



BANK OF JAPAN

**UNECE Workshop on
Statistical Data Collection
October 10-12, 2018**

Compilation Method of the “Wholesale Services Price Index” in Japan



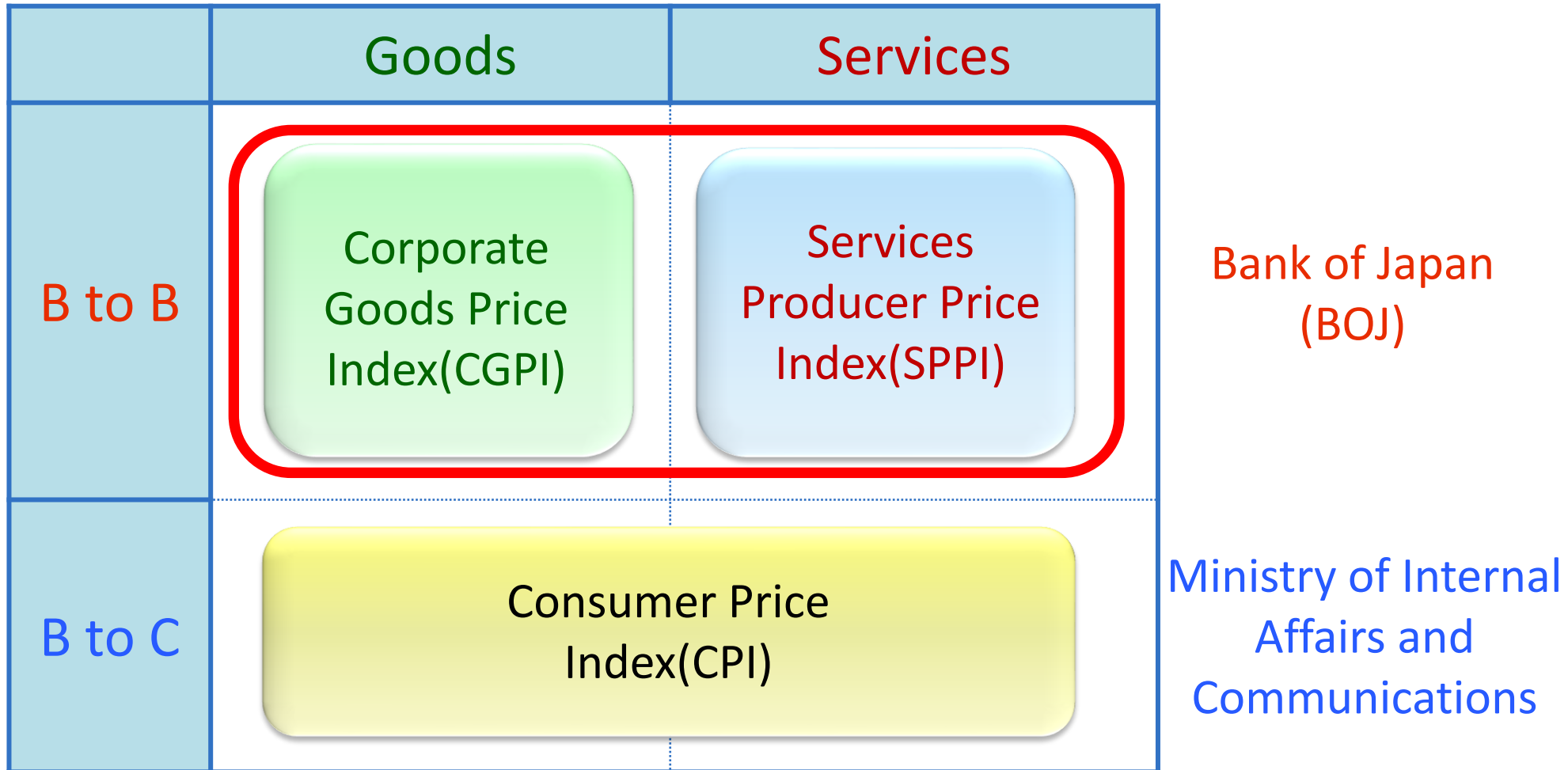
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Price Statistics Compiled by BOJ

Price Indices in Japan



- Bank of Japan compiles CGPI and SPPI, which cover business transactions.



What is a Price Index?

- A price index measures changes in the price of products with constant quality.
- A higher-level price index is calculated as a weighted average of the sample price indices.

(e.g.) Commodity “Television receivers”

		<u>CY 2015 : Base period</u>		<u>Sep 2018 : Current period</u>
Sample A Market share : 30%		200 thousand yen <100.0>	➡	50 thousand yen <25.0>
Sample B Market share : 70%		320 thousand yen <100.0>	➡	240 thousand yen <75.0>
Price index for “Television receivers”		100.0	➡	$25.0 \times 30\% + 75.0 \times 70\%$ = 60.0

Purpose and Application



Purpose and Application

1. Capturing the supply and demand trends in the market

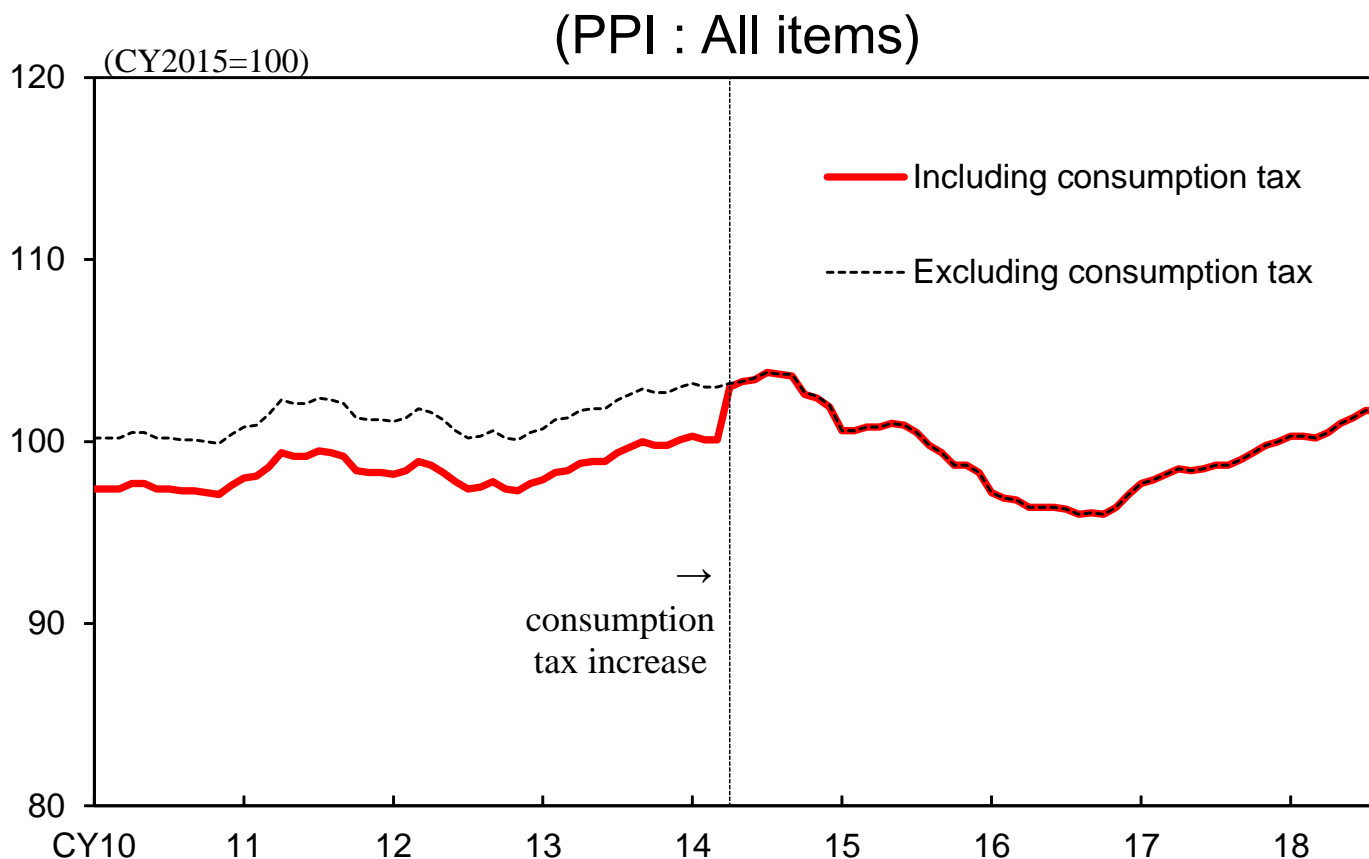
2. Trend predictions of corporate profit/cost, and price pass-through rate

3. Reference for price determination

4. Application in GDP calculation as deflator

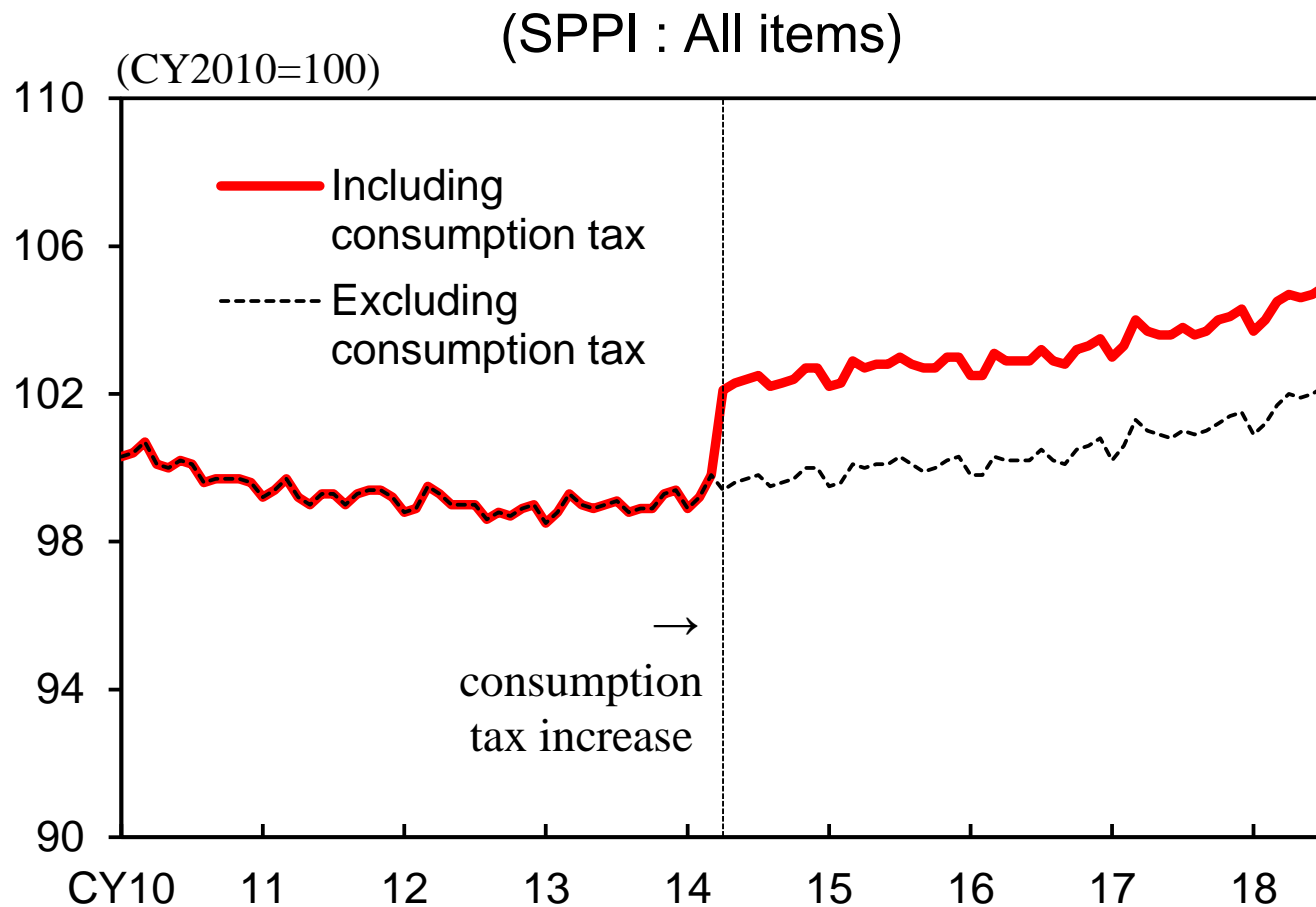
Corporate Goods Price Index

- CGPI consists of the Producer Price Index (PPI), Import Price Index (IPI) and Export Price Index (EPI).
- For PPI, BOJ surveys prices of domestically-produced and domestically-traded goods, at the time of shipment by producers.



Services Producer Price Index

- The Services Producer Price Index (SPPI) measures movements in prices of services traded in the corporate sector.



BOJ Price Statistics Division

- Reporting for CGPI and SPPI is not mandatory for companies (they are not classified as “Fundamental Statistical Surveys”).
- BOJ staff members ask each company for cooperation. The survey response rate is around 95% for CGPI, and 90% for SPPI.

Number of sample prices	Around 8,500 for CGPI Around 3,500 for SPPI
Number of staff members	About 60 staff members including 6 directors (c.f.)The BOJ staff members : 5,000 persons

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Constructing Wholesale Services Price Index

(Note)

- The methodology explained here is subject to change as the Wholesale Services Price Index is currently under development.

Classification and Weights of SPPI

- Japan's SPPI covers wide range of services.
- However, it does not cover wholesale trade services.
 - To the best of our knowledge, price survey on wholesale services is not conducted except in U.S. and Canada.

Services Producer Price Index (SPPI)		
Group	Weight	Item
Finance and insurance	44.3	15
Real estate services	72.1	8
Transportation and postal activities	186.7	38
Information and communications	237.8	23
Leasing and rental	60.7	14
Advertising services	63.4	11
Other services	335.0	38
All items	1,000	147

Constructing the WSPI

- Bank of Japan is trying to construct “**Wholesale Services Price Index (WSPI)**,” intending to launch the new index in mid-2019.
- Wholesale trade service sector is one of the most important sector in Japan’s economy, accounting for 8.4% of GDP.
- Starting survey on the wholesale sector will increase the coverage of Japan’s SPPI significantly.

◆ GDP share ranking (CY2015)

1	Manufacturing	20.7%
2	Real estate	11.4%
3	Wholesale trade	8.4%
4	Professional, scientific and technical activities	7.2%
5	Human health and social work activities	6.8%
6	Retail trade	5.6%

Benefits of Constructing the WSPI

Use for deflators in the GDP statistics

- If BOJ start surveying prices of wholesale services, it will contribute to improve the accuracy of the GDP statistics.

Use for productivity analysis of wholesale trade sector

- Analyzing productivity of wholesale trade sector using WSPI can be a promising research theme in terms of international comparison.

Use for economic conditions assessment and price setting behavior analysis

- As sales activities of wholesalers are closer to final users compared to those of manufacturers, WSPI will provide beneficial information which can contribute to assessment on economic conditions and monetary policy management.
- Data may be useful to analyze companies' price setting behavior.

Concept of the WSPI (1)

- Nominal output (value added) of the wholesale trade service sector is measured by nominal amount of wholesale margin.
- The price of wholesale service can be measured as the difference between the unit selling price and the unit purchase price.
- Real output will be obtained by dividing the nominal output by the price index.

**Nominal output of the
wholesalers**

=

**Value of total
sales**

—

**Value of total
purchase**

**Price of wholesale
service per unit of
goods wholesaled
(Per unit margin)**

=

**Unit *selling*
price**

—

**Unit *purchase*
price**

Concept of the WSPI (2)

- Concept of wholesale service prices may not be very intuitive.
 - ✓ For goods, the actual transaction prices can be observed. However, when it comes to “wholesale services,” prices cannot be observed directly.
 - ✓ While BOJ has decided to collect “per unit margins” as the price of wholesale services, this concept is not necessarily familiar among wholesalers.
- For this reason, it may be difficult to obtain cooperation from companies. Incorrect data may be reported (due to misunderstanding).
- It is important to reduce reporting burden. Careful explanation is necessary to avoid misunderstanding.

Concept of the WSPI (3)

- Companies in Japan adopt a wide variety of data management systems depending on their size and business customs.
 - ✓ Some companies manage selling prices and purchase prices for each individual product or transaction.
 - ✓ Others manage margin percentages for each product segment using accounting information.
- It is necessary to reduce reporting burden and enhance response rate by preparing various reporting methods according to their situation.
- Such consideration could lead to improve accuracy of the index by reducing the non-response bias.

Reporting Method for WSPI (1)

- BOJ asks companies to report both the “unit selling price” and the “unit purchase price” of the selected commodity.
- Instead, they can report “unit selling price” and “margin percentage” if it is easier under their data management system.

**Price of wholesale
service per unit of
goods wholesaled
(Per unit margin)**

$$= \text{Unit selling price} - \text{Unit purchase price}$$

$$= \text{Unit selling price} \times \text{Margin percentage}$$



Unit selling price – Unit purchase price

or

Sales – Cost of Sales

Unit selling price

Sales

Reporting Method for WSPI (2)

- Some companies are only able to report margin percentage, and not selling prices. It is desirable to add these samples to aggregation from the viewpoint of increasing survey response rate.
- Producer Price Index (CGPI) can be used as a proxy for the unit purchase price.

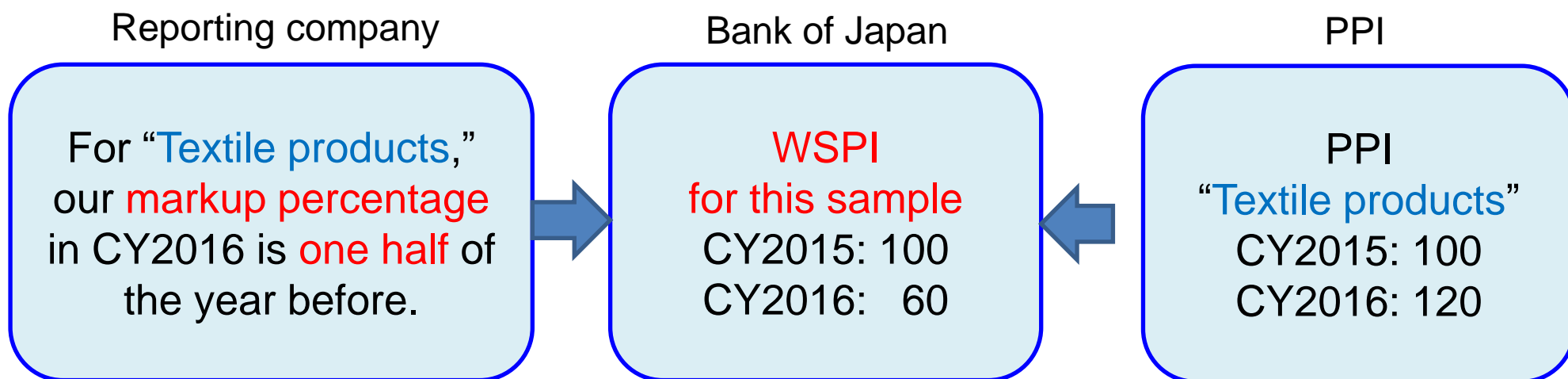
**Price of wholesale
service per unit of
goods wholesaled
(Per unit margin)**

$$\begin{aligned} &= \text{Unit *selling* price} \times \text{Margin percentage} \\ &= \text{Unit *purchase* price} \times \frac{\text{Margin percentage}}{1 - \text{margin percentage}} \\ &= \text{PPI of the corresponding product} \times \frac{\text{Margin percentage}}{1 - \text{margin percentage}} \end{aligned}$$

↖ Markup percentage

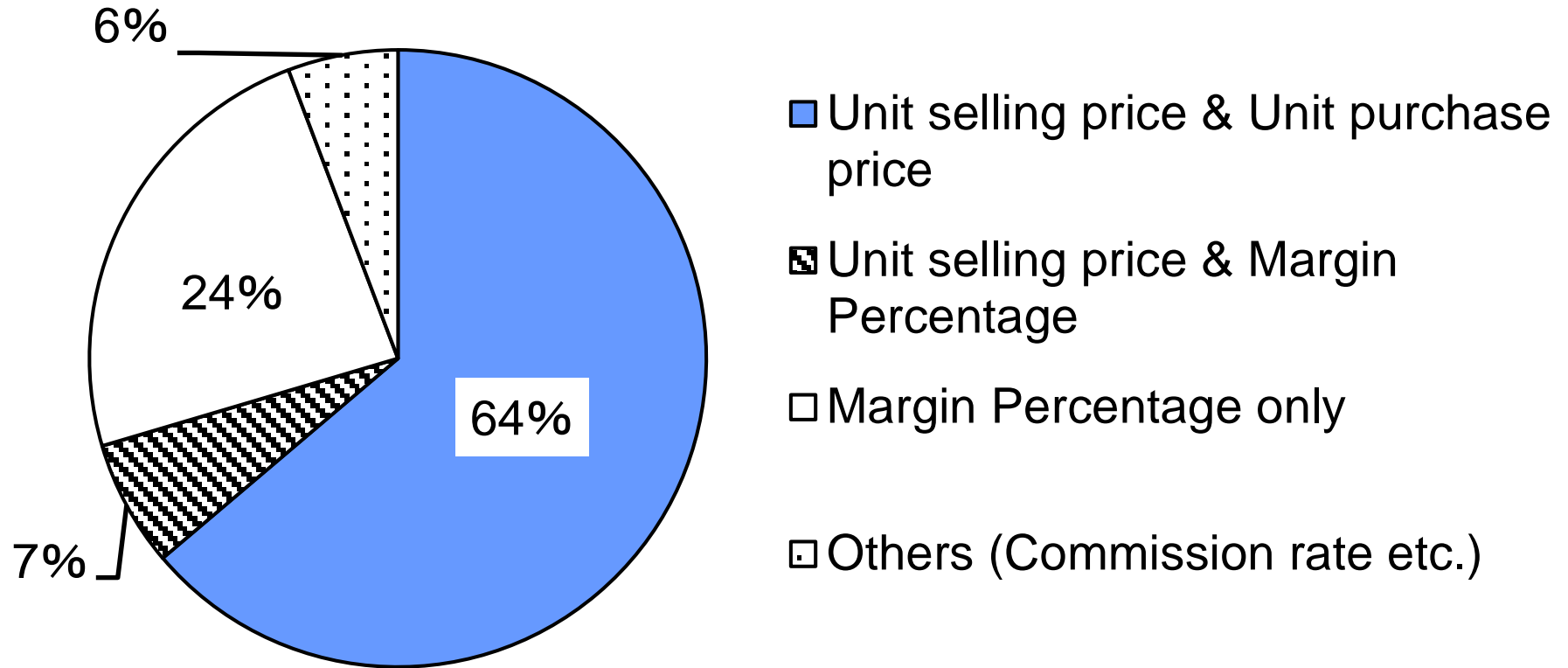
Reporting Method for WSPI (3)

- Some companies do not want to reveal their profit (per unit margin).
- In such cases, we accept the “change in markup percentage” (instead of the “level” of markup percentage), and construct a price index.
 - ✓ Not very desirable because the information is limited (e.g., it is difficult to identify incorrect data).



Breakdown of Reporting Method for the WSPI

- Many respondent companies report both “unit selling price” and “unit purchase price.” However, some companies report their margin percentage only.



Note: Data as of May 2018.

Price Collection (1)

- Our survey is (still) paper-based.
- Survey respondents report their prices via postal mail.

Questionnaire

Price survey

Second Quarter, 2018

	Transaction term		Price	note
Sample price	Currency			
(Personal Computer) Notebook computer Model No. ●●● Purchased from: ××× Sold to: ***	Yen	Unit purchase price	JPY 10,000	
	Yen	Unit selling price	JPY 12,500	









Survey respondents fill in the blanks every quarter.

Price Collection (2)







- Price statistics is generally based on periodical survey of prices with **constant quality**.
- We need to specify various price-determining characteristics which represent the quality of certain wholesale service.
 - ✓ Contents of goods
 - ✓ Quantity
 - ✓ Customers and suppliers
 - ✓ Transaction terms
 - ✓ Contents of accompanying service
- We need to regularly check if the price-determining characteristics (listed above) remain unchanged for each sample price.
- Need to communicate regularly with the reporting companies.

Sample Design

- Composition of sample prices is decided by using the following chart which shows the share in the each market.

		Domestically produced	Imported
Chemical Products	Inorganic		
	Organic		
	Others		
Plastic films & sheets			

<BAD EXAMPLE>

Chemical Products	Inorganic		
	Organic		
	Others		
Plastic films & sheets			

Sample Size, Survey Frequency and Publication

Number of sample prices and survey frequency

- Sample size : Roughly 1,000 sample prices
- Survey frequency : Quarterly

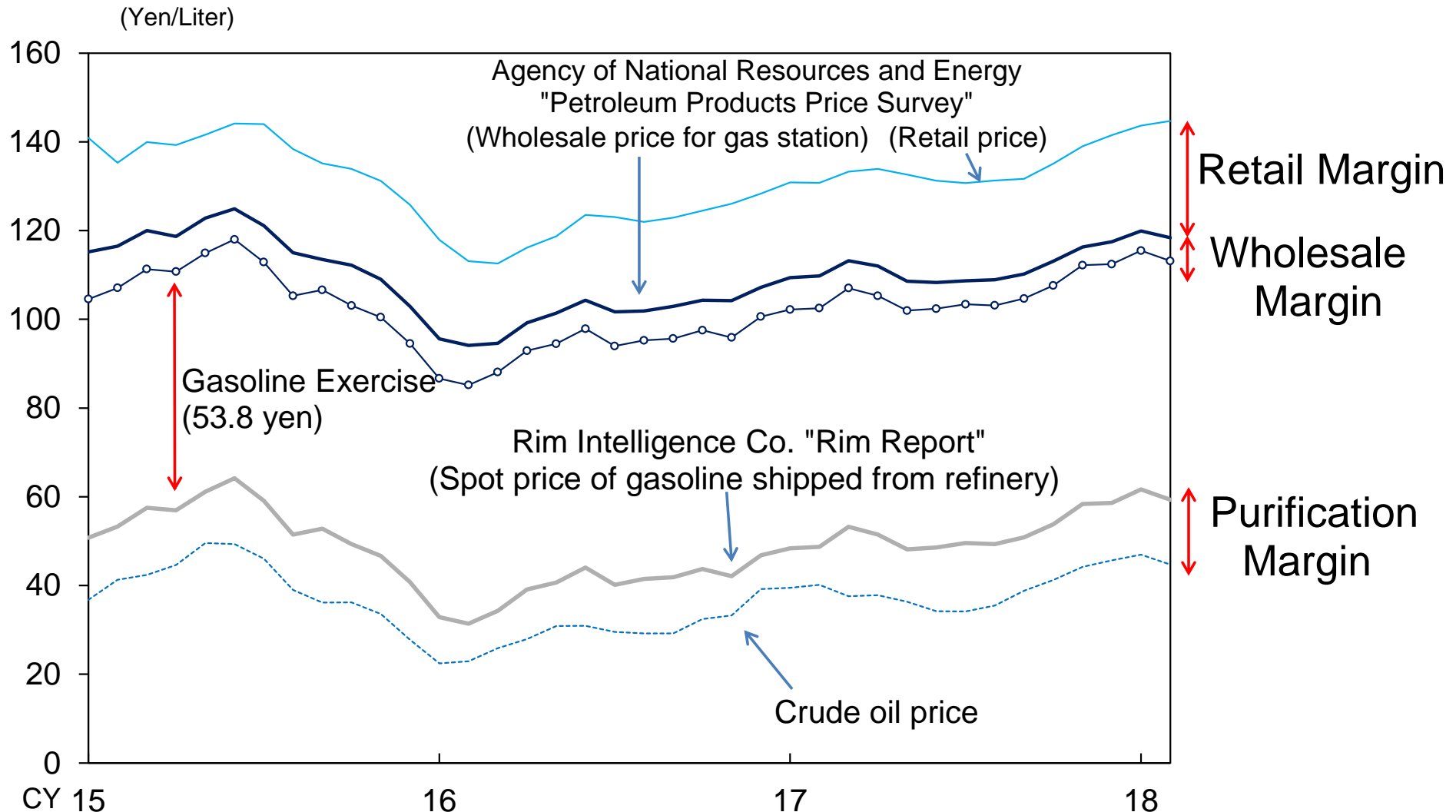
Publication Items

- Planning to provide indexes for 5 subsectors based on “major group” of wholesale trade sector of the Japan Standard Industrial Classification (JSIC).

Item	
Wholesale Trade	Wholesale Trade (Textile and Apparel)
	Wholesale Trade (Food and Beverages)
	Wholesale Trade (Building Materials, Minerals & Metals, etc.)
	Wholesale Trade (Machinery and Equipment)
	Miscellaneous Wholesale Trade

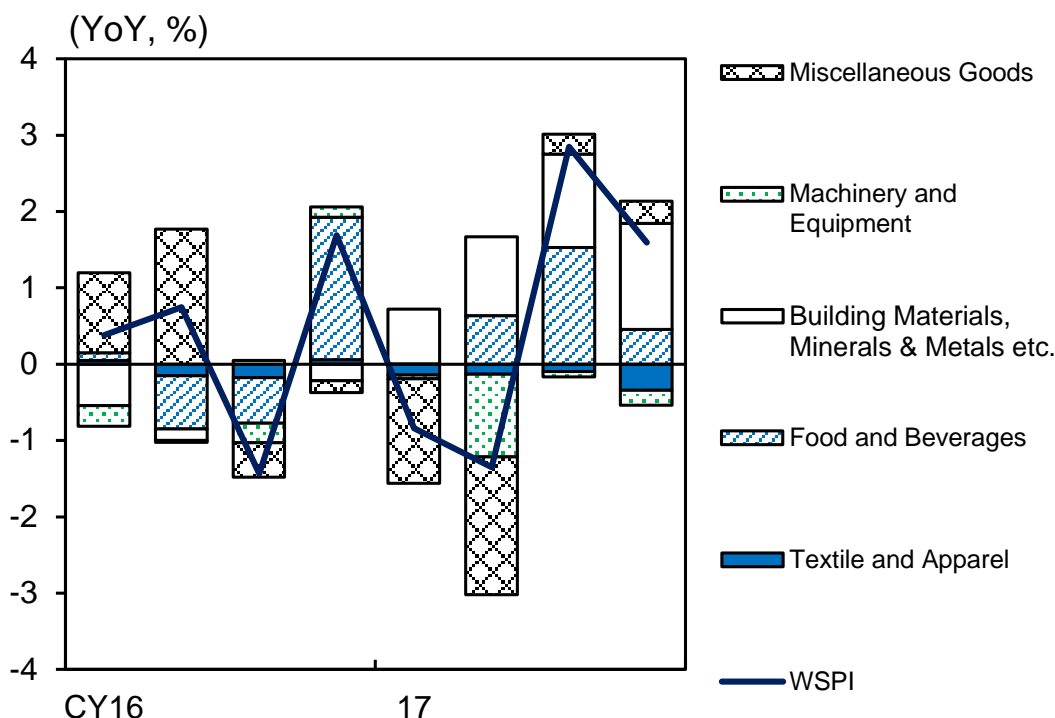
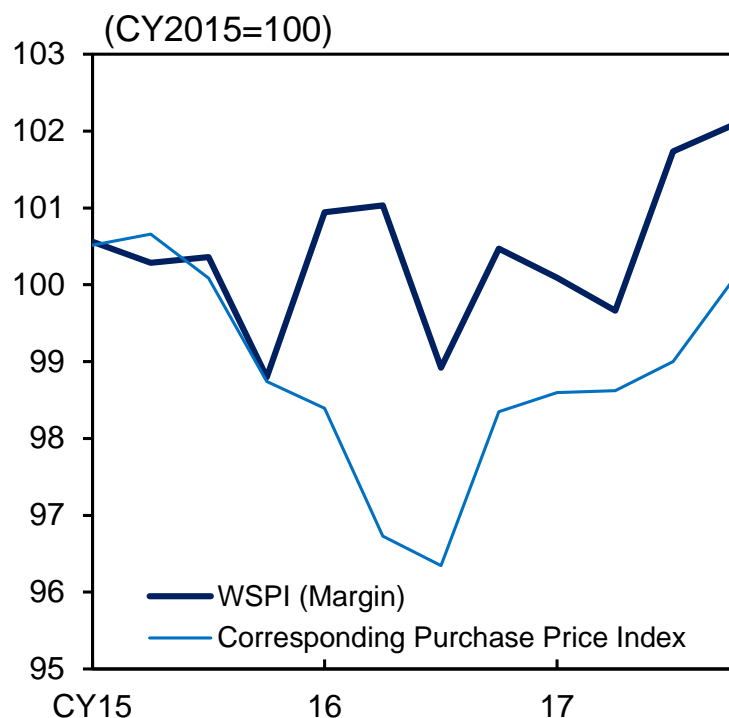
Data from External Sources

- The BOJ uses data from external sources (e.g. other statistics) in order to reduce survey respondents' burden.



Tentative Estimate of the WSPI

- From 2015 to mid 2016, the price index of goods wholesaled declined, but the WSPI remained relatively stable.
- In 2017, the price index of goods wholesaled increased, and the WSPI increased in the same manner.



Note: Estimated by taking simple average of individual surveyed prices (CY2015=100). Data as of May 2018.

Summary

- Bank of Japan is trying to construct “Wholesale Services Price Index,” intending to launch the new index in mid-2019.
- The price of wholesale service can be measured as the difference between the unit selling price and the unit purchase price. However, this concept is difficult even for the reporting companies.
- It is necessary to reduce reporting burden and enhance response rate by preparing various reporting methods according to their situation.
- It is also important to communicate regularly with the reporting companies and keep good relationship with them.

Thank you for your attention



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