ADVISORY PANELS ON CONSUMER PRICES – TECHNICAL

Minutes

11 January 2019

Board room, UK Statistics Authority, Drummond Gate, Pimlico, London SW1V 2QQ

10:30 – 13:00

Members in attendance
Mr John Astin
Prof. Bert Balk
Dr Antonio Chessa
Mr Grant Fitzner (Chairman – ONS)
Mr Mike Hardie (ONS)
Dr Martin Weale
Mr Peter Levell
Dr Jens Mehrhoff
Mr Paul Smith
Mr Rupert de Vincent-Humphreys

Presenters
Ms Heledd Thomas

Guests
Mr Daniel Ayoubkhani
Mr Rob Bucknall

Secretariat
Miss Joanna Corless (ONS)
Mr Chris Payne (ONS)

Apologies
Prof. Ian Crawford

1. **Introduction and apologies**
1.1. The new chairman Mr Grant Fitzner, Chief Economist at ONS, welcomed attendees to the Advisory Panel on Consumer Prices-Technical (APCP-T) meeting and passed on apologies from those who were unable to attend.
1.2. Mr Fitzner informed members of plans to hold an ESCoE workshop on HCIs in February or March and invited them to attend.
1.3. Mr Fitzner reminded members that the Lords Economic Affairs Committee report on the RPI is due to be released on Thursday 17th January.

2. **The use of unweighted indices in ONS's consumer price statistics**

Paper APCP-T(19)01 – *This paper will be published alongside the minutes*

2.1. Mr Payne gave an overview of the paper which summarised recently made arguments about the relative merits and de-merits of the Carli, Jevons and Dutot. This was being discussed in light of the inquiry by the Lords Economic Affairs Committee, whose report was due to be released on 17th January.

2.2. Comments from panel members regarding the index formulae included:

- ONS should not justify decisions based on what is "international best practise", they should justify them based on evidence
- Dutot may be preferable to Jevons in cases where prices of goods can be zero; for example, newspapers
- There may be cases where the Carli index is appropriate. However, Jevons is the safest index to use in the largest number of cases as it satisfies the transitivity condition
- Some commentators have argued that the Carli index is a direct index (unchained) and therefore there isn't a problem in RPI. However, the RPI is chain-linked annually at higher levels, and so the transitivity issues will feed through to higher level aggregation.

2.3. There was an inconclusive discussion around the reasons behind the increase in the formula effect following changes to collection methods for clothing in 2010.

2.4. There was a suggestion that ONS could focus on getting weights at the sub-aggregation level from scanner data. Indices calculated using these weights could be compared to those with unweighted elementary aggregates. However, ONS does not currently have a regular feed of scanner data to allow us to do this.

2.5. Dr Mehrhoff presented a draft note on unweighted indices. This included a derivation of an approximation of Carli to Jevons using a different methodology to that in the CPI Technical Manual. Using published CPI microdata, he found that it was high variance in price relatives in January (month 13) that was driving chain drift. The high variance in month 13 could be due to dispersion of prices over time or the replacement of products over the course of the 13 months. The difference between the direct Carli and chained Carli indices was also investigated; there was an indefinite upward bias of the chained Carli compared to the direct Carli whenever the covariance between the current period and previous period price relatives was negative. Furthermore, in practise, the covariance was always negative; the reason for this needs to be investigated further. Dr Mehrhoff agreed to finish his note on unweighted indices ready for circulation to panel members.

2.6. The arguments highlighted in APCP-T(19)01 raised no new issues that would cause the panel to shift its position from that taken at the end of the January 2016 APCP-T meeting: the mathematical properties of the elementary aggregate formulae are finely balanced. However, their properties also need to be considered in the context of price collection in practice. The evidence based on the clothing shows that the Carli formula is less suitable than the Jevons and Dutot formulae.

Action 1: Dr Mehrhoff to finalise note on unweighted elementary indices

Action 2: Miss Corless to circulate Dr Mehrhoff's note on unweighted elementary indices

3. Assessment of small area estimation for regional CPI expenditure weights

Paper APCP-T(19)02 – *Draft for future publication*

3.1. Mr Smith presented the paper which set out further work carried out by the University of Southampton exploring the feasibility of producing regional breakdowns of CPIH. The aim of the report was to explore the potential suitability and benefits of using small area estimation for regional expenditure weights in a regional CPIH.

3.2. Mr Smith confirmed that there was a separate model for each expenditure category. Mr Smith raised the possibility of grouping some items together to reduce the number of models needed. Another member suggested non-parametric regression could be useful for this.

3.3. One panel member suggested using a Tobit model which could deal with zeros in the data, as an alternative to the multilevel model used.

3.4. A key finding was that the ONS would need to collect price data at the regional level to be able to produce robust sub-national price indices. Access to scanner data in the future may help to plug these data gaps.

4. The use of approximate expenditure weights for web scraped data

Paper APCP-T(19)03 – *This paper will be published alongside the minutes*

4.1. Heledd Thomas presented the paper, which set out research into approximate weight allocation methods for the individual product quotes obtained by webscraping, used in the calculation of an item's index.

4.2. There was discussion around the probability distribution that should be used to describe the quantity shares when items are ranked from highest sales to lowest. Dr Chessa presented some work he had done on this subject using data from Statistics Netherlands. For eight items for which both scanner data and webscraped data were available, a Beta-geometric distribution (with one parameter fixed) had been fit to the quantity shares obtained from the scanner data. This produced a very good fit in some cases and less good in others. The next step would be to use these findings to develop proxies for weights to apply to webscraped data. A key question to investigate going forwards will be how to quantify the popularity of webscraped data when scanner data is not available; are, for example, the page rankings by popularity on websites reliable? Dr Mehrhoff suggested that the approach taken by Dr Chessa could be applied to the Domenick's Finer Foods scanner data. Dr Chessa agreed to write up the analysis presented with some explanation about the methods and data used.

Action 3: Dr Chessa to write up analysis on proxy expenditure weights ready for circulation to members.

Action 4: Miss Corless to Circulate Dr Chessa's note on proxy expenditure weights

4.3. A panel member observed that there is monthly chain-linking and suggested that this could cause chain drift in the benchmark used. It was suggested that a time product dummy could be used as an alternative benchmark.

4.4. There was discussion around the degree of involvement of retailers that would be required. The paper mentioned asking retailers for parameters to derive the weight distribution of goods.

It was suggested that, if there is already a need to involve retailers at some level, we could consider going further than this. The possibility of pursuing "Trusted Smart Statistics", which is an approach promoted by the European Commission, was raised. This could involve access to data being provided without the data being held on the user's systems.

4.5. Other comments were that the research should be extended to more items, and it should be considered how to account for the proportion of items that are returned after purchase, which can be particularly high in categories such as women's' clothing.

5. Quality adjustment review

Paper APCP-T(19)04 – *This paper will be published alongside the minutes*

5.1. Mr Payne presented the paper which provided an update on the review of quality adjustment procedures in consumer price statistics that was started in 2018.

5.2. Dr Mehrhoff discussed the uses and limitations of Implicit Quality Indices (IQIs), clarifying that they are being used for the purpose of monitoring quality adjustment for items and flagging when they need further investigation, rather than the IQI necessarily implying a literal quality change. He suggested that the IQIs had been overinterpreted for some items, such as seasonal items. Here, imputation has a large impact on price levels and this shows up in the IQI; he agrees it is right to investigate this, but it should not be interpreted as quality change. He argued that quantity adjustment should not be included in IQIs as it is not due to quality change.

5.3. Dr Mehrhoff raised that Eurostat also investigates how best to quality adjust for items, but this is on a case-by-case basis rather than being a comprehensive review.

5.4. One panel member highlighted that the focus for further investigation of flagged items should be on those items with high weights. Another suggested that we could flag items which have a deviation in IQI scores relative to other goods in the same class or relative to the general trend for that item. Another suggested that we could look at the impact of IQI scores on higher level aggregates.

5.5. There was discussion around the ultimate goal of this research. It was asked whether out goal was to have a means of automating decisions about what quality adjustment methods to use; Mr Payne said that this wasn't the intended goal and it was envisaged that the system we develop will flag where things need further investigation, but these would then be reviewed on a case-by-case basis. He said the ONS will be doing further work on this in the future.

6. AOB

6.1. Panel members agreed that it would useful for ONS to produce a short paper providing a balanced summary of the strength and weaknesses of unweighted index methods, as suggested by APCP-Stakeholder chair Kate Barker.

Action 5: ONS to produce a short, non-technical paper which provides a balanced summary of the strength and weaknesses of unweighted index methods

6.2. Panel members were informed of the new requirement for them to sign a non-disclosure agreement. These will be circulated before the next meeting.

Action 6: Miss Corless to circulate non-disclosure agreements to panel members

6.3. The next meeting is scheduled for Friday 17th May

No.	Action	Person Responsible
1	Dr Chessa to write up analysis on proxy expenditure weights ready for circulation to members.	Dr Chessa
2	Miss Corless to Circulate Dr Chessa's note on proxy expenditure weights	Miss Corless
3	Dr Mehrhoff to finalise note on unweighted elementary indices	Dr Mehrhoff
4	Miss Corless to circulate Dr Mehrhoff's note on unweighted elementary indices	Miss Corless
5	ONS to produce a short, non-technical paper which provides a balanced summary of the strength and weaknesses of unweighted index methods	Mr Payne
6	Miss Corless to circulate non-disclosure agreements to panel members	Miss Corless