Report of the 14th meeting of the Ottawa Group on Price Indices

Prepared by the Ottawa Group on Price Indices

14th meeting of the Ottawa Group
on Price Indices

Hosted by Statistics Bureau of Japan

20th to 22nd May, 2015

14th Meeting of Ottawa Group on Price Indices
Urayasu City, Japan, 20 May 2015

Introduction

The 14th Meeting of the Ottawa Group on Price Indices was hosted by Statistics Bureau of Japan, in Urayasu city, from 20th to 22nd May, 2015. It was attended by 63 participants from 28 national statistics offices, 9 academic organizations and 10 international organizations.

Further background on the Ottawa Group, including the Terms of Reference and Governance arrangements can be found on:

http://www.ottawagroup.org/ottawa/ottawagroup.nsf/home/About%20us

The fourteenth meeting: Summary

The papers submitted for discussion at the meeting were grouped into six topics and eleven sessions. The sessions and session chairs are shown in below.

- Topic 1 - Alternate data sources and Index number formula
  - Session 1 - Scanner Data and Alternative Elementary Indexes
    Chair: Marcel van Kints
  - Session 2 - Online Prices and Web Scraping
    Chair: Tsutomu Watanabe
  - Session 3 - Scanner Data and New Methods for Constructing Indexes
    Chair: Corinne Becker
  - Session 4 - Topic in Index Construction
    Chair: Patrick Sillard
- Topic 2 - Compiling Property Price Indexes
  - Session 5 - Housing Price Indexes and Rental Price Indexes
    Chair: Chihiro Shimizu
  - Session 6 - Property Price Indexes
    Chair: Kevin Fox
- Topic 3 - Price statistics that meet multiple user needs
  - Session 7 - Integrated Price Statistics and Measuring Regional Growth and Inflation
    Chair: David Fenwick
- Topic 4 - Quality adjustment
  - Session 8 - New Methods for Quality Adjustment
    Chair: Derek Bird
- Topic 5 - Pricing seasonal products
  - Session 9 - The Treatment of Seasonal Data in CPI
    Chair: Claude Lamboray
- Topic 6 - Other topics

> ➢ Session 10 - Topic in Price Measurement
>
> Chair: Bert Balk
>
> ➢ Session 11 - Topic in Price Measurement
>
> Chair Satoshi Imai

<div align="center">(Textual quotation)</div>

28 papers were presented for discussion and 7 papers were submitted as room documents. The key points emerging from each session are given in the Chairperson's summary notes at Annex A.

Annex B shows summary of evaluation from participants and evaluation notes. Generally, the 14th meeting is evaluated favorably but we had some suggestive feedbacks. The 14th meeting introduced two operational options; the document share web site and the live streaming. These options contributed somewhat to success of the meeting. The Ottawa Group steering committee contributed important part of planning the 14th meeting. Also session chairs led sessions appropriately and punctually during the process of the meeting. The authors submitted worthful papers and the participants contributed fruitful discussions and feedbacks.

The next meeting

The next Ottawa Group meeting will be hosted by the Deutsche Bundesbank and will be held in 10 to 12 May 2017.

Possible topics for discussion at the next meeting are:

- New data sources (scanner/transaction data & Big Data, quality adjustment)
- Challenging areas of measurement (e.g. commercial property, services)
- Conceptual frameworks (target indices, reconciling upper and lower levels)
- Treatment of special cases (strongly seasonal commodities, zero prices)

According to the evaluation of 14th meeting, new data source and quality adjustment will continues to take the important place of topic. Topic for strongly seasonal commodities will be expected that NSOs share more practical experiences.

Satoshi Imai

Chief, Ottawa Group 2015 secretariat

Statistics Bureau of Japan

Annex B: Chairperson's summary notes

Topic 1: Alternate data sources and Index number formula

Session 1: Scanner Data and Alternative Elementary Indexes

Chairperson: Marcel van Kints

Presented papers

There were three papers for presentation.

- "New evidence on elementary index bias" Enikö Gábor and Philip Vermeulen
- "A modification of the GEKS index when product turnover is high" Claude Lamboray and Frances Krsinich
- "Consumer Price Index Biases -Elementary Index Biases vs. Sampling Biases" Satoshi Imai, Erwin Diewert and Chihiro Shimizu

There was one room document.

- "Towards a generic price index method for scanner data in the Dutch CPI" Antonio Chessa

<u>Summary</u>

The opening session on Scanner data and alternate elementary indexes focused attention on the challenges and opportunities presented by scanner data to compile the CPI. The presented papers and discussion focused on (1) an examination of bias at the elementary index level and the use of scanner data to measure and address this bias; and (2) the development of new methods to compile price indexes using scanner data, especially when product turnover is high. The discussion concluded that scanner data requires new index methods for compiling the CPI and this presents significant opportunities and challenges for National Statistical Offices.

<u>Detailed record of session</u>

The first paper by Gabor and Vermeulen presented their findings on 'New evidence on elementary index bias.'

There are a variety of index formulas available to NSOs to compile the CPI at the lower levels (elementary aggregate) level. However, the unavailability of expenditure information means that elementary price indexes are generally constructed using price information only. The availability of scanner data, containing both prices and quantities, to compile official statistics allows the use of a variety of index number formulas at the elementary index level. Gabor and Vermeulen compute product category level elementary price indexes using nine different index formulas (Carli, Dutot, Jevons, Laspeyres, Paasche, Fisher Ideal, Lowe, Geometric Lowe and expenditure weighted Jevons). Measured inflation outcomes of the different elementary price index formulas are compared with the Fisher Ideal index.

The main findings are that across product categories, mean levels of annual elementary index bias vary between -0.53 percentage points and 0.55 percentage points depending on the index. A shift towards the use of cost of living indexes at the product category level would therefore have non-negligible effects on measured product category inflation. In addition, this research shows the opportunities scanner data presents to enhance the quality of official

statistics.

The second paper by Lamboray and Krisinich presented on 'A modification of the GEKS index when product turnover is high.' The availability of scanner data has led to new methods being developed for price measurement. This is, in part, because, high levels of product turnover mean that direct superlative indexes become quickly unrepresentative, and volatile prices and quantities cause high-frequency superlative indexes to suffer from chain-drift.

New methods developed to-date (for example, the Rolling Year (RY) GEKS of Ivancic et al (2011)) have focused on a matched model approach. However, scanner data often suffers from high product turnover which poses calculation difficulties for this traditional approach. Consumer electronics data is a good example of high product turnover, due to rapid technological change. Data for these types of products generally also have limited product characteristics so regression modelling is not possible. The authors therefore investigated a modification of the GEKS formula (called the 'intersection GEKS' (intGEKS) index) to deal with its asymmetry in the case of product turnover, and a lack of product characteristics.

The intGEKS is defined as a chained index and so, unlike the GEKS, the intGEKS is not transitive. Empirically though, the authors show that the chain-drift of the intGEKS is insignificant for the eight consumer electronics products analysed. Arguably, transitivity is a less relevant or desirable property in the presence of high product turnover such as we find for these consumer electronics products.

The intGEKS may therefore be a viable method for products where we have scanner data with no characteristics. Although it doesn't reflect the implicit price movements of new/disappearing products, this bias appears to be less significant than previously thought; and the intGEKS requires no regression modelling and may be easier to explain and/or justify to users.

The third paper by Satoshi Imai, Erwin Diewert and Chihiro Shimizu discussed "Consumer Price Index Biases -Elementary Index Biases vs. Sampling Biases".

This paper examined both sampling bias and index formulae bias in the calculation of the Consumer Price Index (CPI). The authors used scanner data for nine types of elementary indices and three types of aggregation formulae to price groups sampled using four different methodologies (two types of sample size, two types of product variation) and compared the differences between the various indices. The obtained results made it clear that considerable biases may result based on the price sampling method in addition to the effect of the calculation formula on the elementary index. Furthermore, even if the same formula and the same sampling method are used, considerable biases may result based on the sample size. These findings suggest the importance of weighting and selection of the number of representative products in order to construct more accurate indices.

Session 2: Online Prices and Web Scraping

Chairperson: Tsutomu Watanabe

Presented papers

There were four papers for presentation.

- "The use of online prices in the Norwegian Consumer Price Index" Ragnhild Nygaard
- "Automatic data collection on the Internet (web scraping)" Ingolf Boettcher
- "Price indexes from online data using the fixed-effects window-splice (FEWS) index" Frances Krsinich
- "Are Online and Offline Prices Different?" Alberto Cavallo

In the first paper, Ragnhild Nygaard explained how Statistics Norway has been developing methodologies to collect and handle online data in the construction of their CPI/HICP. The summary of the paper is as follows. Ordering and buying goods or services for private use over the internet is increasing in popularity. The Nordic consumers are among those who shop the most online. During the last ten years ecommerce has changed from a phenomenon for the few to something almost every Norwegian is familiar to. And the e-commerce is growing fast. This paper starts by giving a general overview of the e-commerce in Norway. As the internet is an increasingly important purchaser channel it is important that a representative and relevant CPI/HICP has adequate coverage of online purchases. This paper therefore also looks into how Statistics Norway is working in order to increase the share of online prices in the CPI/HICP as well as the efforts for making efficient online data collection. Up until today prices collected online for the Norwegian CPI/HICP have been collected manually, thus a resource demanding process. Now Statistics Norway is testing and making use of data extraction techniques. In this paper we'll present our experiences with web scraping in addition to some preliminary calculations and conclusions based on collected online data.

In the second paper, Ingolf Boettcher explained how Statistics Austria has been developing methodologies to collect and handle online data in the construction of their CPI. The summary of the paper is as follows. Currently, Statistical Institutes staff members in Statistics Austria manually collect already a significant amount of data on the internet. The growing importance of online trading requires even more price collection from the internet. Budgetary constraints, however, call for a more efficient deployment of existing human resources to master the additional work load. Automatic price collection can, at the same time, support this objective and achieve higher quality price statistics. Nevertheless, legal (permission to crawl on private websites), technological (increased exposure of IT-system to potentially dangerous internet contents), human (need for IT-training), budgetary (implementing and maintenance costs) issues need to be taken into account when deciding on using this new data collection method. The usage of automatic price collection on the internet as a new data collection method is a two-year project of Statistics Austria's Consumer Price Statistics department. The two year project is supported by a Eurostat Grant and part of the activities to modernize price statistics.

In the third paper, Frances Krsinich presented results from applying the fixed-effects window-splice (FEWS) index to online data collected by PriceStats for a range of New Zealand retailers. The summary of the paper is as follows.

Automated web-scraping of online data gives the potential for timely and high-frequency price measurement. Two key limitations of online data, however, are that it lacks both quantities and characteristics. Krsinich (2014) showed that the fixed-effects index is equivalent to a fully-interacted time dummy hedonic index based on all product characteristics, and that the 'window-splice' implicitly revises the index so that the price movements associated with the introduction of new products are reflected in the index with one period's lag. This paper presents results from applying the fixed-effects window-splice (FEWS) index to online data collected by PriceStats for a range of New Zealand retailers. We also simulate the effect of not including quantities in the indexes for consumer electronics and supermarket products, using scanner data.

In the fourth paper, Alberto Cavallo presented empirical results on the difference between online and offline prices for a set of products. The summary of the paper is as follows. Prices collected online are increasingly being used for price indices and academic research. However, online prices have only been validated by comparing price indices (for example, BPP vs CPI). This paper tries to answer a simple question: is the price collected on a retailer's website the same that can be obtained in a physical store? We find the following. Prices collected online and offline are very similar in most countries. In terms of price levels, approximately 70% are identical prices. In terms of price changes, the timing of prices changes is different between online and offline prices, but the frequency and size of price changes are the same. Results in this paper are lower-bounds for similarity (imperfect matching, zip code differences, etc). We also find substantial differences across retailers. It is important to test for potential biases, particularly in papers/applications with few retailers.

Participants made various comments to the four papers. The issues discussed include the following.

● Prices listed in websites may not necessarily be the prices of goods that sell well. Clearly sellers have incentives to post prices for those goods that do not sell well. By doing that, those goods are more visible to consumers. In this sense, prices listed in websites may not be so informative. We need information on the quantity sold, which will be useful to pick goods that sell well. Scanner data may be a source of such information.

● In websites, we have more prices than transactions. This means that most of prices listed in websites are with no transactions. This is a serious issue for online data. We should respect a principle that CPI should be constructed based on transaction prices rather than offer prices, and, in this sense, transaction prices should be the main data source while online price data will be nothing but a second option.

● The specification adopted in the Krsinich paper is "log price_i = product specific term + time dummy + disturbance term". An important assumption made by her is that the product specific term is non-stochastic and constant over time. However, the product specific term is a linear combination of demand and supply shocks. So, it may be okay to assume that supply shocks are non-stochastic and constant, but it is a too strong assumption that demand shocks are non-stochastic and constant. The product specific term should be assumed to be stochastic, which means that the paper should employ a random effect model rather than a fixed effect model.

Session 3: Scanner Data and New Methods for Constructing Indexes

Chairperson: Corinne Becker

Presented papers

There were three papers for presentation.

- "Replicating Japanese CPI Using Scanner Data" Satoshi Imai and Tsutomu Watanabe
- "Using transactions data to enhance the Australian CPI" Alexander Howard, Kristan Dunford, John Jones, Marcel van Kints and Kristy Naylor
- "Price Discounts and the Measurement of Inflation" Kevin Fox and Iqbal Syed

There was one room document.

- "Rolling Year Time Dummy Indexes and the Choice of Splicing Method" Jan de Haan

Scanner data is an extensive source of information. It can be used as a direct source for sampling and for price collection or as a data bank allowing research in different fields.

The use of scanner data instead of a "traditional" price collection on the field may bring different results. The Bureau of Statistics Japan and the University of Tokyo conducted a research in replicating Japanese CPI using scanner data. Apart from the fact that sampling and prices (transaction prices nationwide) are different, they found out that the frequency of substitution may play a crucial role and that inflation based on scanner data may be much more volatile that inflation based on traditional price collection. Nevertheless, according to the study of Australian Bureau of Statistics, scanner data is a great opportunity to maximize the use of transactions data by increasing the size of samples, using quantity information for weighting purposes and using multilateral calculation methods. The implementation of such changes must be made very cautiously and rigorously tested. Scanner data also allows specific analysis for example in the area of sales prices as studied by the University of New South Wales. In a traditional CPI, there is a tendency to underweight sales prices, conducting in bias. It seems that this under weighting problem is constant over time, so the bias is negligible. Finally, scanner data has the potential to improve the way the CPI is compiled using other calculation methods such as superlative aggregation methods like Törnqvist, Fischer, GEKS, RYGEKS or FEWS. In all cases, the use of scanner data should be maximized for analyzing purposes or directly for CPI production. When using scanner data in production, it is very important to well understand and communicate to users the consequences and the impact on the results.

Session 4: Topic in Index Construction

Chairperson: Patrick Sillard

Presented papers

There were four papers for presentation.

- "Applying the daily inflation to forecast the Broad Consumer Price Index (IPCA)" Pedro Ferreira, José Gondin, André Braz and Juliana Carneiro
- "Choice of index number formula and Upper level substitution bias in the Canadian CPI" Ning Huang, Waruna Wimalaratne and Brent Pollard
- "The Effects of the Frequency and Implementation Lag of Basket Updates on the Canadian CPI" Ning Huang, Waruna Wimalaratne and Brent Pollard

- "Estimating Consumer Price Inflation by Household" Jess Diamond, Kota Watanabe and Tsutomu Watanabe

The first paper dealt with daily inflation forecast in Brazil with the SARIMA technique. The authors showed that the application of this technique represents leads to a substantial improvement with respect to the methods currently applied in Brazil.

The second and third papers were are about the Canadian CPI. The first second paper showed shows very nicely that it is possible to approximate the Törnqvist price index, computable a porsteriori, with a real -time price index based on a Lloyd-Moulton or Lent-Dorfman formulae. The second third paper dealt with the optimal frequency of basket updating. The authors showed that the new frequency of two years (instead of 4 before) chosen for the Canadian CPI improves greatly the quality of the index.

The last paper was is about the consistency of perceived inflation, expectation of inflation and actual inflation. The paper is based on information a couple of surveys collected in a consistent way at the level of households. Therefore, this research is of major importance. These first preliminary steps insights show some preliminary ideas very encouraging evidences about the source of traditional disjunctions discrepancies observed between these three statistical indicators.

Topic 2: Compiling Property Price Indexes

Session 5: Housing Price Indexes and Rental Price Indexes

Chairperson: Chihiro Shimizu

Presented papers

There were two papers for presentation.

- "How can we estimate the quality deterioration with time in the rental service of office buildings in Japanese Services Producer Price Index?" Masato Higashi, Masahiro Higo and Aki Ono
- "Analysis of Rent Prices of Rental Housing by Year of Construction" Taiki Tsukamoto

There was one room document.

- "Analytical Consumer Price Indexes for Owned Accommodation" Faouzi Tarkhani

These papers focused on the depreciation rate for property.

Bank of Japan tried to estimate the age effect in considering construction year or cohort effect. In estimating RPPI with repeat sales index, we face same problem when we try to consider the age effect. Time effect and age effect have perfect multi co-linearity. In estimating hedonic equation, we also face same difficulty for age effect, time effect and cohort effect. Three effects have also perfect multi co-linearity. The method proposed by BOJ maybe useful, and will be able to apply for property price indexes.

In second paper, Statistical Bureau of Japan reported the empirical exercise for depreciation rate for housing rent using micro data from "Housing and Land Survey" in 2003, 2008 and 2013. This research is very preliminary stage. SBJ will continue to do research for improvement of depreciation problem in housing rent.

This session has one room session paper from Canada. The title is "Analytical Consumer Price Indexes for owned Accommodation". They estimated alternative indexes to capture for rental services for owner occupied housing. (1)Net purchaser approach, (2) Rental Equivalence approach, (3) Basic user cost, (4) VV user cost which proposed, (5) financial user cost approach and (6) Diewert's user cost approach.

Session 6: Property Price Indexes

Chairperson: Kevin Fox

Presented papers

There were three papers for presentation.

- "New Estimates for the Price of Housing in the Japanese CPI: Nominal Rigidity of Rents" Chihiro Shimizu, Satoshi Imai and Erwin Diewert
- "Using Hedonics to Create Land and Structure Indexes for the Ottawa Condominium Market" Kate Burnett-Isaacs
- "How should we measure residential property prices to inform policy makers?" Jens Mehrhoff

This session consisted of three presentations examining different aspects of understanding property markets and the construction of price indexes.   The first presentation addressed a particular characteristic of the Japanese housing rental market; specifically the fact that rents have hardly moved following property market crises, even when opportunities for adjustment arise through tenant turnover or contract renewal. The presentation highlighted the importance of recognizing the apparent disconnect between rental and property markets in constructing price indexes for policy purposes.   The second presentation provided an application (to the Ottawa condominium market) of a technique to separate land and structure components of property value using a hedonic regression approach. This division is important for both national accounts and price index construction, with the need to explicitly acknowledge that it is only the structure component which depreciates. The presentation addressed econometric estimation issues that arise and highlights remaining data issues that need to be resolved in moving forward with the general application of this kind of methodology. The third presentation demonstrated a formalized "dashboard" approach employed by the German Bundesbank, drawing attention to the need to examine property markets from diverse perspectives in identifying potential macroeconomic risks and structural vulnerabilities relating to developments in property and mortgage markets. Expert commentary on all three presentations provided both technical and practical advice on moving forward with developing the research agendas in this important policy-relevant area.

Session 7: Integrated Price Statistics and Measuring Regional Growth and Inflation

Chairperson: David Fenwick

Presented papers

There were three papers for presentation.

- "On Measuring Regional or Global Growth and Inflation" Prasada Rao, Alicia N. Rambaldi and Bert M. Balk
- "Methodologies of Compiling Consumer Price Indices in Asian Countries" Makiko Ochiai and Daisuke Oda

- "A measure of core inflation based on dynamic hierarchical factor models" Paulo Picchetti

There were two room documents.

- "Communication Mechanisms, accessibility and transparency of the data used in the price indices in Mexico" Jorge A. Reyes-Moreno
- "Experimental Aggregate GCC Consumer Price Change Estimates" Kari Manninen

In the event, the paper by Kari Manninen was also subject to a short presentation.

The paper entitled "On measuring Regional or Global Growth and Inflation" (Prasada Rao, Alicia N. Rambaldi & Bert M. Balk, The University of Queensland & Erasmus University, Rotterdam) generated a great deal of discussion given the analytical potential of the methodology described and the achieved consistency between value, quantity and price developments. A symmetric formula is presented for the calculation of regional or global growth and inflation. The practical application of the methodology continues and it is hoped that further results will be presented at the next meeting of the Ottawa Group in 2017.

Discussion of the paper entitled "Methodologies of Compiling Consumer Price Indices in Asian Countries" (Makiko Ociai & Daisuke Oda, Price Analysis Section, Statistics Bureau of Japan) centred on the different market practices operating in different countries and the relationship between movements in crude oil prices and the corresponding movements in the retail price for petrol and heating oil. The point was made that analysis by the ILO suggested that the relationship between crude oil prices and CPI inflation differed between developing and developed countries. The meeting concluded that the work represented in the paper provided a very useful exploration of one of the external factors affecting inflation and its impact in different countries.

–In response to the paper entitled "A measure of Core Inflation based on dynamic hierarchical factor models" (Paulo Picchetti [Fundacao Getulio Vargos]) the point was made that a decomposition into different groups provided an important input for analytical purposes. The discussion then broadened into a general debate on different core inflation measures.

The final presentation related to the paper entitled "Experimental Aggregate GCC Consumer Price Change Estimates" (Kari Manninen, Statistical Center of Gulf Cooperation Council [GCC-Stat]) and the importance of harmonization of methodology and comparability of the figures between different GCC countries was emphasized. It was agreed that there was a need for a rigorous and harmonized measure of rents given the relative large weights, including for imputed rents.

A Room document was also made available entitled "Communication Mechanisms, accessibility and transparency of the data used in the price indices in Mexico" (Jorge A. Reyes-Moreno, National Institute of Statistics and Geography) and participants were encouraged to send their comments to the author.

The session papers represented a diverse range of issues, all relevant to the computation and analysis of price-related statistics.

Session 8: New Methods for Quality Adjustment
Chairperson: Derek Bird

Presented papers

There were two papers for presentation.

- "Implementation of consumer electronics scanner data in the New Zealand CPI" Frances Krsinich
- "Scanner data and quality adjustment" Patrick Sillard

There was one room document.

- "Quality Adjustment of Second-hand Motor Vehicle – Application of Hedonic Approach in Hong Kong's Consumer Price Index" James L.Y. Cheng

The paper "Implementation of consumer electronics scanner data in the New Zealand CPI" looks at how Statistics New Zealand (SNZ) uses scanner data to measure price change of consumer electronic products and how these are implemented into its CPI. The scanner data, which are purchased from a market research company (GfK), provides information on total monthly sales values and the quantities sold in a range of products in 12 consumer electronic classes.

As the CPI is produced quarterly the paper discusses the limitation that only the first two months of the quarter are available in time for production. SNZ considered four options to cope with this and concluded that estimating an ITRYGEKS index on the first 2 months of the quarter, with complete back data feeding into the estimation was the most suitable approach.

The paper gives a brief outline of developments in the treatment of quality adjustment in scanner data, emphasizing the importance is this aspect in an area of the basket that is constantly and rapidly changing. This work culminated in the development of the ITRYGEKS approach, which was selected given its properties and applicability when there is information on all prices, quantities and a wide range of product attributes available in the data set. The paper notes that other feasible methods are a time dummy hedonic index or 'fixed effects window splice' (FEWS) approach.

For the development of the processing system an iterative approach was taken and since then the processes for analysis and monitoring have evolved and are being developed with the intention that they will align with systems that will underpin SNZ's future 'big data' projects. Prior to introducing the new approach to the index, SNZ deployed a range of communication channels, with appropriate levels of technical detail, to provide assurance to users that the changes were positive ones.

In discussion SNZ was congratulated for moving the topic and methodological development forward with some pace. The importance of producing a series showing the impact of the new methods when compared with existing ones was noted. This was possible in this instance because SNZ purchased data for three years and was able to construct comparative series, which tracked below the existing approach (as expected), but not substantially. A delegate wondered how SNZ had prepared for the possibility of non-delivery of micro data. Frances noted the importance of developing contingencies and in the case of SNZ the solution is to facilitate collection in retail outlets using 'standard' approaches, but it has not proved necessary. Finally the issue of cost was discussed. Frances noted that there was a significant up-front investment needed to ready systems and methods for implementation, but once up and running the approach was affordable and the business case was positive.

The paper "Scanner data and quality adjustment" looks at how Institut National de la Statistique et des Etudes Economiques (INSEE) assesses the importance of quality adjustment for a range of products that are included in a comprehensive scanner data set, which reflects around 30 per cent of the market in France, prior to introducing the data into the French CPI. The paper focusses on using the data to compare different types of quality adjustment when a product becomes unavailable for pricing and a replacement product is chosen. INSEE's analysis aims to emulate the same approach as the one applied for its 'live' CPI. Given the size of the data set a sample was drawn to enable INSEE to generate sample statistics that yield parameters that indicate which approach to quality adjustment is optimal when compared with a benchmark approach, which is defined by a hedonic model, and whether those approaches that are 'sub-optimal' are significantly, statistically, different.

The paper deals with the quality adjustment applied in scanner Data. It compares, on a subset of 13 product families, the results obtained through different techniques of quality adjustment and discusses the advantages and disadvantages of the various techniques with respect to the numerical differences found. INSEE finds that quality adjustment is necessary, since a quality-adjusted price index differs significantly from a non quality-adjusted index. However, the type of quality correction method used is immaterial statistically in respect of the price indices. That said, INSEE also identifies some systematic differences (biases) between the methods of quality adjustment tested. The differences are negligible in terms of the final target index and its accuracy requirement, but if the required accuracy is higher, then the differences between the quality adjustment methods may become material.

In discussion the quality dimension for some of the products considered was questioned, particularly as consumers may not perceive quality change to the same extent as the analysis seemed to suggest. There was not a qualitative answer to this since it would depend on a supplementary survey of consumer perceptions. One delegate asked whether there was evidence of chain drift in the approach proposed by INSEE but the general conclusion was that this would not be an issue with a fixed base, within year approach. Finally, the delegate from the ILO wondered whether scanner data implied a new approach to the selection of replacement products in 'traditional' collections. Patrick confirmed that the analysis presented suggested that this is the case and could be statistically significant, if not materially important at the aggregate level.

There was one room document, from James L.Y. Cheng (Census and Statistics Department, HKSAR Government) "Quality Adjustment of Second-hand Motor Vehicle - Application of Hedonic Approach in Hong Kong's Consumer Price Index".
The paper considers the problem that arises when calculating price relatives of second-hand motor vehicles, when comparing the price for the same brand and model between two reference time points may not account for depreciation perfectly. The paper presents the findings from analysis using hedonic regression models using characteristics, price and time dummy variable methods. It concludes that the hedonic approach is preferred to the matched-model method since it uses data more thoroughly and takes into account the quality characteristics. The method will be monitored in parallel with the current approach with a view to switching to the hedonic approach in

the future.

Session 9: The Treatment of Seasonal Data in CPI
Chairperson: Claude Lamboray
Presented papers
There was one paper for presentation.
- "The new procedure for calculating seasonal items indices in Japanese chained CPI" Shunichi Shimakita

The session on pricing seasonal products included a paper prepared by the Statistics Bureau of Japan. This paper dealt with the planned introduction of fresh food into the Japanese annually chained CPI. The chained CPI is published on a monthly basis and acts as a supplementary price index to the official fixed base CPI. In the chained index, each year, weights are adjusted using the expenditures recorded in the previous year.

For fresh food products which are not available all year round, it was decided to adopt a variable weights approach. The use of monthly weights means that month-on-month changes reflect changes both in prices and in weights. However, it was argued that annual rates and seasonally adjusted monthly rates are in general considered to be more important indicators.

The paper also examined different chaining methods. Either the December month or the entire year was used as the overlap period. Both approaches have advantages and disadvantages. An example of school fees was shown where the application of the annual overlap method would lead to an undesirable price movement between December and January. At the same time, the monthly overlap method may lead to distortions in the chained series because of price bouncing. This can be typically the case when there is a significant seasonality in the data with the prices in the December month sitting well below or above the annual average.

Empirically, it was found that the application of the annual overlap method for fresh food leads to results which are closer to the fixed base index and which are less volatile. Consequently, the decision was made that each year the sub-indices for fresh food will have to be chain-linked using the entire previous year as the overlap period. This contrasts with the current practice in the Japanese chained CPI for products other than fresh food where the previous December month is used as the overlap period.

During the discussion, it was clarified that prices for fresh food items only need to be collected during the month when they are available whereas the chaining is applied to index levels above. Explanations were also provided on how the change in weights and in price reference periods impacts the results of the chained indices. More generally, the discussion highlighted the need for a better understanding of the practical implementations of methods that treat "strong" seasonality.

Session 10: Topic in Price Measurement
Chairperson: Bert Balk

Presented papers

There were two papers for presentation.

- "Consumer Price Index with constant tax - the Swedish approach" Peter Nilsson and Martin Kullendorff
- "Revision of the CPI Items for 2015-base" Eri Hirota

There was one room document.

- "Price Indexes, Political Judgments, and the Challenge of Democratic Control" Thomas Stapleford

The connecting theme of the papers in this session could well be formulated as "CPI and society". The weighting scheme of a CPI provides a picture of the standard-of-living in a certain country at a certain time period. An update of such a weighting scheme and the concomitant basket of representative items thus provide insight into standard-of-living changes over a certain time span. The paper by Eri Hirota (Statistics Bureau of Japan) describes the changes that have taken place in Japan from 2010 to 2015.

Any CPI measures prices as paid by final consumers; that is, including indirect taxes and subsidies. Several parties have an interest in questions such as: what would the effect on the CPI be of a change in the indirect tax and subsidy regime? There are several concepts here, as well as distinct approaches (for instance, top-down or bottom-up). The paper by Peter Nilsson and Martin Kullendorf (Statistics Sweden) describes a particular solution.

Finally, the room document by Thomas A. Stapleford (University of Notre Dame, USA) is about the democratic control over the fundamental choices that must be made in the course of defining and compiling price indices relevant for society. Unfortunately, the author could not attend the meeting to present this highly interesting paper.

Session 11: Topic in Price Measurement

Chairperson: Satoshi Imai

Presented papers

There was one paper for presentation.

- "A Framework for Large Scale Use of Scanner Data in the Dutch CPI" Jan de Haan

This paper explains a framework using scanner data. Especially, explained Regression based indices and quality adjusted unit value indices. Also this paper explains the capability of using online data for CPI and raises issues treating online data with offline data. We can see useful approach when we touch the scanner data. The participants pointed out the issue of class or size for regression in practice. This point has a lot of issues when NSO use regression in practice. And also it is mentioned that theoretical consistency between economic theory and the formulae in these research should be considered.
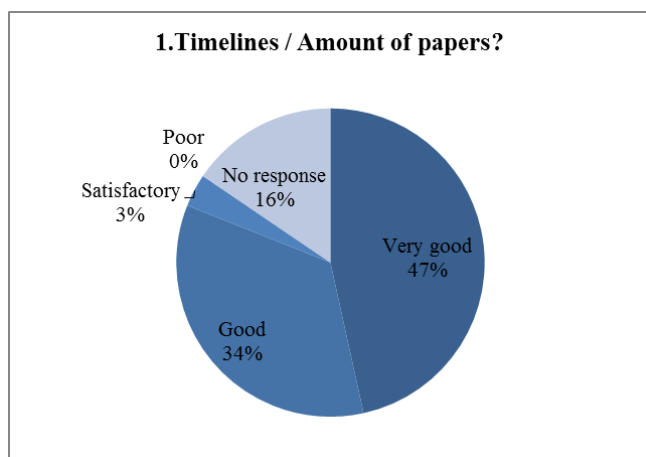
Annex B: Summary of Evaluation Forms

This evaluation excludes officers from Statistics Bureau of Japan.

1. Timelines / Amount of papers?				
Very good	Good	Satisfactory	Poor	No response
27	20	2	0	9
Comments (selected): Quite a lot of papers were ended or revised at a very late stage.				

2. Content of the homepage?				
Very good	Good	Satisfactory	Poor	No response
27	20	3	0	8
Comments (selected): Did not pop up on Google until recently.				
Participant list - hard to remember everyone's name.				

3. Document management site?				
Very good	Good	Satisfactory	Poor	No response
20	19	6	1	12
Comments (selected): It was difficult to download papers.				
Not easily accessible; everything should be on the website.				

4. Meeting venue?				
Very good	Good	Satisfactory	Poor	No response
37	11	2	0	8
Comments (selected):				
Very nice venue but a little bit far from central Tokyo.				

5. Facilities at the venue?				
Very good	Good	Satisfactory	Poor	No response
41	9	0	0	8
Comments (selected): none.				

6. Overall organization?				
Very good	Good	Satisfactory	Poor	No response
45	5	0	0	8
Comments (selected): none:				

7. Overall value of the meeting?				
Very good	Good	Satisfactory	Poor	No response
39	10	1	0	8
Comments (selected): none.				

8. Which topic in the agenda did you find most useful? (more than one allowed)					
Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
38	15	12	26	12	13

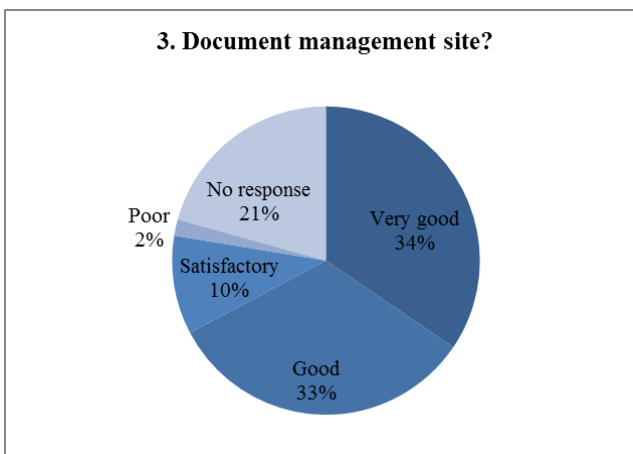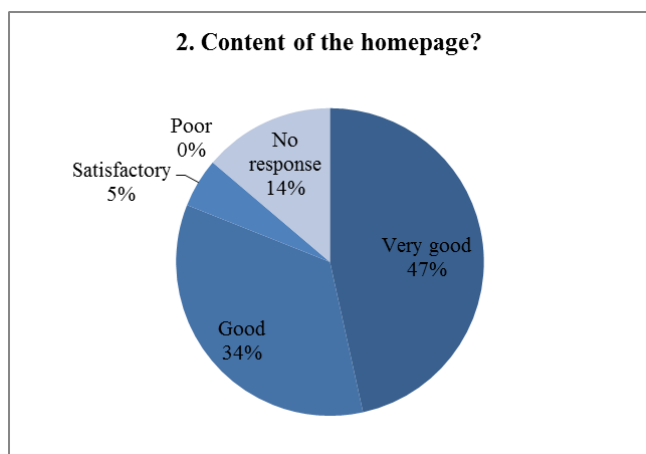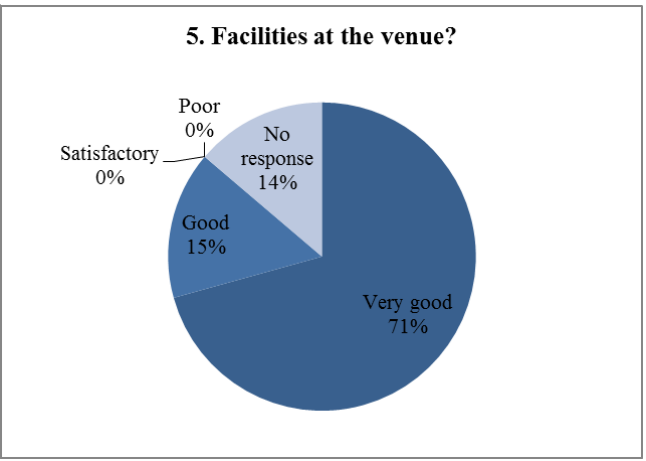| 9. Do you prefer room documents or poster sessions?			
Room documents	Poster sessions	Do not know	No response
17	15	16	10
10. Do you consider live streaming valuable for those who cannot attend?			
Yes	No	Do not know	No response
23	3	22	10
11. How was the division of time between presentations and discussions?			
More time for presentations	More time for discussions	Good balance	No response
4	4	42	8

Assessment

A. Timelines and amount of papers

1.Timelines / Amount of papers?

Poor 0%
Satisfactory 3%
No response 16%
Very good 47%
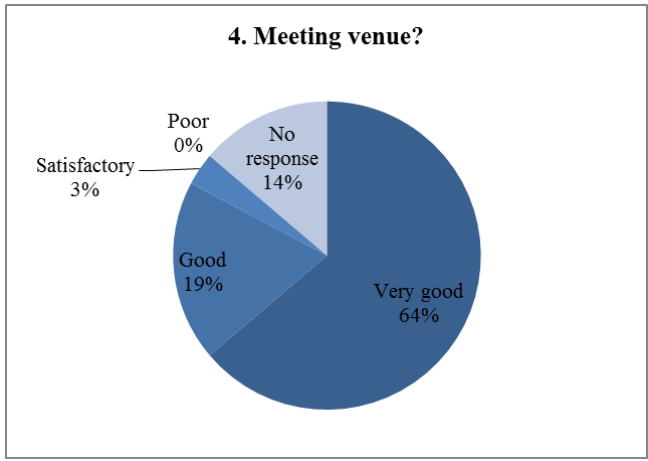Good 34%

35 papers (including 7 room documents) were submitted to this meeting. Number of papers for full presentation was larger than 13th meeting but 13th meeting has large number of poster session papers. Total number was slightly smaller than last meeting. In that sense, participants react positively to the amount of papers. However, some papers extended the deadline. Some participants pointed out that cause inconvenience.
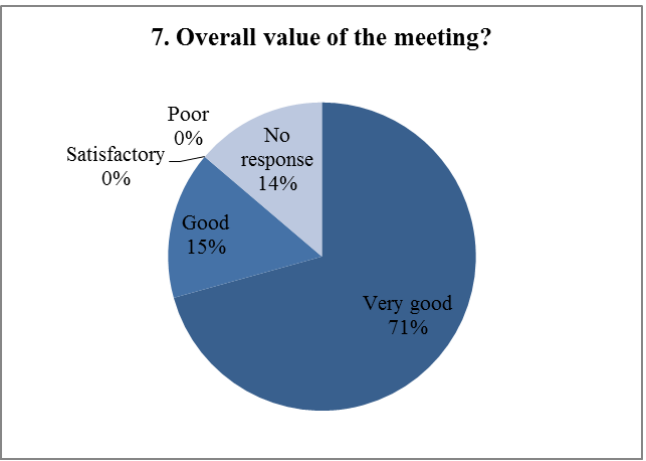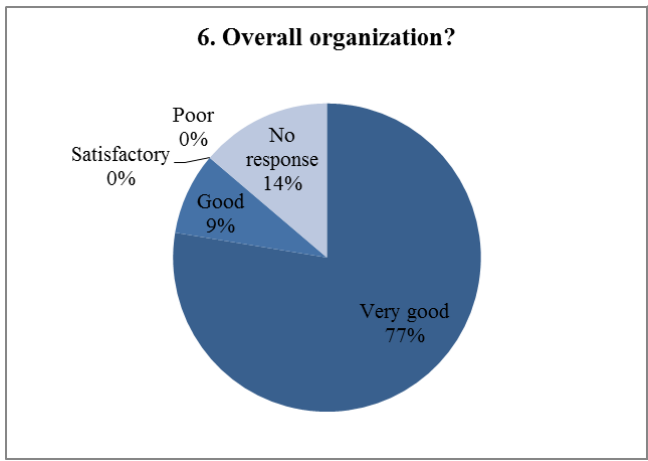
B. Facilities and logistics for meeting

2. Content of the homepage?

Poor 0%
Satisfactory 5%
No response 14%
Very good 47%
Good 34%

3. Document management site?

No response 21%
Poor 2%
Satisfactory 10%
Very good 34%
Good 33%

4. Meeting venue?

- Poor 0%
- Satisfactory 3%
- No response 14%
- Good 19%
- Very good 64%

5. Facilities at the venue?

- Poor 0%
- Satisfactory 0%
- No response 14%
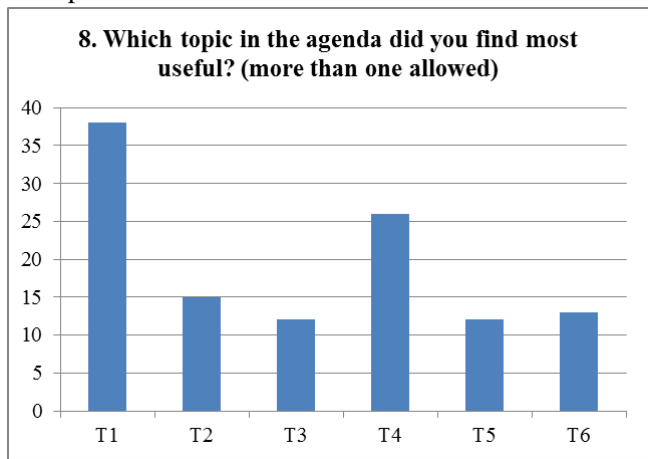- Good 15%
- Very good 71%

Most of participants react positively to facilities and logistics. SBJ introduced the use of document share web site to manage and share papers in this meeting. This use of site was responded favorably by participants but some issues were reminded. This share site is powerful to organizers because it reduced the cost of managing the version of papers but it also cause sloppy management of deadline. By improving these points, the share site is useful for future meeting, too. Some participants indicated that the list of participants should be shared before the meeting.

C. Comprehensive evaluation

6. Overall organization?

- Poor 0%
- Satisfactory 0%
- No response 14%
- Good 9%
- Very good 77%

7. Overall value of the meeting?

- Poor 0%
- Satisfactory 0%
- No response 14%
- Good 15%
- Very good 71%

All of participants react positively to comprehensive evaluation. So some technical or operational issues should be cleared for more improvement.
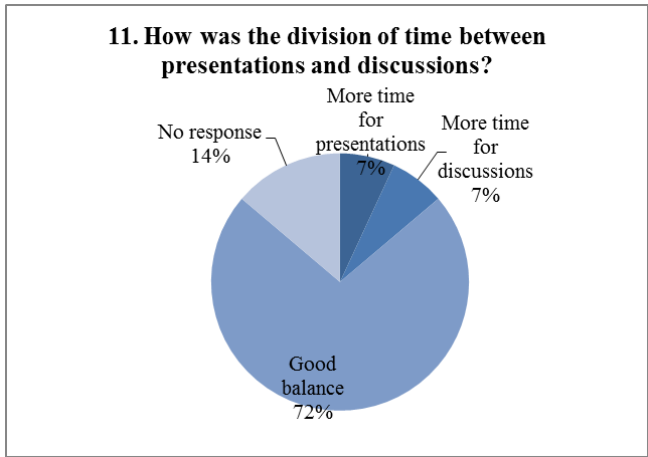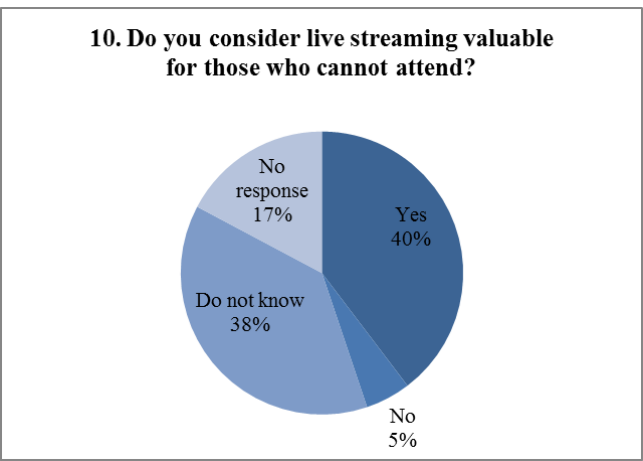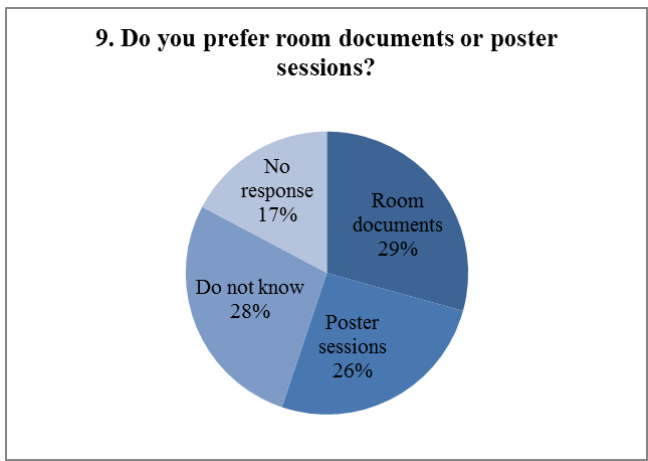
D. Topic evaluation

8. Which topic in the agenda did you find most useful? (more than one allowed)

Most of participants reacted that topic 1 and topic 4 were useful. It may reflect that lots of NSOs keep interest in the use of alternative data source (scanner data, online date, etc.) and also the quality adjustment for new data source is big issue for them.

The meeting should treat these topics continuously.

E. Operation evaluation

9. Do you prefer room documents or poster sessions?

- No response 17%
- Room documents 29%
- Poster sessions 26%
- Do not know 28%

10. Do you consider live streaming valuable for those who cannot attend?

- No response 17%
- Yes 40%
- No 5%
- Do not know 38%

11. How was the division of time between presentations and discussions?

- No response 14%
- More time for presentations 7%
- More time for discussions 7%
- Good balance 72%

In regards to the poster session, the vote shows nearly equivalent. Also newly participated people react "do not know". So the choice of poster session is depend on the number of papers submitted. The poster session is good choice for large number of papers in limited time.

SBJ introduced the live streaming to improve the experience for who cannot attend the meeting. It was entertained favorably by participants. But "do not know" has large share, too because the participants does not viewed the streaming. The live streaming is also good choice for who cannot attend the meeting.

In regards to the division of time, we employed 20 minutes presentation and 5 minutes Q&A time. The participants evaluated this balance was good. In practice, some margins should be set aforetime (in this meeting, mean margin was about 10 minutes for each session).