all year) and Footwear HICP simulated with new basket (all year).]
Another basket, other results

Thus, if two countries recorded the same prices, applied the same imputation technique, but had a different basket, the results would be different.
What is the ideal imputation?

An imputation that does not have an impact on the results.

If you compile the index with seasonal products, the results would be the same.

We will call it the neutral imputation technique.
What is the ideal imputation?
But perhaps you have an important question?

+ 20% or -10%?
Remember the three questions…..

We talked about what to do when the season ends and until the season reappears. But we didn’t talk about what to do when the season reappears.

Our indices are compiled on the basis of collected prices. When the season reappears, the compiled price change is based on the last recorded price, without taking into account the imputations that took place during the off-season.
### What’s going on…

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#### Recorded price change

No problem with the carry forward since the previous index is the same in April as in July
What’s going on with the HICP

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+ 20% or -10%?  Probably inbetween

Price change of footwear between 2008 and 2015

- Footwear HICP
- Footwear CPI
- Footwear HICP recompiled (all year)
Thank you!

“I know that I have some very big shoes to fill”