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



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Benefits of Constructing the Wholesale Services Price Index

Use for deflators in the GDP statistics

- Current method is not appropriate.
- “Basic Policy for the Fundamental Reform of Economic Statistics”¹ suggests BOJ to start surveying prices of wholesale services.

1 ... The Council on Economic and Fiscal Policy, December 2016.

Use for productivity analysis of wholesale trade sector

- Currently difficult to grasp the holistic picture due to inadequate deflator.

Use for economic conditions assessment and price setting behavior analysis

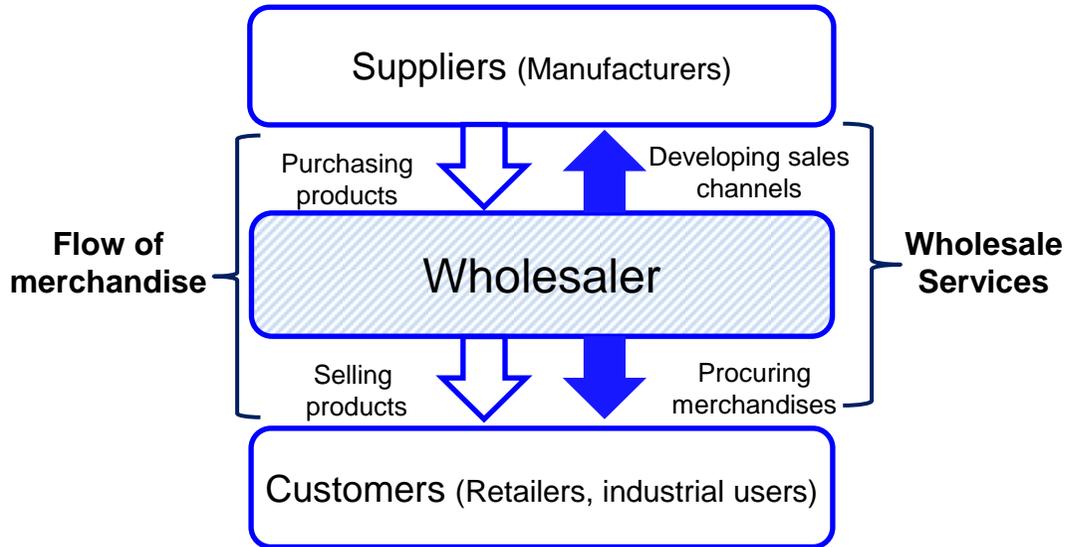
- Contribute to assessment on economic conditions and monetary policy management.
- Useful to analyze companies' price setting behavior.

Wholesale Services Price Index for GDP Statistics

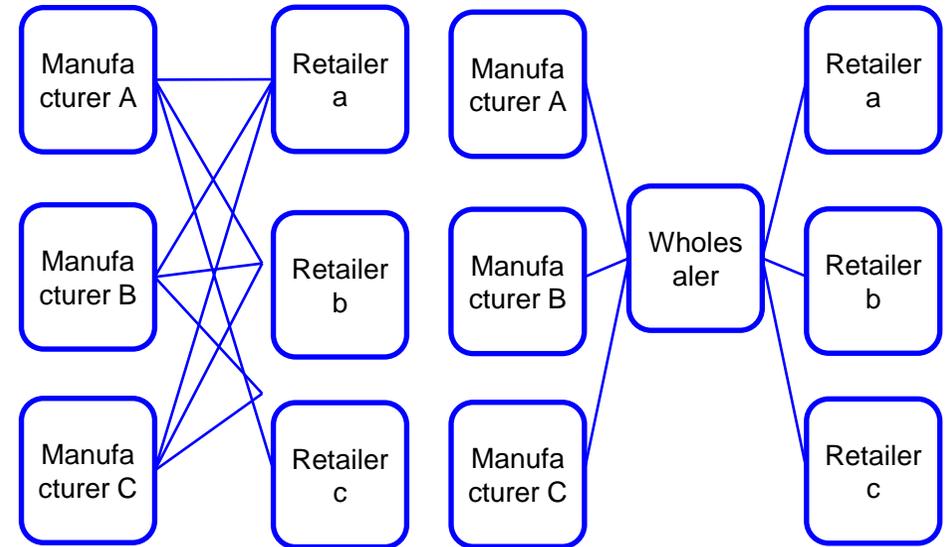
	Most appropriate method		Second-best method	Inappropriate method
Methods to measure real output	Using WSPI	Double deflation	Equivalent to real sales or sales volume	Using price index of products sold or purchased
	Deflating nominal trade margin using the deflator explained below	Taking the difference of real sales and real purchase deflating individually with corresponding price indexes	Presumes that real output is proportional to real sales (deflating sales with price index)	Deflating nominal trade margin using the deflator explained below
Computation of deflator	Calculated using quality adjusted price indexes of wholesale services (WSPI)	----	----	Calculated using price indexes of selling products or purchased products
Challenges	Difficulty in surveying prices with constant quality	Real output is influenced by the accuracy of sales and purchase price indexes (large measurement error)	Unsuitable for analyzing productivity as quality of wholesale service is not considered	Assuming that price developments in wholesale services coincide with those of products is unreasonable
Adopting Countries	U.S., Canada	Korea (only for total of wholesale and retail trade)	UK, Germany, Australia etc.	Japan (current method)

Organizing Concepts of “Wholesale Services”

Commercial Intermediation



Reducing transaction costs

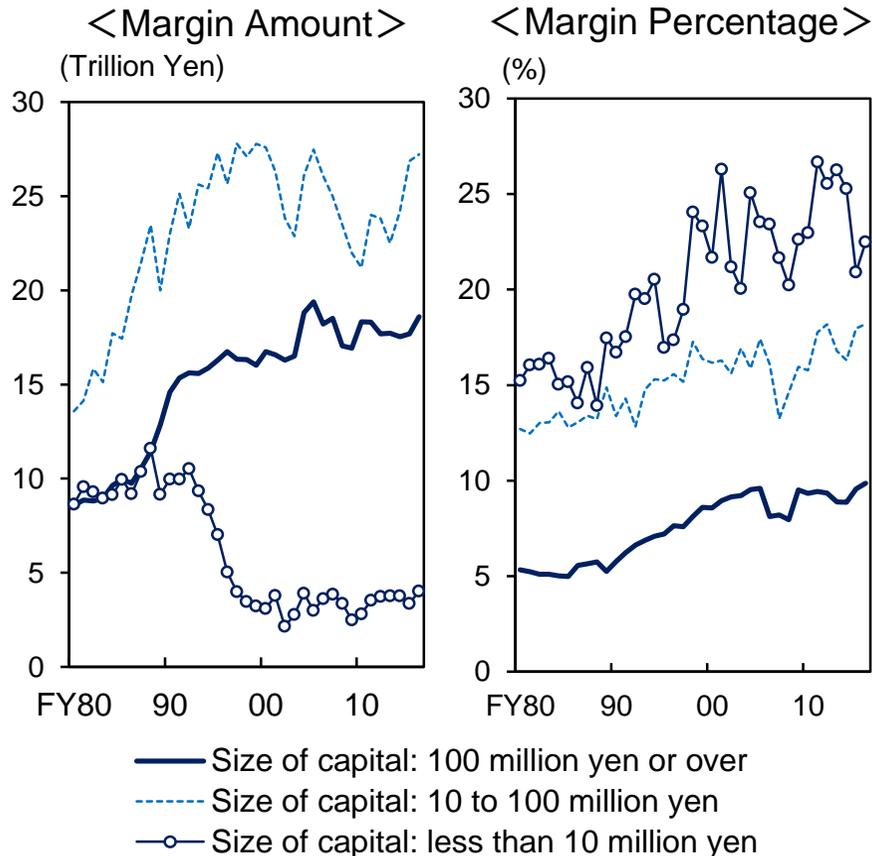


Main functions of wholesalers

Intrinsic functions of wholesalers		Functions providable by other sectors (accompanying services with strong synergy)	
Commercial Intermediation	Developing sales channels for suppliers and procuring products for customers.	Market Information	Making use of summarized transaction information for marketing.
Transaction Cost Reduction	Reducing costs and risks related to transaction by being a hub of distribution channels.	Transportation and Warehousing	Providing delivery, warehouse service and inventory management.
Assortment Building	Bulk breaking and enriching product lineup to support various demand of customers.	Financing	Providing credit and financing through payment collection.
		R&D	Development of private label products, product planning.

Current Picture of Japan's Wholesale Trade Sector

Wholesale margin by company size



Note: Margin amount = Sales – Cost of sales
 Margin percentage = Margin amount / Sales volume
 Source: Ministry of Finance

Nominal GDP share by economic activity

◆ 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%

◆ Change in GDP share of wholesale trade

CY1981 -1985	1986 -1990	1991 -1996	1996 -2000	2001 -2005	2006 -2010	2011 -2015
7.2%	6.9%	8.0%	8.4%	8.6%	8.6%	8.7%

Note: Figures prior to 1993 is estimated based on figures of benchmark year 2000 (1993SNA).
 Source: Cabinet Office

Pricing Method of Wholesale Services

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

$$\begin{aligned} &= \text{Unit selling price} - \text{Unit purchase price} \\ &= \text{Unit selling price} \times \text{Margin percentage} \end{aligned}$$



$$\begin{aligned} &\underline{(\text{Unit selling price} - \text{Unit purchase price}) / \text{Unit selling price}} \\ &\quad \text{or} \\ &\underline{(\text{Sales} - \text{Cost of sales}) / \text{Sales}} \end{aligned}$$

Quality Adjustment of Prices of Wholesale Services

- ✓ 5 quality adjustment methods in the SPPI are considered to be applicable in the WSPI.

Direct comparison method	If difference in quality between old and new services is ignorable, the <u>price difference is treated as “pure price changes”</u> .
Unit price comparison method	If difference in quality between old and new services is proportionate to transaction volume (sales volume), <u>the price difference arising when same volume is compared is treated as “pure price changes”</u> .
Production cost method	If <u>cost accounting for quality difference</u> between old and new services can be interviewed, <u>the amount is treated as “price change due to quality changes”</u> .
Overlap method	Treat <u>all price difference</u> between old and new services as <u>“price change due to quality changes”</u> .
Hedonic regression method	From difference in specification of old and new services, quantitatively <u>estimate “price change due to quality changes” using regression analysis</u> .

Applicability of Production Cost Method

- ✓ The applicability of Production Cost Method for the WSPI is under consideration.
- ✓ Examples of applying production cost method

Examples	Practical approach of quality adjustment
<p>Increasing promotion expenditure at launch of new model (improvement in quality of wholesale services)</p>	<ul style="list-style-type: none"> ✓ If expenditure for promoting new model increased compared to that of old, it can be assumed as function of developing sales channels increased (quality improvement). ✓ Practical approach : Expected margin percentage which is equivalent to promotion cost was interviewed, so price of wholesale services was adjusted for the margin percentage.
<p>Discount due to changing method of payment for sales (deterioration in quality of wholesale services)</p>	<ul style="list-style-type: none"> ✓ Quality of wholesale services deteriorate when payment method change from credit to cash, as in the prior method credit and financing function was provided. ✓ Practical approach : Information on decrease of interest and credit cost was interviewed from company, so price was compiled by adjusting the selling price for that amount.
<p>Decreasing use of private warehouse due to buyer's newly built distribution center (deterioration in quality of wholesale services)</p>	<ul style="list-style-type: none"> ✓ If wholesaler's use of private warehouse decreases due to usage of buyer's newly built distribution center, it can be assumed as deterioration of quality as they no longer provide logistic function. ✓ Practical approach : Interview the facility usage fee and adjust for the equivalent amount.

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

Specification of samples and transaction conditions (1)

Selecting candidate companies and survey products

- Candidate company is selected considering the:
 - Wholesale trade subsector which the reporting company belongs to
 - Product wholesaled by the reporting company
 - Place of origin of the product (domestic or foreign)
- If necessary additionally considers:
 - Usage of product
 - How to procure products
 - Contract term
 - Firm size
 - Geography, etc.

Specification of samples and transaction conditions (2)

Specifying contents of survey products

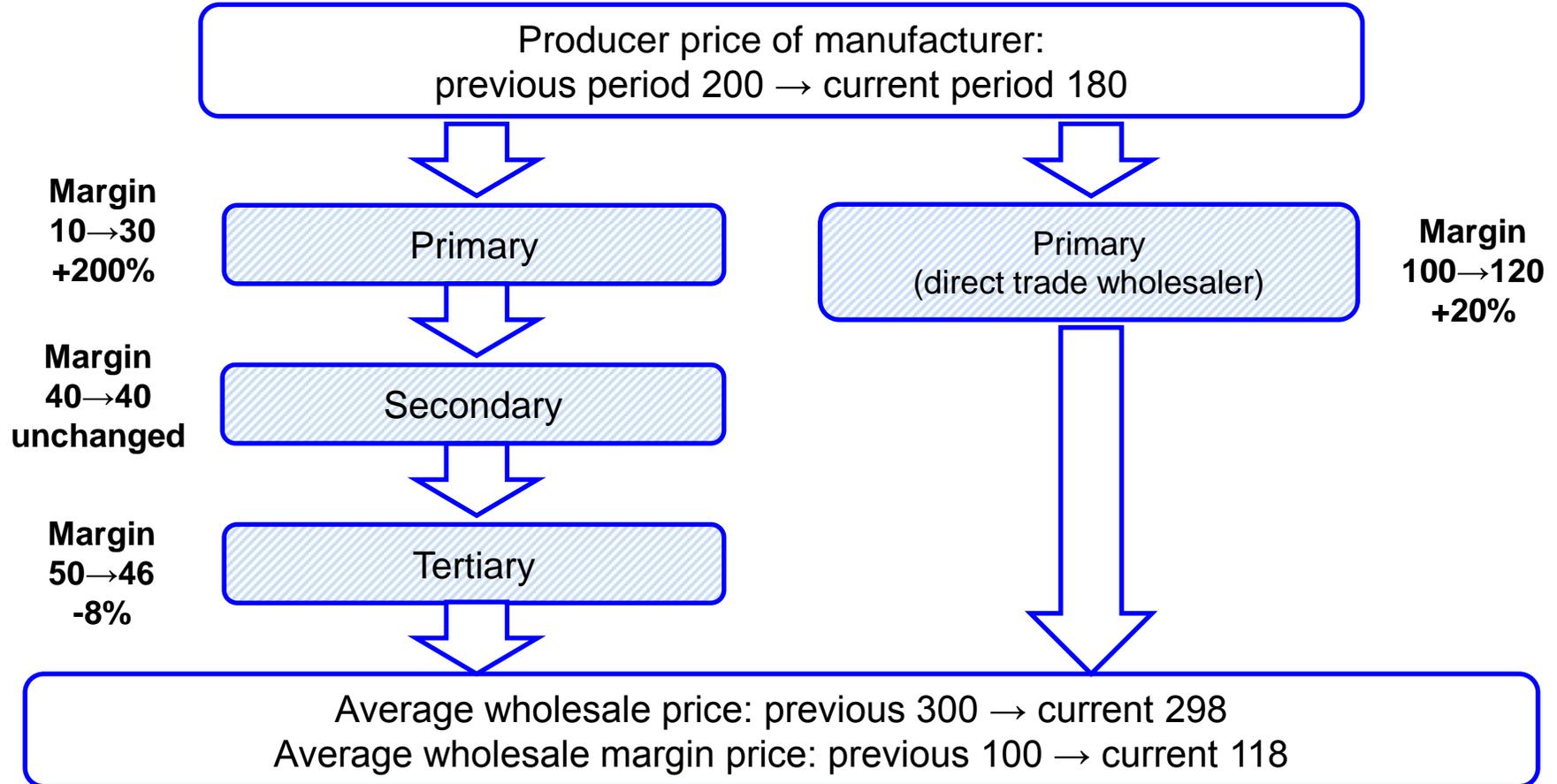
- In order to survey wholesale service prices with constant quality, it is desirable to collect “single products”, narrowing the range of survey products.
- When sample numbers are limited, prices of “comparable product lines” are collected.

Specifying customers and suppliers

- Size of margins of wholesale services differ between customers.
- Characteristics of supplier are not to be explicitly considered. Specification of products roughly determines the supplier.
- Quality of market-procured products are identical regardless of suppliers. Excessive specification of characteristics may disrupt the continuous survey when supplier changes.

Considering Distribution Level

Example: Aggregation method considering distribution levels



Percentage change in aggregated price of wholesale services

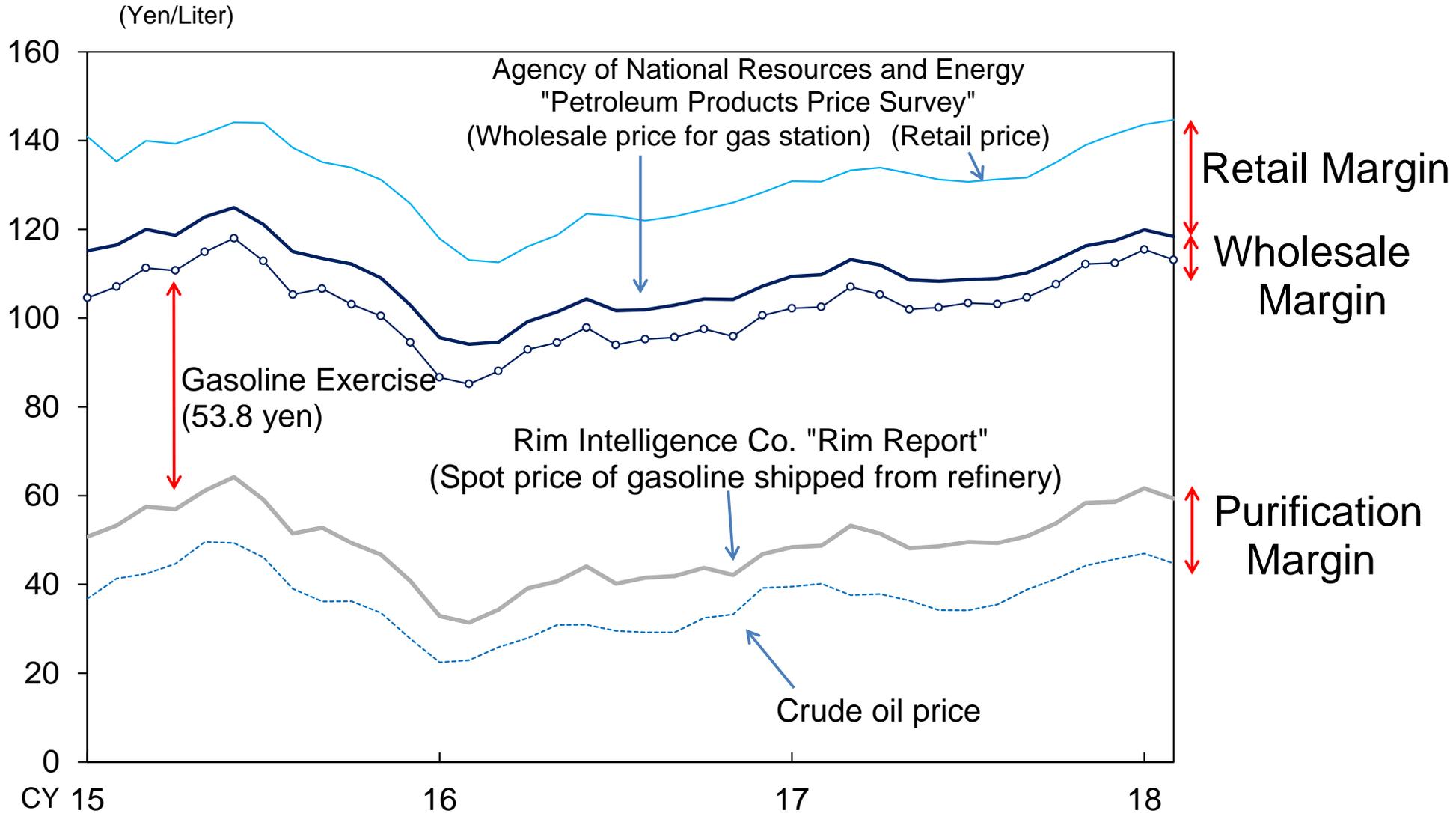
◎ weighted average: +18% (true value)

× simple average: +53%

△ for direct trade: +20%

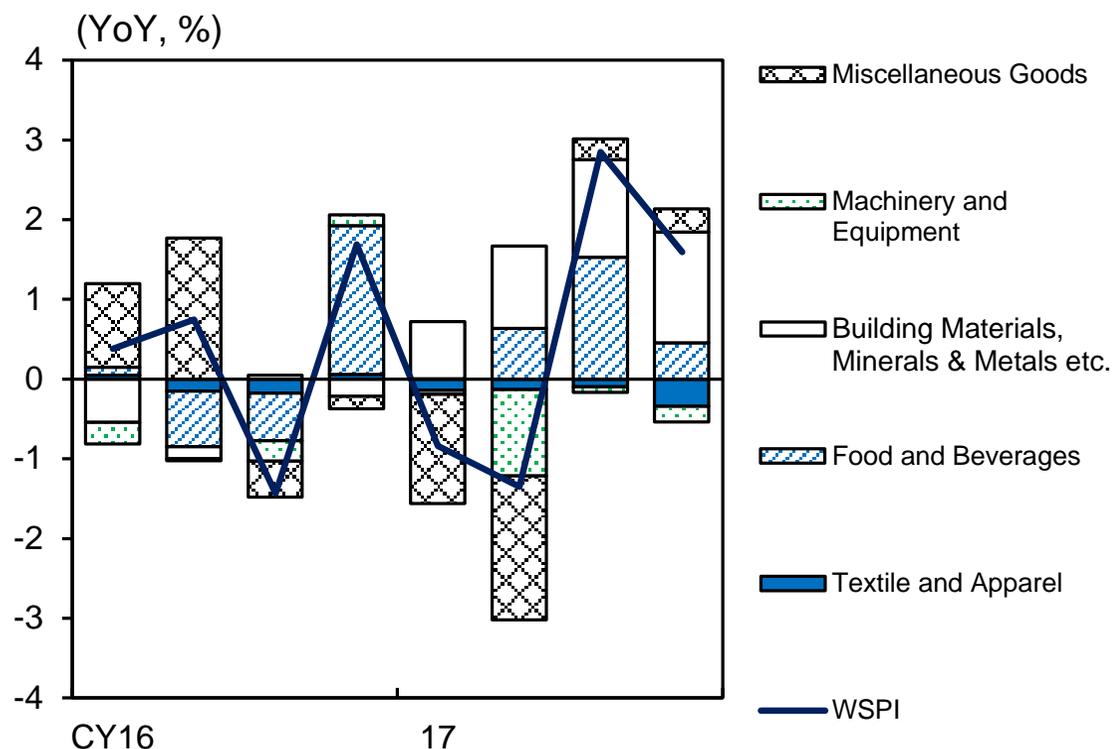
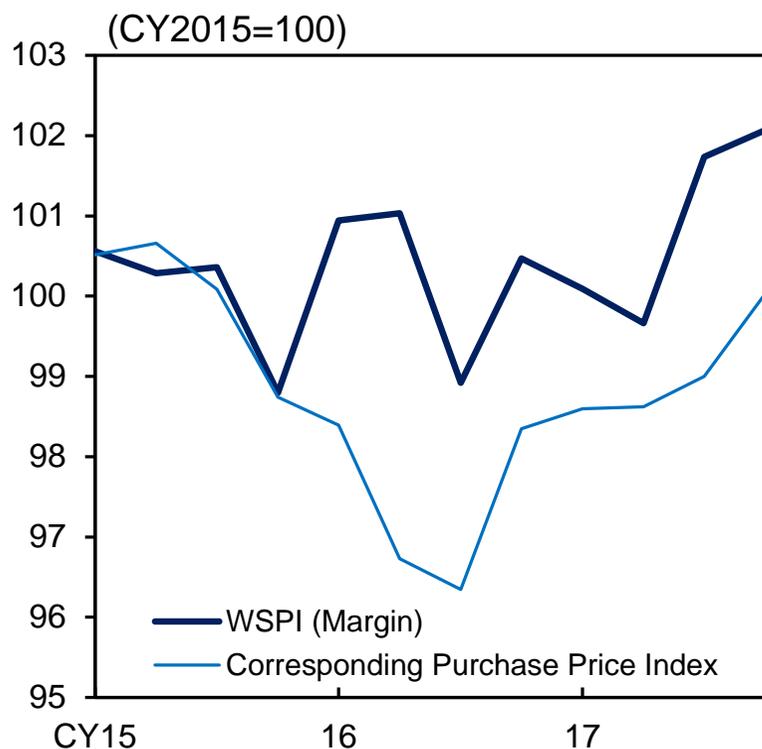
Utilization of External Database

External data for Gasoline Price



Tentative Estimate of the Wholesale Services Price Index

Tentative estimate of the WSPI



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

Issues Faced in Practice

Difficulties in obtaining the appropriate sample price composition

- To increase index accuracy, composition of sample prices needs to be decided according to various characteristics.
- In practice, candidate with the targeted characteristics can be scarce and therefore **deciding the appropriate balance is difficult.**

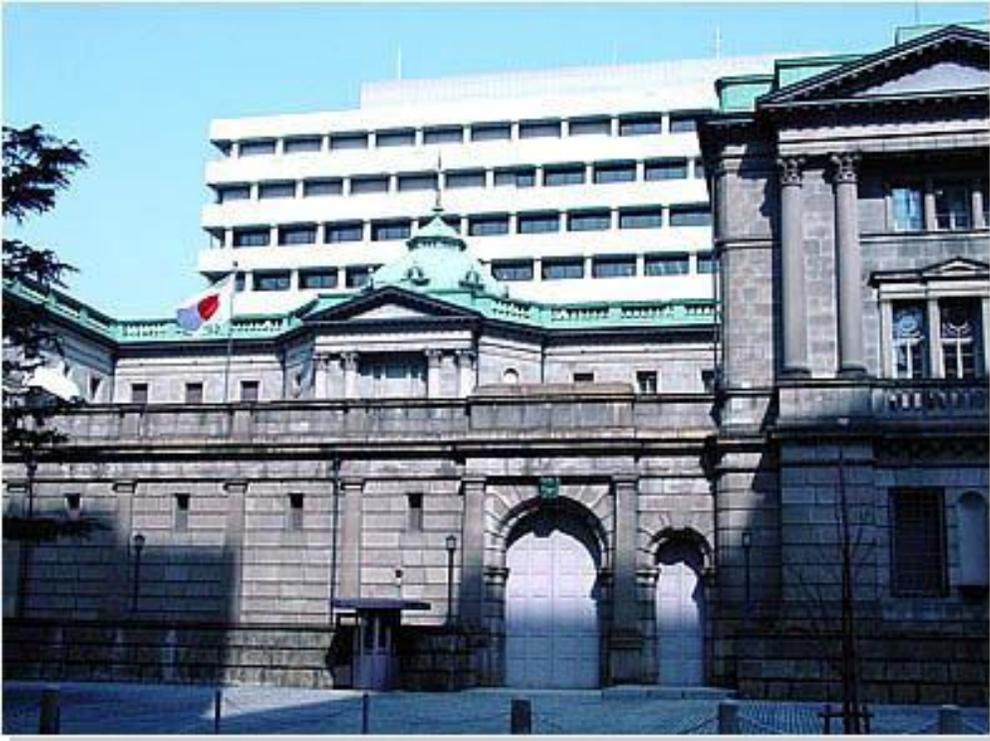
Difficulties in dealing with “large fluctuation” of individual price of wholesale services

- **Large fluctuation** of prices of wholesale services can be caused by various factors.
- The cause needs to be identified, and the fluctuation should be appropriately dealt according to the cause.

Difficulties in treatment of quality change of wholesale services

- Change in samples is likely to occur with a reasonably high frequency.
- Quality adjustment method is under consideration, however **it is a rare case where necessary information is capable from survey respondents.**

Thank you for your attention



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