

The treatment of difficult-to-measure products and services in Japan

Shunichi SHIMAKITA
(Statistics Bureau of Japan)

Outline

- ❑ 2015 Revision and review for Japanese CPI
- ❑ Viewpoints and outline on the review and revision
- ❑ Revised items for adapting economic condition change
- ❑ Elaborated items by review

2015 Revision and review for Japanese CPI

- ❑ Revision of the CPI base period to 2015
- ❑ Weight revision
- ❑ Revision of items (Presented at the Ottawa Group 2015)
- ❑ Release the series including fresh food calculated by chain index not annually but monthly (Presented at the Ottawa Group 2015)
- ❑ Review and revise the calculating method for difficult-to-measure products and services

Difficult-to-measure products and services

- Base
 - Dutot index by municipality
 - Data collected by enumerators
- Compiling indices by special methods (90 / 585 items)
 - Model based estimation
 - Hedonic method
 - Jevons index
 - Web data collection

Viewpoints on the review and revision

- Economic changes in Japan
 - Decreasing household size
 - Aging population
 - Increasing female workers with young children
 - Introduction of IT
 - Preparing for huge disasters
- Improving methods efficiently

Outline of review and revision

□ Revised items for adapting economical condition change

- **Electricity**, Gas supply, Water supply (COICOP 04.4-04.5)
- Cultural services (09.4.2)
- Nutritional supplementary foods (06.1.1)
- **Nursery fees** (12.4)
- Educational services (10)
- **Telecommunication services** (08.3)
- **Digital content** (09)
- Cameras (09.1.2)
- **Insurances connected with the dwellings** (12.5.2)

Outline of review and revision

□ Elaborated items by review

- Services for repair and maintenance of houses (04.3.2)
- Medical and dental services (06.2-06.3)
- **Airline fees** (07.3.3)
- Paper magazines (09.5.2)
- **Package holidays to foreign countries** (09.6)
- Restaurants and cafes (11.1.1)
- **Brand-name handbags** (12.3.2)
- **Insurance connected with the motor cars** (12.5.4)

□ Simplified items by review

- Fees for administrative certificates (12.7)
- Admission fees for sports stadium (09.4.1)
- Refuse collection for recycling durables (04.4.2)

Electricity

□ Current estimation

Consumption amounts	Unit prices
0-120kWh	¥20/kWh
120-300kWh	¥24/kWh
300- kWh	¥26/kWh

- We need to check the price movements for **both light users and heavy users**
- The model cases established by the consumption amount distribution of households, the data for which is provided by the Family Income and Expenditure Survey

Electricity

□ Points of 2015 revise

- Decreased electricity consumption per households due to the decreasing household size

- Persons per households: **2.46**(2010)⇒**2.38**(2015)

- We will revise model consumption amount

	Case 1	Case 2	Case 3	Case 4	Case 5
2010 model	180kWh	270kWh	350kWh	450kWh	700kWh
2015 model	160kWh	250kWh	330kWh	440kWh	720kWh

- We allocate the weights to each case corresponding to the consumption distribution by district, which reflected the differences in household size

Nursery fees

□ Current estimation

- Collect the price of one case in large cities only

□ Points of 2015 revise

- Each local government decides nursery fees considering household income and age of children
- Expanding demands for nursery

	2010	2015
Couple with children under 7 years old	4.40	4.28 million households
Whose female spouse is labor force	1.93	2.30 million households

- We decide to collect various price of model cases including various incomes and cities as multiple ages of children

Cell phone fees

□ Current estimation

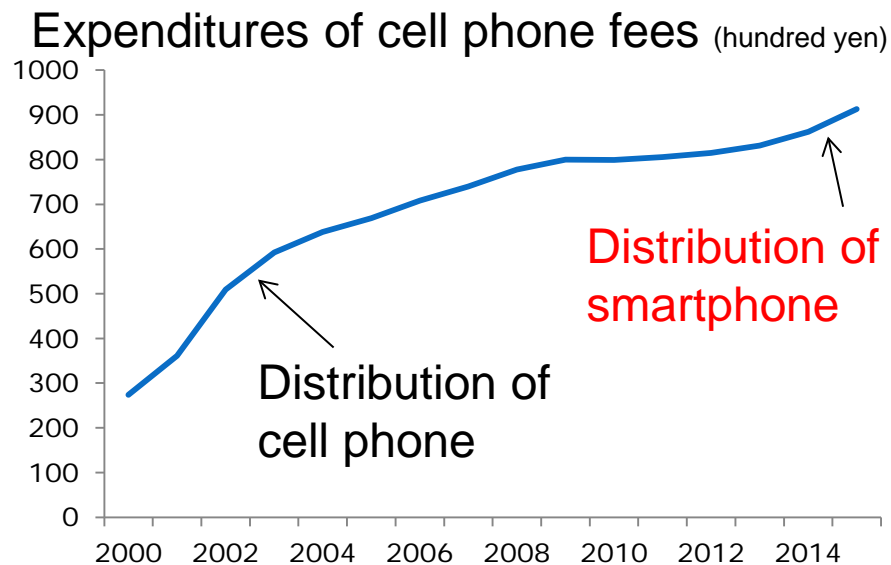
- Cell phone fees depend on
 - Data traffic
 - Talk time
 - Smartphones or older-type mobile phones
- Cell phone carriers provide various price plans
- We **set multiple model cases** (XX GB data uses and YY minutes talk per month)
- In each model case, we **estimated the cheapest fees** and reflected it in the price index

Cell phone fees

□ Points of 2015 revise

■ Expanding weights

913 hundred yen per household in 2015



■ We expand the number of model cases

*We have reflected this issue for current CPI (since price change in Oct. 2015)

■ We revise the setting of model cases (XX GB and YY minutes) reflecting increasing data traffic and decreasing talk time based on temporary household survey

Digital content

□ Current estimation

- We collected the price of music content (charged by each download type) only

□ Points of 2015 revise

- Distribution of smartphones has expanded demand for various digital contents
- We decide to **collect various charges of contents**
 - **Music contents** (both the charged by each download type and charged a constant amount monthly type)
 - **Video distribution on the internet**
 - **Charged application for smartphones**
 - **Digital books**

Insurances connected with dwellings

□ Current estimation

- Collect the service charges for insurance against fire, theft, water damage only

□ Points of 2015 revise

- The huge earthquake in 2011 has caused people to be more aware of preparation for disasters in Japan
- Insurance against earthquake, optional service for fire insurance, are distributed to households in Japan (48.1%(2010)→ 59.3%(2014))
- We decide to collect charge of earthquake insurance

Airline fees

- Current estimation
 - Pricing of airline fees depends on
 - Departure and Arrival location
 - Boarding date
 - Date of reservation and payment
 - We select 10 major airlines
Tokyo-Sapporo, Tokyo-Fukuoka, etc.
 - We estimate the **cheapest fees** among all reservation dates for each airline and each boarding date
 - We survey the fees of **all boarding dates** throughout one month

Airline fees

- Points of 2015 revise
 - Improving representative of collected prices
 - We have collected the prices of flights departing from metropolitan cities to rural cities
 - Many Japanese travel from metropolitan cities to rural cities at the end of Dec. They come back at the beginning of Jan.
 - This causes an underestimation for prices in Jan. due to only detecting cheap vacant flights
 - We will introduce the price collection of flights departing from rural cities to metropolitan cities for half of the surveyed flights
 - Introduction of simplified web-scraping method
 - We collect many price data from airline carriers' websites
 - **Exclude irrelevant data** for ticket prices that couldn't be used to board

Package holidays to foreign countries

□ Current estimation

- We select 6 major destination with weights on the number of Japanese travelers

□ Points of 2015 revise

- Travelers includes persons for business purpose
- We will change the weights and destination based on an estimation for **the number of sightseeing travelers**

□ Next issues

- Expanding collected prices by web-scraping
(as well as “Accommodation services of hotels and inns”)



Insurance connected with the motor cars

□ Current estimation

- We set the model cases depending mainly on the driver's age
- We **ask** the insurance companies to estimate insurance fees in each case (each insurance fee is confidential)

□ Points of 2015 revise

- Insurance fees depend on
 - Age of driving experience
 - Driver's age
 - Experience of accident
 - Possessing car type
- We set multiple model cases regarding various factors

*We have reflected this issue for current CPI (since price change on Oct. 2015)

Introduction the Jevons index

- Brand-name handbags
 - We will expand the surveyed brands from one brand to multiple brands
 - There are large price differences among each brand-name handbag
 - We will introduce the Jevons index for this item

$$I_{t,a} = \frac{P_{t,a}}{P_{0,a}} \quad (1)$$

$$I_t = \prod_a (I_{t,a})^{\frac{1}{n}} \quad (2)$$

Summary

- We reviewed the calculating method for difficult-to-measure products and services
- We reflect the economical changes such as...
 - Decreasing household size for “Electricity, Gas, Water supply”
 - Aging for “Cultural services”, “Nutritional supplementary foods”
 - Increasing female workers with young children for “Nursery fees”
 - Introducing of IT for “Telecommunication”, “Digital contents”
 - Preparing for huge disasters for “Insurance for earthquakes”
- We also improved the method for
 - “Airline fees”, “Package holidays”, etc.
- We will release the revised CPI on Aug. 2016

