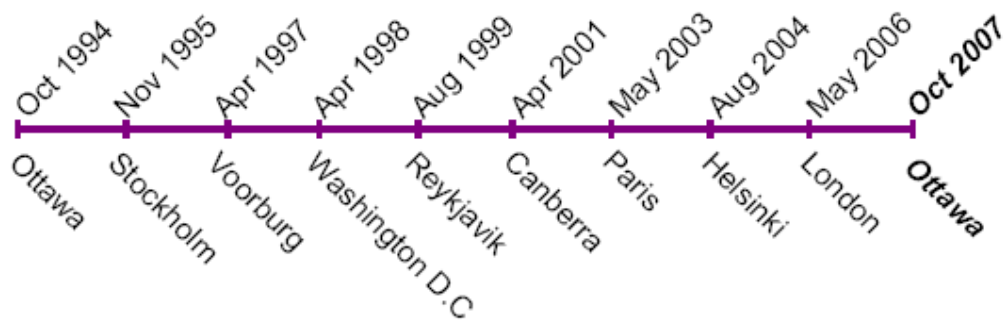# The Ottawa Group – 10 Meetings on: a personal view

David Fenwick
*Office for National Statistics,*
*1 Drummond Gate,*
*London SW1V 2QQ, United Kingdom.*
david.fenwick@ons.gov.uk

## 1. Background

On October 31st 1994 the first meeting of the Ottawa Group on Price Indexes opened in Ottawa. The group was set up as a forum for specialist academics and practitioners to share their experiences and discuss research on crucial problems of measuring price change. The focus was on applied research particularly, though not exclusively, in the area of Consumer Price Indices (CPI).

The first paper presented to the Group in 1994 was by Marta Haworth of the UK's Central Statistical Office (now ONS) on 'Sampling and Data Capture Issues in CPI Construction'. The group is now holding its 10th meeting 13 years later and discussing its 200th paper. It is therefore a suitable time to pause and reflect on the achievements of the group and, just as importantly, on the future for the group and for consumer price statistics.

The current terms of reference are given at Annex A and a list of the papers presented at each of the meetings is given at Annex B.

## 2. Topics Discussed

Table 1 groups the papers presented at meetings 1 to 9 of the Ottawa Group by subject area. Note, some papers may be included in more than one area and the distribution of papers may not necessarily fully reflect the relative importance as reflected in the discussion time. Also the categorisation of the papers themselves may at times be broad-brush. Nevertheless, the analysis provides a useful insight into the work of the group

From Table 1 we can clearly see that:

- The most heavily discussed areas have been those associated with potential sources of bias in an index rather than issues of accuracy or the conceptual basis of an index. This may, to a large extent, reflect the concerns about index construction resulting from the publication of the Boskin Report[1].

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[1] The Boskin Report assumes that a CPI should be a cost-of-living index (COLI), that is that it should measure "the minimum cost, at a particular month's prices, of achieving the level of utility actually attained in the base period". Of course, this is, not necessarily the case. It is unproductive to attempt an objective assessment of CPI bias without first having a clear idea of what it is that is trying to be measured, i.e. the target index.

- The work on addressing bias has focused particularly on quality change and quality adjustment (including hedonic regression) {49 papers} and has been informed not only by the potential size of the systematic impact on measured inflation but also by:
  - Accelerating trends in retailing, with much higher levels of turnover in the type and range of goods and services on offer, which are likely to increase the potential for bias. Thus the discussions on quality adjustment should be seen in the context of broader-based concerns about the dynamic universe of retailing and, for example, the potential for new goods bias[2] {4 papers}.
  - The statistical tools and methods at a statistician's disposal, including enhanced computer facilities, and readily available and relevant data sources such as scanner data (see below), which give a statistical office the capacity to deliver the operational solutions. In other words, the extent to which there are workable solutions which are easy to implement.
  - The presence of underlying conceptual issues which can generate controversy and the extent to which this has led to a lack of consensus.
  - Statistical Offices understandably take a reserved approach to the introduction of new CPI methodology. For instance, whilst there is now a growing consensus on the approach to explicit quality adjustment methods such as hedonics, it has taken some time for these methods to be generally accepted for use in official CPIs. This reserved approach to the introduction of new statistical methods is reflected in a number of papers submitted by National statistical Institutes.
- Associated with this concern about trends in retailing and the relevance and practical measurement of a "fixed basket" in a dynamic universe, has been the growing availability and capacity to exploit scanner data for index construction, sample selection and quality adjustment {12 papers}.
- There has also been extensive coverage of specific "difficult-to-measure" areas such as Telecommunications, Financial Services and Housing.
  - The relatively large number of papers for both Telecommunications {12 papers} and Financial Services {9 papers} reflects in large part the increasing size and complexity of these services and concerns about whether the true price changes are being captured. Services also raise conceptual issues relating to the nature of the service that consumers are buying, issues which have practical measurement implications.
  - The relatively large number of papers on housing {8 papers} and in particular owner-occupier housing costs, reflects a growing concern about the lack of international consensus on conceptual and practical measurement issues in an area of expenditure which is growing in relevance to a larger proportion of households. The exclusion of owner-occupier housing costs from many CPIs has become a major issue of increasing concern.
- Other notable topics discussed include the choice of Price Index Formulae, the European HICP (developed during the life of the Ottawa Group) and Sampling. Many papers have also been presented that offer specific country examples, often these may represent important changes in a country's CPI. These papers have kept the group up-to-date with developments across the world and can provide good case studies for other National Statistical Institutes.

Based on this analysis it is noteworthy that relatively less time has been spent on.

- Those issues relating to better index measurement, which are not associated with bias.
- The underlying conceptual basis of different index types including choice of aggregation methods and the use of conceptual frameworks relating to the family of indices approach, none of which have been re-visited for some time.

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[2] In comparison relatively little work has been undertaken on new outlet bias, perhaps surprisingly given the fact that the potential bias can equal that associated with quality change in replacement and new goods. This may be because the technical solutions for dealing with new outlet bias are relatively straight-forward but the implementation costs are relatively greater.

**Table 1: Ottawa Group Papers by Subject Area**

All Papers (excluding room documents), meetings 1 - 9:       179

| Subject Area | Papers | % of Total |
|---|---|---|
| Quality Change/Adjustment (not hedonics) | 29 | 16 |
| Hedonics | 20 | 13 |
| General CPI Country Examples | 15 | 8 |
| Aggregation/Elementary Aggregates | 14 | 8 |
| Use of Scanner Data | 12 | 8 |
| Telecommunications | 12 | 7 |
| Price Index Formulae | 10 | 5 |
| Financial Services | 9 | 5 |
| Housing | 8 | 4 |
| European HICP | 8 | 4 |
| Sampling | 7 | 4 |
| Bias | 6 | 3 |
| Cost-of-living Indexes | 6 | 3 |
| General CPI (purpose, how, why) | 6 | 3 |
| E-Commerce/Internet | 6 | 3 |
| New Goods | 4 | 2 |
| Weighting | 3 | 2 |
| CPI Manual | 3 | 2 |

## 3. Achievements

Through debating the subject areas outlined above, the Ottawa Group has contributed to international best practices in key areas of CPI methodology and compilation, particularly in relation to dealing with quality change and bias.

The group has provided a forum for individuals and organisations to seek the advice of leading experts in order to inform developments in the measurement of price change within their countries and indeed for researchers to consult practitioners on how their work fits with the real-world situation.

Working sessions have resulted in recommendations to National Statistical Institutes and the identification of future axes of research.

The outcomes of the Ottawa Group are reported to UNSC and this enables the group to make recommendations to UNSC when appropriate.

Individual members of the group also played a significant part in the development of the International CPI Manual in terms of recommending its direction and reviewing draft chapters (although the responsibility for producing the manual lay with the Inter-secretariat Working Group on Price statistics). Many Ottawa Group members were major contributors to the manual.

## 4. The current state of CPI compilation: outstanding issues

Taking a more critical look at Table 1 and surveying the CPI methodologies used by National Statistical Institutes through the available metadata it can be observed that:

- There has been a significant time lapse between the practical application by National Statistical Institutes and the methodological solutions offered by the Ottawa Group[3]. It has been argued that National Statistical Institutes still lag behind in terms of the application of best practice and should be more pro-active in moving forward in parallel with CPI methodologists. Whether this time lapse results from the need for caution, the lack of resources (expertise or money) or a natural and inherent sluggishness in the statistical system it not clear.
- In addition, the Ottawa Group itself has made limited progress in some strategic and difficult areas, most notably, owner occupier housing costs where there is little sign of a consensus on how these costs should be accounted for in a CPI. Arguably this is the most important and difficult outstanding issue confronting compilers of CPIs[4].
- Where a consensus has been reached in the Ottawa Group on appropriate methodologies, there has not always been agreement on the detailed practical application. An example is the application of hedonics for quality adjustment. The application of hedonic techniques for the quality adjustment of prices has made a significant contribution to the methodological development of price indices in recent years and is rapidly becoming a preferred method. But, there are outstanding conceptual and practical issues.[5]
- There are no fully developed and effective tools available to National Statistical Institutes to prioritise index development work and there is only limited evidence that this has generated a great deal of concern amongst National Statistical Institutes or users. In essence, there is a lack of substantive evidence, and some indications to the contrary, that National Statistical Institutes generally have directed their resources to addressing those methodological issues which represent the optimum value-for-money gains in terms of index improvement to meet user needs. This applies both to strategic planning and to detailed work programmes[6].
- There continues to be issues of coherence between different price indices within the family of price indices. For instance, limited work has been undertaken to look at the coherence between the quality adjustment of CPIs and their PPI counterparts. An example relates to quality adjustment and the conceptual and practical index construction issues associated

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[3] This can be observed from a survey of National Statistical Institutes websites. It also apparent from meta-data returns to the international organisations.

[4] Opposing arguments have been put forward for the use, payments and acquisitions approaches. This has resulted in a limited coverage of owner-occupier housing costs in CPIs, for instance it is not as yet included in the European HICP, and where it is included this has often been by way of a compromise in terms of the conceptual consistency of the index. For example, in the UK the Retail Prices Index includes mortgage interest payments, which can be viewed as important from the perspective of income related-uses of the RPI even though the index can be seen as acquisition-based in most other expenditure areas. The OECD are drafting a handbook on house price indices to supplement the ILO Manual on Consumer Price Indices.

[5] As noted by the Schultze Panel, hedonics at its very basic is a statistical technique that exposes nothing more than a purely empirical relationship between the observable attributes of a good or service and the price paid. The question then is whether this is sufficient in the context of a price index (either a COLI or non-COLI) and whether there is a corresponding economic interpretation. In addition there is little uniformity in the practical application of hedonics or agreement on what is best practice. For instance, opposing arguments have been put forward for quantity and expenditure weights and some National Statistical Institutes and experts favour use the individual coefficients to quality adjust, others the time dummy variable approach, and others predicted prices.

[6] The Schultze Panel was critical of the focus of the Bureau of Labor Market's use of CPIs claiming that the work may not always have centred on the most productive expenditure items. For example, on hedonics it concluded that "The best candidates for hedonic analysis are categories of goods for which quality change is frequent but incremental and for which the characteristic changes are easy to measure. For example, personal computers are seen as an obvious candidate whilst cars [where, for example, measuring performance is highly subjective] and clothes [the challenge of fashion] are seen as problematical". The UK Office for National Statistics attempted to produce a framework for identifying priorities for the introduction of explicit quality adjustment but with only limited success. It took a simple two-dimensional matrix approach that can be characterised by two statistics:

· Rate of technology change in goods - are new features and improvements regularly being introduced?

· Rate of turnover of models – are older models disappearing from the market and being replaced by new models at a high rate?

Generally, if an index item is subject to both a high rate of turnover and of technological change then it should be a prime candidate for explicit quality adjustment. Similarly, the index compiler would not want to give priority to explicit quality adjustment where an item has low turnover and technological change. An attempt to express this in terms of a score system based on a regression formula was inconclusive and did not add value to decision making.

with the possible application of the retail model to quality adjust producer costs[7]. More generally, limited progress has been made to take forward the concept of "families of indices" based on agreed and internationally recognised framework. Price indices serve many different purposes and their definition, coverage and construction depends on the precise use for which they are being constructed. Once constructed, however, their use is frequently extended to other areas. A co-ordinated approach to the systematic application of frameworks for the development of price indices is long overdue and the lack of one may be considered to be one of the main reasons for the current lack of supplementary indices to fill in the gaps in our understanding of inflation and for outstanding issues of coherence between indices and for the limited international comparability between the different indices produced by different countries.[8]

- The lack of a strategic approach to the development of price indices and the over reliance on evolution rather than a systematic application of frameworks is also evident in other price indices produced by National Statistical Institutes. Deflators are an interesting and pertinent example. The needs of national accountants are, perhaps understandably, not always the highest priority for consumer price statisticians and this can lead to measurement issues which should not be ignored. The literature on National Accounts deflation is relatively more recent and less developed than that on consumer price indices and this increases the challenges that national accountants face in articulating their needs[9].

## 5. Future priorities

The common thread to the above discussion is the need for a more systematic approach to index construction and development with the goal of moving to the production of a more coherent and inclusive family of good quality and fit-for-purpose price indices using internationally recognised standard methodologies. This work would be taken forward within the system of national accounts and leaning on associated frameworks including social accounting matrices, stage-of-production

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[7] A central assumption when applying hedonics, based on retail prices, to producer prices in the Producer Price Index (PPI) is that a specification change that the hedonic model values as an x% change in quality at the retail stage, translates to an x% change at the factory gate stage of the supply chain. In theory, fluctuations in the margins enjoyed by manufacturers, retailers and other intermediaries could render this assumption false. Similarly, it is generally accepted that for consumption oriented indices, a user value approach to measuring quality change is appropriate, whereas for production based indices such as PPI output series a resource cost based approach is deemed appropriate. As has been pointed out by Diewert and others, this can potentially lead to consistency problems in the compilation of the national accounts. Rosen demonstrated that in a perfectly competitive market marginal user value should equal marginal cost, for all observations used in estimating the hedonic function. For real markets, where few of the assumptions that underpin the perfectly competitive paradigm are satisfied, quality adjustments derived from hedonic models cannot be assumed to accurately reflect either user value or resource cost changes. Nevertheless, it has been argued that the use of hedonics to quality adjust PPIs can still be justified on the grounds that it yields better estimates of both user value and resource costs than are obtainable via other approaches. The adoption and implementation of a common approach to quality adjustment by both a CPI and PPI is clearly desirable from this perspective.

[8] The theoretical framework for CPIs is essentially based on economic theory relating to consumer behaviour. Many references in the plentiful literature on consumer price indices argue that an advantage of a Cost-of-living Index (COLI) over a Cost-of-goods Index (COGI) is that the former is supported by economic theory (i.e. the behaviour of the individual in the market place), implying that the latter is not. However, this does not recognise that economic theory can be used to support both a COGI and a COLI- one at a macro-level and one at a micro-level- and each supplements the other. Thus:

- a COGI measures the inflationary pressures in the economy from price developments in the retail sector. It represents one of many sectors, albeit an important one, in the Stage of Processing Framework.
- a COLI measures the expenditure required by a household to maintain their standard of living or utility. Putting aside the definition of utility and whether the COLI is unconstrained or constrained, it is an index constructed from the viewpoint of the individual consumer and has its foundation in micro-economics and the theory of individual consumer behaviour. Unlike a COGI, it takes into account the substitutions consumers make when faced by relative changes in prices either between different goods and services or between different outlets and suppliers

[9] The lack of progress in developing a methodology for deflators is illustrated by the limited attention given to constant price estimation in the SNA93 where only about 25 pages are given over to this subject. Similarly, the Eurostat handbook on Price and Volume Measures in National Accounts, whilst providing useful guidance on an industry by industry basis, goes no further in offering advice on a conceptual framework for deflators than recommending in general terms a Supply-Use approach. More often than not for consumer expenditure, National Accountants use available price indices as deflators rather than indices specially constructed using appropriate index methodology. This can lead to bias.

and stage-of-processing[10]. It is now for National Statistical Institutes to take the initiative and build on the extensive knowledge base which now exists.

Such a systematic approach would also encompass:

- Further standardisation of the practical application of methodologies with a view to increased harmonisation and international comparability as well as better quality and fit-for-purpose indices.
- Progress on outstanding measurement issues which impinge on coverage. Most notably owner-occupier housing costs.
- A better populated family of indices which will support analysis and a better understanding of inflation. This would also include the production by National Statistical Institutes of supplementary inflation measures covering, for example, government consumption, and analytical series such as measures of core inflation which, where produced, have traditionally often been within the remit of Central Banks.
- A wider and more outward-looking perspective beyond CPIs to other price indices, such as PPIs, and deflators.
- Confronting statistical reliability issues as well as bias and with a better focus on the measurement and achievement of value-for-money. The latter to include focusing on addressing measurement issues which have the biggest impact on the relevance of the index to users, more efficient sample design and better exploitation of readily available data sources.

## 6. Implication for future working

To make more progress in this direction will also require the Ottawa Group to more fully exploit relationships with the wider community of experts engaged in the production and development of economic statistics and closer and more formal and co-ordinated working with other United Nations groups and working parties.

It may also suggest re-visiting the terms of reference of the group to reflect a change in mode of working and for consideration to be given to occasional joint meetings with other groups, most particularly the Voorburg Group on Service Statistics which in the past has also covered producer price indices for services. A more fundamental change would be to extend the remit of the Ottawa Group to cover the complete family of price indices. This might better facilitate taking forward future priorities as listed above but clearly there is the danger that it could dilute the level of expertise on the group as specialists in CPIs may not have the same expertise in, for instance PPIs. In looking to the future it is important to consider the extent to which the key issues facing the different inflation measures are similar.

It should be noted that the views expressed in this paper are those of the author alone and are raised in order to stimulate debate.

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[10] A Stage of Processing Framework divides the entire economic process into distinct stages- production (split into broad categories); final demand (separated into private final consumption, government consumption, capital purchase & exports); the rest of the world. The main price indices are then grouped according to coverage. Under the Stage of Production concept commodity flows are categorised sequentially according to their destination along the production chain following an input-output approach, the primary classification being between final and non-final commodities. It has been argued that there is a tension between Stage of Processing, which is essentially driven by economists' needs, and National accountant's Supply and Use frameworks, which are essentially driven by measurement needs. This can be resolved by the flexibility and generic approach provided by Social Accounting Matrices (SAMs).

## Annex A: Terms of Reference

Without avoiding theoretical issues, the focus of the Group is on applied research, particularly though not exclusively, in the area of consumer price indices. The Group examines advantages and disadvantages of various concepts, methods and procedures in the context of realistic operational environments, supported by concrete examples whenever possible. Only specialists actively involved in the application of the principles relating to the topics under discussion are invited to the Group's meetings as active participants. The proceedings from the sessions are edited and diffused. They contain the presented papers and the most important elements of discussions. They also include the Group's recommendations when a preponderant opinion clearly emerges from the discussions, or, if this is not the case, a summary of the discordant opinions with balanced commentary.

The Group may also assemble and publish compendia of materials related to specific topics of price statistics, composed of papers and of summaries of discussions from several meetings. Each of these publications could constitute chapters of a Handbook describing best practices in the given area of price statistics.

## Annex B – Topics and Papers

| Meeting | Session | Paper |
|---|---|---|
| 1.Ottawa | Topic 1: Price indices at the micro aggregation level and their macro effects: Methodological and Empirical Evidence | Martha F. Haworth, Central Statistical Office (UK), Sampling and Data Capture Issues in CPI Construction |
| | | Paul A. Armknecht, Brent R. Moulton and Kenneth J. Stewart, Bureau of Labor Statistics (US), Improvements to the Food at Home, Shelter and Prescription Drug Indexes in the U.S. Consumer Price Index |
| | | Don J. Sellwood, EUROSTAT, Constraining Macro Effects of the Use of Different Methods at the Basic Level in the Project to Harmonise Consumer Price Indices in the European Union |
| | | Bohdan J. Schultz, Statistics Canada, Choice of Price Index Formulae at the Micro-Aggregation Level: The Canadian Empirical Evidence |
| | | Bert M. Balk, Statistics Netherlands, On the First Step in the Calculation of a Consumer Price Index |
| | | Jörgen Dalén, Statistics Sweden, Sensitivity Analyses for Harmonising European Consumer Price Indices |
| | | Keith Woolford, Australian Bureau of Statistics, A Pragmatic Approach to the Selection of Appropriate Index Formulae |
| | | Alain Saglio, INSEE (France), Comparative changes in Average Price and Price Index: Two case studies |
| | Topic 2: Bias of a consumer price index, shall we try to estimate it? | Diewert, W. Erwin, "Axiomatic and Economic Approaches to elementary Price Indexes", University of British Columbia, January 1995, pp. 1-60 |
| | | Carruthers, A.G., Sellwood, D.J. and Ward, P.W. "Recent Developments in the Retail Prices Index". The Statistician, Vol. 29, No. 1, 1980, pp. 1-32 |
| 2. Stockholm | Topic 1: Purposes and concepts of consumer price indices | UK RPI: A cost of living index or an inflation indicator? By Marta Haworth, Central Statistical Office, UK |
| | | Three kinds of monthly CPI By Ralph Turvey |
| | | The consumer price index and income escalation By Bert M. Balk, Statistics Netherlands |
| | | Handbook of inflation accounting, (Chapter 5) By Peter Hill |
| | | Seasonal commodities, high inflation and index number theory By W. Erwin Diewert, University of British Columbia |
| | | A statistical interpretation of CPI comparability By Jörgen Dalén, Statistics Sweden |
| | Topic 2: Selected difficult areas of consumer price indices | Selected difficult areas in the Finnish CPI By Kaisa Weckström-Eno, Statistics Finland |
| | | Swedish CPI practices for difficult areas with a noteon CPI Subindexes for services with income-dependent fees By Jörgen Dalén, Statistics Sweden |
| | | Note on the practices in the field of insurance, financial services and public price policies in the Icelandic CPI by Rosmundur Gudnason, Statistics Iceland |
| | | Note on selected difficult areas of consumer price indices By Lasse Sandberg, Statistics Norway |
| | | A note on Cost-of-Living Indexes, Subsidized Commodities and Income Dependent Prices By N. Anders Klevmarken, Uppsala University |

| | Topic 3: Product Quality Adjustment to Prices | Item & outlet replacements and quality adjustment By Ralph Turvey |
|---|---|---|
| | | Treatment of changes in product quality in consumer price indices  By Bohdan Schultz, Statistics Canada |
| | | The type and extent of quality change adjustments in the Canadian CPI  By Robin Lowe, Statistics Canada |
| | | Quality adjustment in the Swedish price index for clothing y Anders Norberg, Statistics Sweden |
| | | Quality Adjustment of prices of audiovisual goods in the U.K.R.P.I.  By Central Statistical Office, U.K. |
| | | The harmonisation of quality adjustment practices in the European Union By Don Sellwood, Eurostat |
| | | Harmonisation of consumer price indices. Progress Report By Eurostat B3 |
| 3. Voorburg | Topic 1: Inflation measurement | Marta F. Haworth and David A. Wall, Inflation measurement in the UK |
| | | Scott Roger, A robust measure of core inflation in New Zealand, 1949-96 |
| | | Brent R. Moulton and Kenneth J. Stewart, An overview of experimental U.S. Consumer Price Indexes |
| | | John S. Greenlees, Expenditure weight updates and measured inflation |
| | | François Poinat, Estimation of the potential bias of the French C.P.I. due to the annual linking of intermediary aggregates |
| | Topic 2: Various measurement issues | Paul A. Armknecht, Improving the efficiency of the U.S. CPI |
| | | Ralph Turvey, New outlets & new products |
| | | Marta Haworth, David Fenwick and Rachael Beaven, Recent developments in the UK Retail Prices Index: Quality management |
| | | Rósmundur Gudnason, Improved methods for the evaluation of the composition and quantity of household goods |
| | | Helen Stott, Financial services (credit services) in the New Zealand CPI |
| | Topic 3: The use of scanner data | William J. Hawkes, Reconciliation of consumer price index trends with corresponding trends in average prices for quasi-homogeneous goods using scanning data |
| | | Jörgen Dalén, Experiments with Swedish scanner data |
| | | Ralph Bradley, Bill Cook, Sylvia G. Leaver and Brent R. Moulton, An overview of research on potential uses of scanner data in the U. S. CPI |
| | | Jan de Haan and Eddy Opperdoes, Estimation of the coffee price index using scanner data: simulation of official practices |
| | | Jan de Haan and Eddy Opperdoes, Estimation of the coffee price index using scanner data: the choice of the micro index |
| | | Mick Silver, Christos Ioannides and Marta F. Haworth, Hedonic quality adjustments for non-comparable items for consumer price indices |
| | | Christos Ioannides and Mick Silver, Chained, exact and superlative hedonic price changes: estimates from micro data |
| | Topic 4: Quality Change | Don J. Sellwood, In search of new approaches to the problem of quality adjustment in CPI |

| | | Henk van Tuinen, Bram de Boo and Jaco van Rijn, Price index numbers of complementary goods |
|---|---|---|
| | | Derek Blades, Consumer journals and hedonics: a puzzle |
| | | Mick Silver, An evaluation of the use of hedonic regressions for basic components of consumer price indices |
| | | Robin Lowe Item selection and quality change in the Canadian CPI |
| | Topic 5: European issues | John A. Astin and Don J. Sellwood, Harmonization in the European Union: a review of some technical issues |
| | | Jörgen Dalén, What is a Monetary Union price index? |
| 4. Washington D.C. | Session 1: New goods, disappearing goods and "variety increase" | Robin Lowe, Televisions: Quality changes and scanner data. |
| | | Mick Silver, Bias in the Compilation of Consumer Price Indices when Different Models of an Item Coexist. |
| | Session 2: Quality adjustment including the treatment of durables | John Astin, Quality Adjustment in CPIs – A Personal View. |
| | | Jérôme Bascher and Thierry Lacroix, On the use of hedonic methods in the CPI: an application to consumer durables and apparel. |
| | | Brent R. Moulton, Timothy J. LaFleur, and Karin E. Moses, Research on Improved Quality Adjustment in the CPI: The Case of Televisions. |
| | | Arja Kinnunen, Hedonic method is practicable in CPI compilation. |
| | | Don Sellwood, Constraining unwarranted variations in sampling and quality adjustment practices in the construction of CPI elementary aggregates. |
| | Session 3: Sampling and elementary aggregates | Bert M. Balk, On the Use of Unit Value Indices as Consumer Price Subindices. |
| | | By Jörgen Dalén, On the statistical objective of a Laspeyres' price index. |
| | | Fenwick, The Impact of Sample Design on the Performance of the Sample Geometric Mean and Related Issues. |
| | | William J. Hawkes, The Use of Scanner Data in Reconciling Time-series (Consumer Price Index) and Geographic (Place-to-Place) Price Comparisons. |
| | | Jack E. Triplett, Elementary Indexes for a Consumer Price Index. |
| | Session 4: Aggregation | Rósmundur Guðnason, Comparison of different sources for CPI weights: Consumers bar-code cash receipts vs supermarkets scanning data. |
| | | Marshall B. Reinsdorf, Divisia Indexes and the Representative Consumer Problem. |
| | | Bohdan Schultz (Szulc), Effects of Using Various Macro-index Formulae in Longitudinal Price and Volume Comparisons, Canadian Empirical Studies. |
| | | Ralph Turvey, Months versus Years. |
| | Session 5: Index purpose, definition and scope | Luigi Biggeri, Consumer Price Indices: Purposes and definitions, A useful general approach to the construction of the indices and some measures of the divergences between them. |
| | | Yoel Finkel and Israel Givol, The Consumer Price Index Development Project in Israel: An Integrated Approach. |
| | | Tomohiko Sato, Outlet Sampling Method on the 1997 National Survey of Prices. |

| | | Mariana Schkolnik, Francisco Ruiz, Gunter Hintze, Francisco Meneses, Paula Jara, and Cristóbal Videla-Hintze, The New Chilean CPI. |
|---|---|---|
| | | Helen Stott, The CPI purpose and definition - the Australasian Debate. |
| 5. Reykjavik | Session 1: Treatment of quality change in price indices for durable goods | Greenlees, Fixler, Lane and Fortuna: The Use of Hedonic Regressions to Handle Quality Change: The Experience in the U.S. CPI |
| | | Hoffmann: The Treatment of Quality Changes in the German Consumer Price Index |
| | | Hoven: Some observations on quality adjustment in the Netherlands |
| | | Lacroix and Bascher: Dish-washers and PCs in the French CPI: hedonic modeling, from design to practice |
| | | Lowe: The use of the regression approach to quality change for durables in Canada |
| | | Sandberg: Quality adjustments and capital goods |
| | | Schultz: Alternative estimates of price change for private transportation |
| | | Sellwood: Quality Change a Statistical Approach |
| | | Silver and Heravi: The Measurement of Quality-Adjusted Price Changes |
| | Session 2: Different concepts of price indices serving different purposes | Balk: On Curing the CPI's Substitution and New Goods Bias |
| | | Dalén: A proposal for a new system of aggreation in the Swedish Consumer Price Index |
| | | Diewert: The Consumer Price Index and Index Number Purpose |
| | | Fenwick: The impact of choice of base month on the relative performance of different formulae used for aggregation of Consumer Price Index data at an elementary aggregate level |
| | | Triplett: Should the Cost-of-Living Index Provide the Conceptual Framework for a Consumer Price Index? |
| | | Turvey: True Cost of Living Indexes |
| | Session 3: The planned revision of the ILO manual | Obst: Draft Chapter Outline for the Revised CPI Manual |
| | | TEG: Development of International Handbook on Consumer Price Indices |
| | | Turvey: CPI Terminology. First draft which has not yet been discussed with Eurostat |
| 6. Canberra | Session 1: Quality adjustment and scanner data | Timo Koskimäki and Yrjö Vartia, Beyond matched pairs and Griliches-type hedonic methods for controlling quality changes in CPI sub-indices: Mathematical considerations and empirical examples on the use of linear and non-linear models with time-dependent quality parameters |
| | | Eunjeong Lee, How to Reflect Quality Change in the CPI: The Case of Korea |
| | | Ben Bode and Jan van Dalen, Quality-corrected price indexes of new passenger cars in the Netherlands, 1990-1999 |
| | | Masato Okamoto and Tomohiko Satou, Comparison of Hedonic Method and Matched Models Using Scanner Data: The Case of PCs, TVs, and Digital Cameras |
| | | Mick Silver and Saeed Heravi, Quality Adjustment, Sample Rotation and CPI practice: An Experiment |

| | | David Fenwick, Adrian Ball, Peter Morgan and Mick Silver, Sampling in Consumer Price Indices: what role for scanner data? |
|---|---|---|
| | | David H. Richardson, Scanner Indexes for the CPI |
| | | Don Sellwood, Improving Quality Adjustment in Practice |
| | | Erwin Diewert, Hedonic regressions: a consumer theory approach |
| | | Malti Jain and Joanne Caddy, Using scanner data to explore unit value indexes (Room document) |
| | | Malti Jain and Ruel Abello, Construction of Price Indexes and Exploration of Biases Using Scanner Data (Room document) |
| | Session 2: New and disappearing goods | Eddy Opperdoes, Some Empirical Experiments with CES Functions |
| | | Jan de Haan, Generalised Fisher Price Indexes and the Use of Scanner Data in the CPI |
| | | Walter Lane, Addressing the New Goods Problem in the Consumer Price Index |
| | Session 3: Financial services | Dennis Fixler and Kimberly D. Zieschang, Price Indices for Financial Services |
| | | Keith Woolford, Financial Services in the Consumer Price Index |
| | | Stephen Frost, The construction of price indexes for deposit and loan facilities |
| | | U.S. Bureau of Labor Statistics, Direct Pricing of Health Insurance in the Consumer Price Index |
| | Session 4: Miscellaneous areas of new or ongoing research | Jörgen Dalén, Statistical targets for price indexes in dynamic universes |
| | | Masato Okamoto, Midpoint-year Basket Index as a Practical Approximation to Superlative Index |
| | | Bohdan Schultz, User-cost Approach to the Estimation of Price Change for Private Transportation, Experimental study in the spirit of the Cost-of-Living Index |
| | | Paul Haschka, Market Liberalisation in the Austrian CPI/HICP |
| | Session 5: Telecommunication services | Prapa Puntumeka and Aree Orapin, Mobile Phone Services in Thailand Consumer Price Index |
| | | Yoel Finkel and Merav Oren, Price Indices for Telecommunication Services in the Israeli CPI |
| | | Dennis Fixler, John S. Greenlees and Walter F. Lane, Telecommunications Indexes in the U.S. Consumer Price Index |
| | | Thierry Lacroix and François Magnien, Methodology for constructing a price index for mobile-telephony services |
| | | Kam Yu, Trends in Internet Access Prices in Canada |
| | | Monica Montella, Franco Mostacci and Gualtiero Zanolini, Consumer Price Indexes for Telecommunication Services in Italy: Work in Progress |
| | | Rosmundur Guðnason, Telecommunications services in the CPI - a quantity approach |
| | | Irmtraud Beuerlein, The German Consumer Price Index for Telecommunication Services: A User Profile Approach for Mobile Telephony and Internet Access |
| 7. Paris | Session 1: Coping with changing to complex pricing schemes | Paul Haschka, Simple Methods of Explicit QA for Services in Complex Pricing Schemes |
| | | Alina Gluchowska, Pricing some complex products for the CPI needs (based on the Polish practice) |

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| | | Françoise Le Gallo and François Magnien, Measuring the price change of mobile phone services: an arduous task |
| | Session 2: Use of hedonic regression | Jan de Haan, Direct and indirect Time Dummy Approaches to Hedonic Price Measurement |
| | | Erwin Diewert, Hedonic Regressions: A Review of Some Unresolved Issues |
| | | Heymerik van der Grient and Jan de Haan, An Almost Ideal Hedonic Price Index for Televisions (Room Document) |
| | | Masato Okamoto, Comparison of Hedonic Indices Compiled using Different Types of Weights (Room document) |
| | | Mick Silver, The Use of Weights in Hedonic Regressions: the measurement of Quality-Adjusted Price Changes (Room document) |
| | Session 3: Elementary aggregation, superlative indexes | Bert M. Balk, Price Indexes for Elementary Aggregates: The Sampling Approach |
| | | Mick Silver and Saeed Heravi, Why Price Index Number Formulae Differ: Economic Theory and Evidence on Price Dispersion |
| | | Robert Cage, John Greenlees and Patrick Jackman, Introducing the Chained Consumer Price Index |
| | Session 4: Financial services including insurances | Lionel Viglino, Insurance and quality adjustment: excess and option-cost method |
| | | Martin Ribe, Financial Services in Swedish Price Indices |
| | Session 5: New products, substitution between products and outlets | Timo Koskimäki and Mari Ylä-Jarkko, Segmented Markets and CPI Elementary Classifications |
| | | Rosmundur Guðnason, How do we measure inflation? Some measurement problems |
| | | Alexandre Makararonidis, On the treatment of newly significant goods and services in the HICP |
| | Session 6: E-commerce | David Fenwick, Anna Brueton and Adrian Ball, Internet retail channels in Price Indices: the challenges involved in including non-traditional retailers in the UK Retail Prices Index |
| | | Yoel Finkel and Merav Yiftach, E-commerce in the Israeli CPI |
| | | Robin Lowe, E-commerce and consumer behaviour |
| | | Masato Okamoto and Eiji Nitta, The Present Situation of E-Commerce and a Pilot Survey on E-Commerce |
| | | Andrea Grcman and Keith Woolford, E-commerce and Data Capture Opportunities for Price Indexes |
| | Session 7: ILO activities on CPIs | International Labour Office, Proposals for a draft resolution concerning Consumer Price Indices |
| 8. Helsinki | Session 1: Price Indices for Services | George Beelen, Should a CPI attempt to hold all risk factors constant in pricing non-life insurance services |
| | | Adrian Ball and David Fenwick, Costing mobile telephone calls: the use of constrained user profiles |
| | | Keith Woolford, Experimental Price Indexes for Financial Services |
| | Session 2: Relationships between consumer price indices and other statistical systems | Nobuyuki Sakashita and Makoto Shimizu, CPI and Household Income Expenditure under deflationary trend |
| | | Heikki Pursiainen, The algebraic interpretation of consistency in aggregation and quasilinear index numbers |
| | Session 3: Housing | Erwin Diewert, The Treatment of Owner Occupied Housing and Other Durables in a Consumer Price Index |

| | | Rósmundur Guönason, Simple User Cost and Rentals |
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| | | Randi Johannessen, Owner occupied housing in the Norwegian CPI |
| | | Eugen Koev, Combining Classification and Hedonic Quality adjustment in Constructing a House Price Index |
| | | Stefan Linz and Timm Behrmann, Using Hedonic Pricing for the German House Price Index |
| | Session 4: Quality Control of price index production processes | Anders Norberg, Comparison of Variance Estimators for the Consumer Price Index |
| | | David Fenwick, Adrian Ball and Jay Beaven, The Quality Adjustment Matrix: a novel and strategic approach to the quality measurement issue and the application of methods for the a priori identification of those items in a Consumer Price Index where hedonic quality adjustment can be used to best effect |
| | | Yoel Finkel and Dorit Zioni, Automization in the CPI, Quality Assurance and EFQM |
| | | Rolf Boesch and Corrine Becker Vermeulen, Quality assurance of the Swiss consumer price index |
| | Session 5: Other Issues | Mick Silver, The difference between hedonic imputation indexes and the time dummy hedonic indexes for desktop pcs |
| | | Jan De Haan, Time dummy hedonic index as a specific case of Törnqvist index |
| | | Kari Manninen, The Effects of the Quality Adjustment Method on Price Indices for Digital Cameras |
| 9. London | Session 1: Families of indices | Christine Wirtz and Mariagnese Branchi: Family of indices - estimating the impact of government measures on the HICP for the euro area and the EU |
| | | Peter Hill: Household production, consumption and CPIs |
| | | Matthew Powell: Applying the index family concept in practice - tracing price changes through the retail sector |
| | | Carsten Hansen: Price updating of weights in the CPI |
| | | Walter Lane and Mary Lynn Schmidt: Comparing inflation between United states and Europe using the methods of the European Union's Harmonised Index of Consumer Prices |
| | Session 2: Housing costs | Keith Woolford (presented by Merry Branson): An exploration of alternative treatments of owner-occupied housing in a CPI |
| | | Anders Klevmarken: Towards an applicable true cost-of-living index that incorporates housing |
| | | Timo Koskimaki: Options for the organisation of rent surveys |
| | | Marc Prud'homme, Andrew Baldwin and Alice Nakamura: An empirical analysis of the different concepts for owned accommodation in the Canadian CPI: The case of Ottawa, 1996-2005 |
| | | Makoto Shimizu: Review of the prices of rents and owner-occupied houses in Japan |
| | | Rosmundur Guonason: Market prices, house price indices and flow of services methods |
| | Session 3: Services | Corinne Becker: Recent developments in the Swiss CPI - Scanner data, telecommunications and health price collection |
| | | Alexandra Beisteiner: Measuring prices for telecommunication services in Austria |

| | | Dennis Fixler: Financial service prices - discusses the incorporation of financial services into a CPI |
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| | Session 4: Healthcare | Grietje van Haren, Foske Kleima and Jan de Haan: The CPI and the new Dutch Health Care System |
| | Session 5: Measuring quality change | Stefan Linz: Hardware, software, network effects - what's the price for using computers? |
| | | Kari Manninen: Hedonic regressions - a transaction economy |
| | | Peter Moran: Applying hedonics in practice: Analysis of US and UK methods for Flat Panel Televisions |
| | Session 6: Measuring the statistical quality of indices | David Fenwick: Real world quality measures |
| | | Mick Silver: Why elementary price index number formulas differ - price dispersion and product heterogeneity |
| | Session 7: Other issues | Jorgen Dalen: Spatial price comparisons in poverty measurement |
| | | Yoel Finkel: CPI - Measuring across households |
| | | Bert Balk: Measuring and decomposing rates of inflation derived from annually chained Lowe Indices |
| | | Wendy Wusan Xi: Vector based price index |

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