17th Ottawa group meeting
Rome, 7 – 10 June 2022

Title: New ways of measuring price development on consumer electronics

Topic: New data sources and new techniques to compile price indices, including the implications on index formulas

Authors: Kjersti Nyborg Hov, Ragnhild Nygaard, Statistics Norway

Abstract (maximum length of 400 words)

Today Statistics Norway makes regular use of scanner data for consumer price index measurements for main areas like groceries, clothing, pharmaceutical products and petrol. Now the aim is to expand to scanner data on consumer electronics. Consumer electronics poses additional challenges compared to the other areas. Consumer electronics are notoriously prone to high item churn and rapid technological changes often resulting in large and rapid quality improvements. In addition, prices tend to fall before exiting the market, thus new and disappearing items need to be linked to avoid downward bias in the index.

To obtain measurements of the underlying pure price movements and given rapid technological changes, linking new and disappearing items entail some form of quality assessment and adjustment. The large amount of data necessitates an automatic detection and treatment of such quality differences. In order to calculate quality adjusted price indices there is a need for item information. Since scanner data seldom contains detailed item specifications, metadata has been regularly web scraped from the retailer's own websites. The web scraped metadata has then been combined with scanner data to obtain more extensive and complete information to be used in hedonic regression models.

Hedonic regression is often considered the preferred method for quality adjustment, especially for highly technological products. Different hedonic techniques are therefore tested empirically on data from different product categories like for instance mobile phones and tablets from the leading retailers on the Norwegian market.

This paper sets out to describe the challenges concerning the vast amount of information found online, how to best utilize this information, in addition to present results of hedonic quality adjustment derived from hedonic regression models.

REFERENCES

de Haan, J., "Scanner Data in the CPI: The Imputation CCDI Index Revisited", Ottawa Group Meeting (2019)

de Haan, J. & Krsinich, F., "Scanner data and the treatment of quality change in nonrevisable price indexes", Journal of Business & Economic Statistics (2014)

de Haan, J. & Krsinich, F., "Time-dummy hedonic and quality-adjusted unit value indexes: Do they really differ?", Paper presented at the conference of the Society for Economic Measurement, Chicago (2014)

Hov, K., “New data sources for measuring price development on consumer electronics”, Eurostat/UN joint Workshop on Scanner Data and Web Scraping (2021)

Krsinich, F., “Implementation of consumer electronics scanner data in the New Zealand CPI”, Ottawa Group Meeting (2015)

Loon, K.V., “Calculating a price index for consumer electronics and household appliances using transaction data”, Eurostat HICP workshop (2020, 2021)