

## Revision of the CPI Items for the 2015-base

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### Abstract

The CPI basket items in Japan, which represent the typical Japanese consumer consumption pattern, consist of 588 goods and services for the current 2010-base CPI.

The goods and services are compiled into a weighted aggregate for an all items index, and individual indices are also published.

The basket is updated at the time of rebasing, but if necessary, it is reviewed during a base period. For instance, during the 2010-base period, we added smartphones in 2013 and tablet computers in 2014.

For 2015-base CPI, we analyzed the monthly Family Income and Expenditure Survey (FIES) and checked other statistics data and finally decided on the added and deleted items[\*].

The purpose of this paper is to explain not only how we selected these items from the actual decision making viewpoint, but also to describe the characteristics of these items and highlight recent Japanese trends and changing tastes which are the background to the changes.

[\*] Please note that this is provisional. It could be changed depending on future procedures.

*Keywords:* Revision; consumption pattern;

## 1. Introduction

In the rebasing of the Consumer Price Index (CPI) in Japan, the Statistics Bureau of Japan (SBJ) revise the base period, revise the basket items and the weights, expand the publishing series, and so on. Since the 1955-base revision, we conduct rebasing every 5 years, and this year (2015) is the rebasing year. Now we are preparing the 2015-base revision.

In the 2015-base revision, from a viewpoint of aiming at improvement in measurement accuracy of a price fluctuation, we select added and deleted CPI items. If there are rapid spreads of new goods and services or sudden changes in a consumption pattern after this rebasing, we can revise those items before the next revision (“midpoint-year revision”)<sup>1</sup>.

This paper focuses on the revision of CPI items for the 2015-base. It introduces the actual procedures of selection of added and deleted items, and aims to highlight recent Japanese trends and changing tastes which are the background to these changes.

## 2. Selection of added items

Newly added items had been selected before deleted items were selected. This is because price collection for 2015-base CPI would start in January 2015, while that of 2010-base CPI would be continued until December 2016. This means we selected newly added items first because those prices were necessary to be collected from January 2015, while those of deleted items continued to be collected until December 2016.

The criteria and actual procedure of selection of added items are as follows.

### 2-1. Selection criteria

Items which meet all conditions of the following (a) to (c) are to be added items.

- (a) Items whose importance in household consumption expenditure<sup>2</sup> increased due to a change in the consumption pattern by appearance and spread of new goods and services and change of taste.
- (b) Items that can contribute to improving accuracy and retaining representativeness of subgroup indices.
- (c) Items whose prices can be collected smoothly and whose price changes are represented correctly.

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<sup>1</sup> During the 2010-base period, we were to include smartphones in “Mobile telephone charges” and “Cellular phones” in 2013 and tablet computers in “Personal computers (notes)” in 2014.

<sup>2</sup> The aim of the importance is fixed to be above 1/10,000 of the proportion of annual household consumption expenditure.

## 2-2. Procedures

(1) Selection of items whose importance in household consumption expenditure had been increased (confirmation of (a))

We selected items whose annual average consumption expenditure proportion to that of total (hereinafter, “the proportion”) is above 1/10,000 from the results of the special tabulation on FIES 2012 (primary tabulation)<sup>3</sup>. In this tabulation, we analyzed the FIES items which are the source of weights of CPI items in Japan.

FIES is a monthly survey which aims to show actual conditions of income and expenditures of households by keeping daily household accounts with about 9,000 selected households nationwide. When a family expends money by purchasing some goods or services, names, use, amounts and expenditures of all items are requested to be filled in a household account book in accordance to the example shown below (Table 1). In FIES, each FIES item, which is each income and expenditure classification classified by commodities and use, is added up based on these entries in every household account book.

Table 1. Example to fill in household accounts

Kinds of income or names of items and use	Cash income (yen)	Amount		Cash expenditure (Yen)
			unit	
Pork		330	Gram	630
Lunch (Japanese set meal) - Head of household		1	Set	1,000
Bus fare		1	Round-trip	420
Child's polo shirt		1		2,900

The special tabulation on FIES aims to grasp the circumstances of household consumption expenditure for more detailed items than FIES items by re-tabulating a part of household account books collected for FIES with permission. However, those items which were difficult to confirm due to the filling situations of the household account books were estimated from other statistics. For example, items that were difficult to distinguish by entries in household account books: wine and wine (imported); Children's T-shirts (long sleeves) and Children's T-shirts (short sleeves); Railway fares (JR) and Railway fares (excluding JR); etc.

<sup>3</sup> Target period: from April 2012 to March 2013; target households: 564 two-or-more households per one month; the total tabulated households: 6,768 households for one year

The FIES items which were the target of the special tabulation were selected as the following viewpoints.

1. FIES items which correspond to plural CPI items
2. FIES items which consist of plural items (e.g. “others”, “group of XX”, “XX & XX”)
3. FIES items which include goods or services for which household consumption expenditure were expected to have increased in recent years.

Table.2 Example of FIES items and corresponding CPI items

FIES item	Included items	CPI items
	Other fresh cakes	
Frozen food	frozen croquette, frozen shumai, ... etc.	Frozen croquettes Frozen hamburg steak
Musical instruments	Piano, organ, flute, ... etc.	Pianos
Notebooks & other paper stationery	loose-leaf notebook, diary, envelope,... etc.	Notebooks Papers for office automation

(2) Verification of accuracy improvement and retaining representativeness of subgroup indices (Confirmation of (b))

These were judged from the following viewpoints.

- Retaining representativeness of subgroup indices

By adding the item, whether the coverage<sup>4</sup> of CPI items in the subgroup indices will increase or not. This includes whether the weights which are distributed to the all CPI items in the subgroup will decrease or not.

Example) “Hearing aids” (subgroup: Medical supplies & appliances),  
“Swiss rolls” (subgroup: Cakes & candies)

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<sup>4</sup> The ratio of the total proportions of CPI items in the sub group indices to the total proportion of the corresponding FIES items

- Accuracy improvement of subgroup indices

By adding the item, whether the weight per one price will decrease or not in case the number of CPI items is not enough compared to the amount of the weight of the FIES item.

Example) “Japanese soba” (subgroup: Meals outside the home)

### (3) Judgment of the possibility of smooth price collection (confirmation of (c))

We judged whether the smooth nationwide price collection of the nominated items was possible or not from confirmation of their distributions by distribution surveys. This includes whether the cooperation from enterprises would be possible in case we would like them to report their prices.

## 3. Selection of deleted items

The criteria and actual procedure of selection of deleted items are as follows.

### 3-1. Selection criteria

Items which meet at least one of the three conditions below are to be deleted items. However, if deleting these items may adversely affect the accuracy of the subgroup indices, they are not to be deleted.

- (a) Items whose importance in household consumption expenditure has decreased due to a change in the consumption patterns
- (b) Items that even when deleted do not affect the accuracy of the subgroup indices
- (c) Items whose prices become difficult to be collected or whose price changes cannot be represented correctly.

Condition (b) includes integration of items.

### 3-2. Procedures

#### (1) Selection of items whose importance in household consumption expenditure had been decreased (confirmation of (a))

We selected items whose proportion is below 1/10,000 from the results of the special tabulation on FIES 2013 (secondary tabulation)<sup>5</sup>, in which we analyzed the items whose proportion was around 1/10,000 in the special tabulation on FIES 2012 (primary tabulation). In this tabulation, we tabulated data of more samples that were more recent than that of the primary tabulation.

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<sup>5</sup> Target period: from January to December 2013; target households: 1,128 two-or-more households per one month; the total tabulated households: 13,536 households for one year

(2) Verification of accuracy of subgroup indices in case of deleting the item  
(confirmation of (b))

In particular, the accuracy was regarded as to be secured in the cases meeting the following conditions.

- Replacement with a more representative added item

In cases where a more representative item is added in the subgroup indices than the item.

Example) “Installing air conditioner”

(Subgroup: Repairs & maintenance; new added items: “Parking lot construction”, “Wallpaper pasting”)

“Charge for treatment of human waste”

(Subgroup: Furniture & household utensils; new added items: “Cleaning fees of wastewater treatment tanks”)

- Integration with the items which indicate the same price change

In cases where items indicate the same price change as the item which is the same under the conventional wisdom, integration of these items was taken into consideration.

We confirmed the serial correlation of annual changes as price changes. (Target period: from January 2011 to December 2013)

Example) “School lunch (elementary school, lower grades)” and “School lunch (elementary school, higher grades)”

(Subgroup: Meals outside the home)

(3) Selection of items whose prices became difficult to be collected or whose price changes cannot be represented correctly (Confirmation of (c))

We selected items whose prices were reported to be difficult to collect by price collectors. Among them, those items which could not be dealt with by specification changes or changes of the number of collected prices were decided to be deleted items.

Example) “Flounder” (subgroup: Fish & sea food)

We made trial calculations of each subgroup indices for confirmation of the above plans except for those of replacement. As a result, we confirmed that the tendencies of annual changes of the two (the trial calculation values and the published values) were the same.

However, we decided not to make them deleted items if they were judged to affect the accuracy of the subgroup indices adversely even if they met the above criteria.

#### 4. Results of the selection

By following the procedures of the above 2 and 3, added items and deleted items were selected as below. (See attachment 1)

Added items: 33 items; Deleted items: 32 items;

Integrated items: 8 into 4 items; items that changed their survey religion: 1 item

As a result, the number of basket items for 2015-base CPI is to be 585 from the current 588.

From a viewpoint of corresponding items and their weights or specifications more appropriately, some items' scope was expanded. These items were decided to be renamed in association with that.

(See attachment 2)

Please note that the names of items are tentative.

#### 5. Consideration

Regarding the main added items and the scope expanded items whose market size expansion were observed, the backgrounds of these were considered based on newspaper reports and so on as follows.

##### 5-1. Aging

Japan is aging more rapidly than other countries. The proportion of the aged population in Japan reached 23.0% according to the result of the Population Census 2010. Compared with other countries, that was the highest level in the world, greater than that of Germany and Italy.

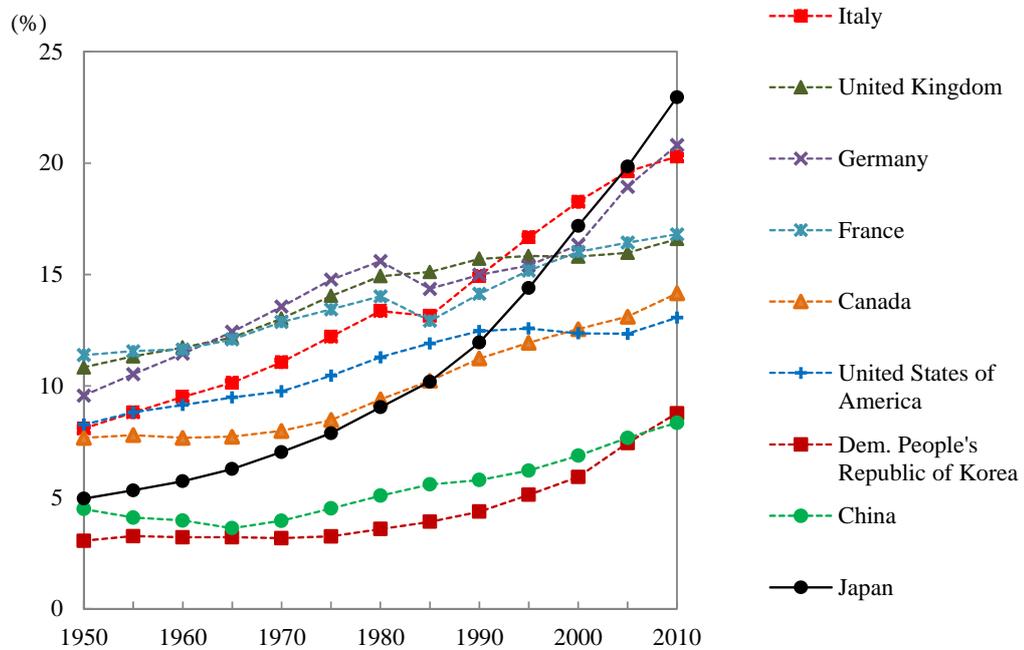


Fig.1 Trends in the Proportion of Aged Population in Other Countries (1950~2010) [1]

Associated with this, the consumption pattern of household expenditure has been influenced by aging. Below are those items considered to have expanded because of aging.

- Hearing aids (Subgroup: Medical supplies & appliances)

It is said that hearing aids in Japan are originally behind with the spread in comparison with foreign countries エラー! 参照元が見つかりません。 , but, backed by aging, both the amount of shipments and the number of shipments have continued increasing. It is regarded as one of the factors of expansion that elderly people choosing high-performance and high-price range products increased particularly recently[3].

The FIES item which is the source of its weights is “Other medical supplies & appliances”. As its corresponding CPI items, other than “Hearing aids”, “Supporters” is to be added. On the other hand, “Bathroom scales” and “Thermometers” are to be deleted because their proportions were below 1/10,000.

Table.3 CPI items corresponding “Other medical supplies & appliances”

FIES item	2010-base CPI items	2015-base CPI items
Other medical supplies & appliances	Bathroom scales	Manometer
	Thermometers	Hearing aids
	Manometer	Supporters

In the subgroup of Medical supplies & appliances, “Disposable diapers (for adults)” was added to CPI items also backed by also aging at the time of the 2010-base revision. Its market is reported to be expanding continuously[4].

- Health fortification-B (Subgroup: Medicines & health fortification)

From the background of aging, those who wish to be youthful and be healthy for as long as possible are increasing in number. As Fig.2 indicates, the older people get, the larger the proportion of people paying attention to their health becomes[5]. That's why that is thought to become larger and larger in future.

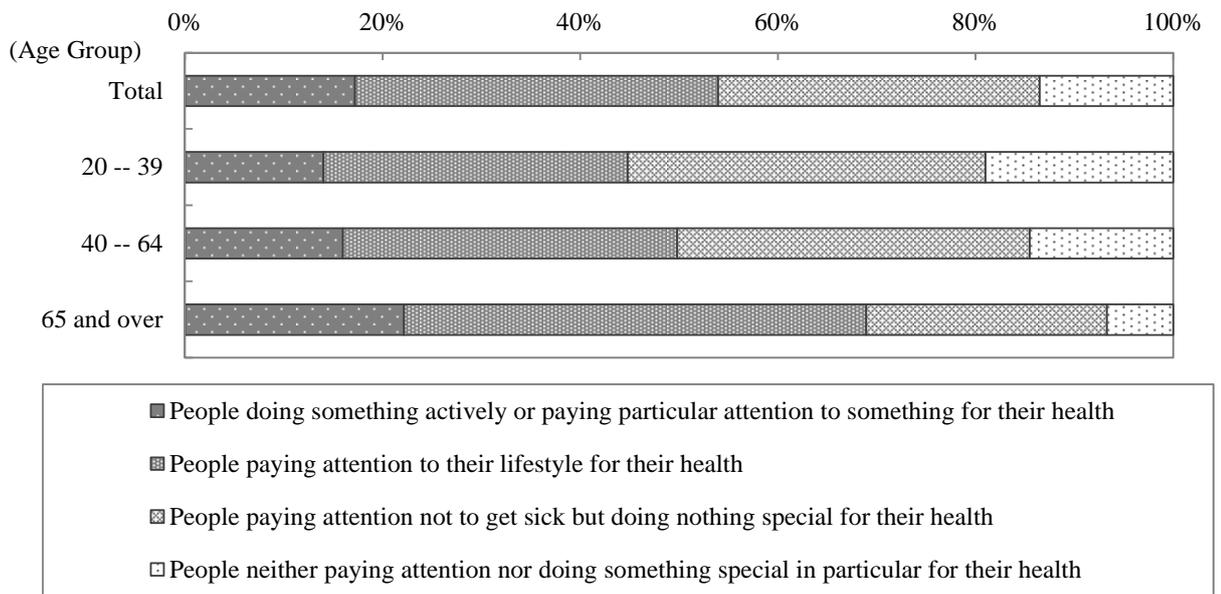


Fig.2 Health awareness by age group[5]

With the increase of those health-minded people, the market of health food including supplements has expanded as Fig.3 indicates[6].

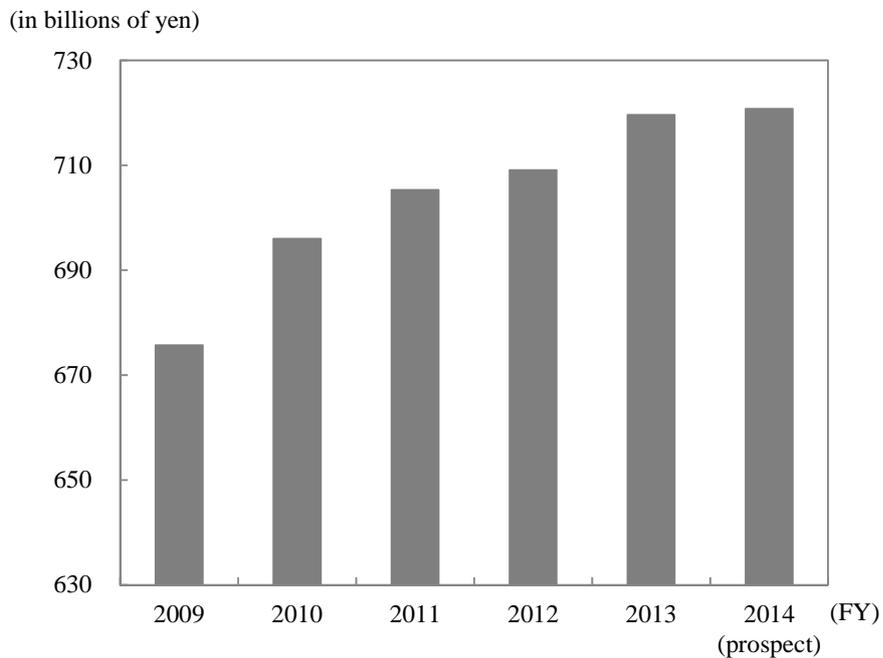


Fig.3 Trends in Health Foods Market[6]

“Supplements” was added to CPI items at the time of the 2005-base revision as a corresponding item to “Health fortification” of FIES item. As its basic specification, prices of “Multi vitamin” have been collected.

With the market expansion, the item is to be divided into 2 items; prices of “Aojiru” (green juice) are to be collected as another specification.

With its division, the names are to be “Health fortification A” and “Health fortification B”.

Table.4 CPI items corresponding “Health fortification”

FIES items	2010-base CPI items	2015-base CPI items
Health fortification	Supplements	Health fortification A
		Health fortification B

## 5-2. Heightened awareness of disaster risks and environmental issues

In Japan, natural disasters occur more frequently than other countries[7]. Heavy damage by not only the Great East Japan Earthquake in 2011 but also a volcano, a typhoon, heavy rain and so on have occurred in recent years. Moreover, since the nuclear accident due to the Great East Japan Earthquake and a series of food counterfeiting problems, consumers’ concern about environmental issues coming to the surface and awareness of the safety of food is growing.

- Fire & earthquake insurance premium (subgroup: Repairs & maintenance)

“Fire insurance premium” was added at the time of the 1970-base revision. Since the fire insurance contracts which attach earthquake insurance have increased<sup>6</sup>, it is to be renamed to “Fire & earthquake insurance premium” in order to expand its scope so that earthquake insurance premium can be included.

In FY2012, earthquake insurance attachment rate, the proportion of new fire insurance contracts for household which include earthquake insurance, have increased to 56.5% (it has increased for 10 consecutive years) as Fig.4 indicates[9].

This tends to expand just after big earthquakes such as the Great East Japan Earthquake in 2011. The concern for an assumed giant earthquake and the awareness of a future earthquake or tsunami are thought to continue to heighten エラー! 参照元が見つかりません。 .

<sup>6</sup> The Earthquake Insurance is exclusively for earthquake disasters. Fire insurance does not indemnify against damage caused by fire resulting from an earthquake or fire damage that spreads because of an earthquake.

The Earthquake Insurance is attached to fire insurance. Namely, it is a prerequisite to carry fire insurance in order to carry the Earthquake Insurance. Fire insurance policyholders without the Earthquake Insurance can attach it midway through the policy period.[8]

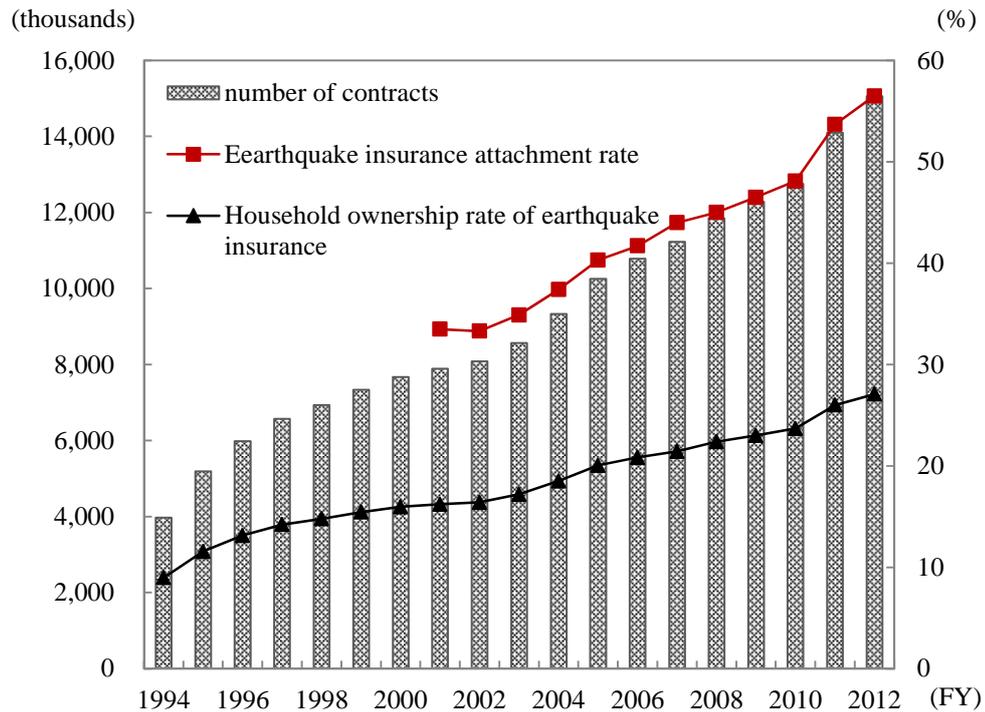


Fig.4 Trend of Earthquake Insurance Attachment Rate (1994~2012)[9]

- Air cleaners (subgroup: Household durable goods), Masks (subgroup: Medical supplies & appliances)

Nowadays, backed by heightened awareness of infection measures against hay fever and infectious disease including influenza, moreover, against air pollution represented by Particulate Matter 2.5 (PM2.5), markets of both air cleaners and masks have expanded エラー! 参照元が見つかりません。 .

“Masks” were thought to be effective in infection prevention in 2009, when a pandemic of new influenza occurred. After that, people wearing masks for a long time in their daily life to prevent these infections have increased. In addition, PM2.5, a particulate matter apprehensive of transported air pollution from China, was featured on media after Mar. 2013, and the demands for measures have increased particularly in West Japan[12]. From this background, it is regarded as a factor of the expansion of high-performance and high-price range products that have appeared and spread[13].

The market of “Air cleaners” has also expanded. The number of shipments in FY2012 was double as that in FY2008, and its penetration rate of households exceeded 40% in FY2012[13].

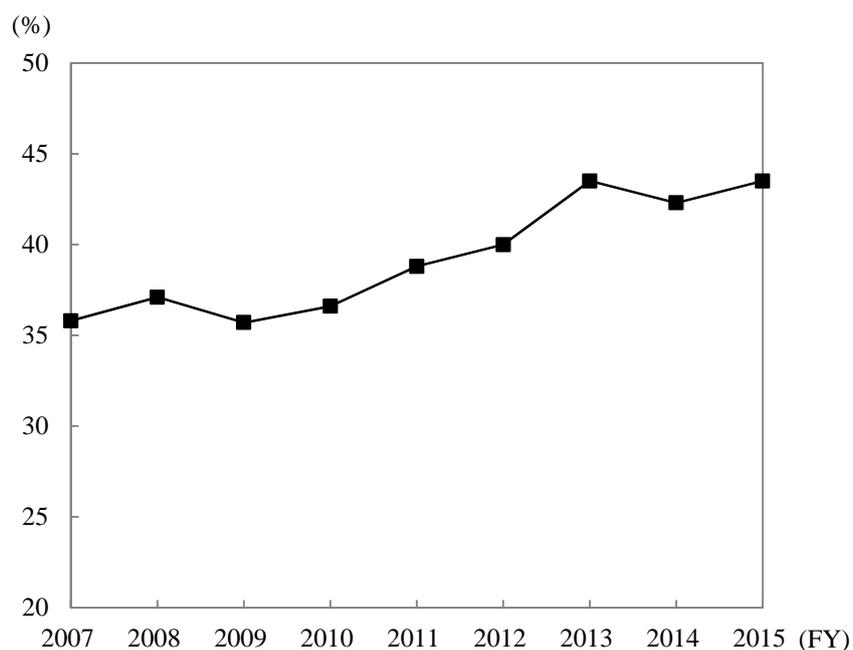


Fig.5 Trends of Penetration Rate of Air Cleaner of households of two or more persons (2007~2015)[13]

The FIES item which is the source of its weights is “Other heating & cooling appliances”. As its corresponding CPI items, “Electric carpets” had been included for 2010-base CPI, but it is to be deleted because its proportion was below 1/10,000.

Table.5 CPI items corresponding “Other heating & cooling appliances”

FIES items	2010-base CPI items	2015-base CPI items
Other heating & cooling appliances	Electric carpets	Air cleaners

- Charges for security service (subgroup: Miscellaneous)

Security service here indicates home security service. Home security service is the machine guard for households. In case an emergency such as crime or a disaster occurs, security guards rush to the site if needed in order to protect the house, family, fortune, and so on.

After the mid-2000s, although the number of crimes has tended to decrease[15], consumers’ heightened awareness of buying safety and companies’ expansion of services in response to this have led to the market expansion. Formerly, there was a lot of demand among the high-income class, but it is regarded as one of the factors of market expansion that the customers’ range has been widened by diversification of service contents or price plans. From now on, the necessity for the home crime prevention is increasing with an upward trend of nuclear families or the aging[16].

- Background of deleting of “Clean water equipment” (subgroup: Domestic utensils)  
 “Clean water equipment”<sup>7</sup> is to be deleted because its proportion was below 1/10,000 from the results of the special tabulation on FIES 2013. It is considered that the spread of mineral water and water delivery<sup>8</sup> are the background for this.

After experiencing the Great East Japan Earthquake, a growing number of people have started placing importance on acquiring drinking water safer than tap water and on stockpiling it, and it has been boosting the market of mineral water and water delivery has expanded[17].

Household consumption expenditure for “Mineral water”, added at the 2000-base revision, tends to increase by seeing change from 2005, although its highest was in 2011. The market is likely to continue its rising trend.

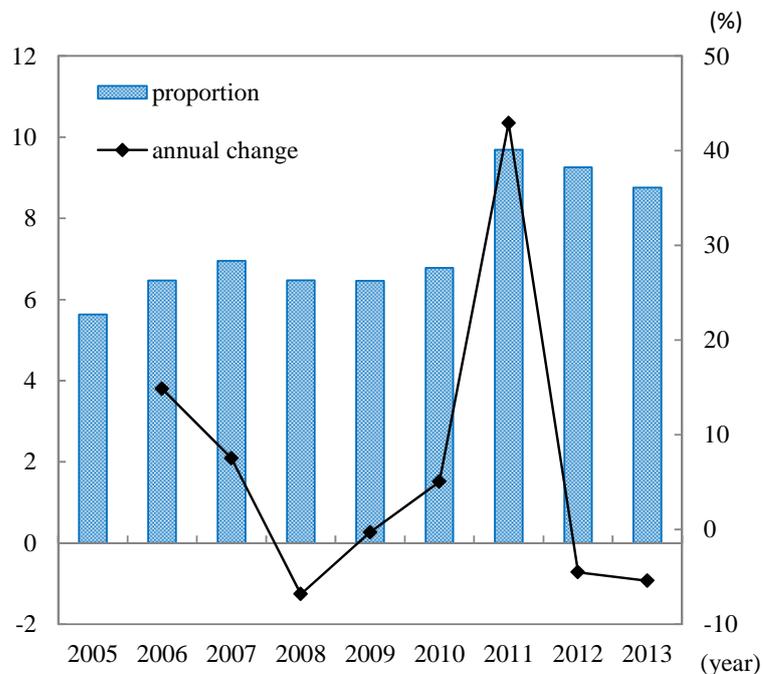


Fig.6 Trends of Proportion of Mineral Water to total consumption expenditure (2005~2013)[18]

<sup>7</sup> Equipment to clean tap water installed in tap water faucets in houses

<sup>8</sup> The water delivery business is a packaged business of delivering water and lending a water server.[17]

Regarding water delivery service, its big popularization to households has been reported. Formerly, the number of users among offices or commercial facilities was greater, but, especially after the Great East Japan Earthquake, the number of users among general households has been boosted[19].

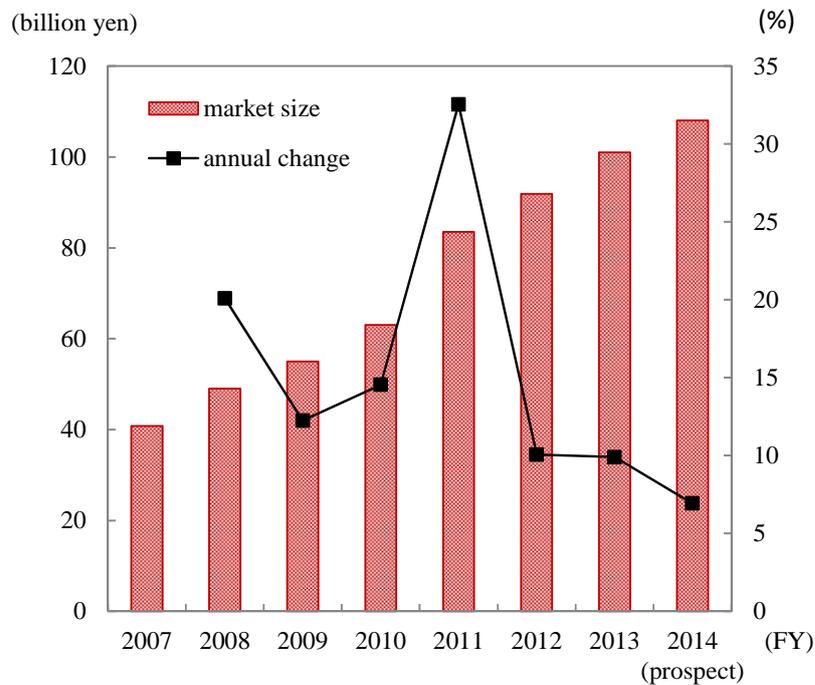


Fig.7 Trends in Water Delivery Market (2007~2014)[17]

### 5-3. Progress of Information and Communication Technology (ICT)

With its exponential improvement of the ability and price fall, ICT has become widespread and has brought many big changes in various fields all over the world[20]. It is also the same in Japan. The Internet penetration rate in Japan has rapidly grown. It stood at 82.3% at the end of 2013 while it was 64.3% in 2003. Particularly, due to the spread of smartphones and tablet PCs, the internet has become more common in people's daily life[21].

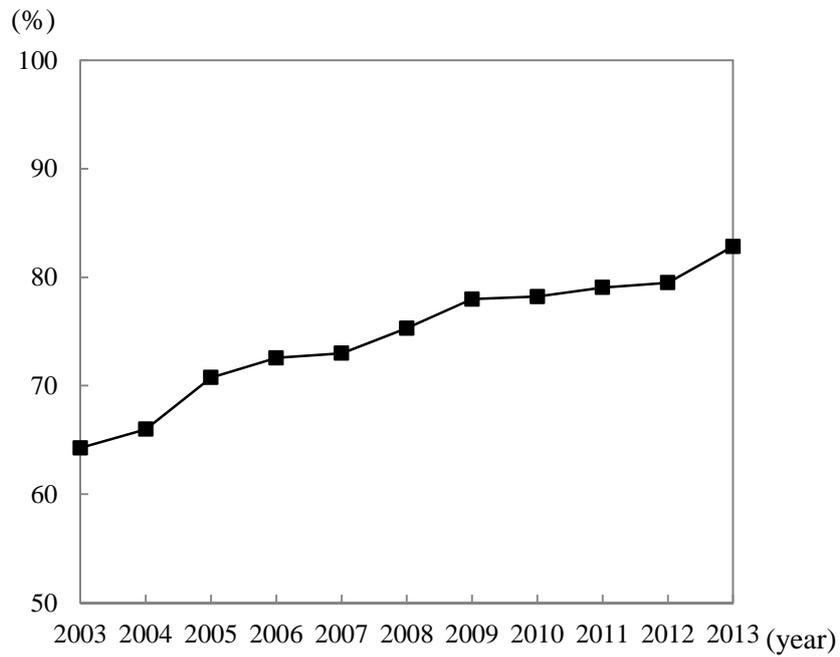


Fig.8 Trends of the Internet Penetration Rate (2003~2013)[21]

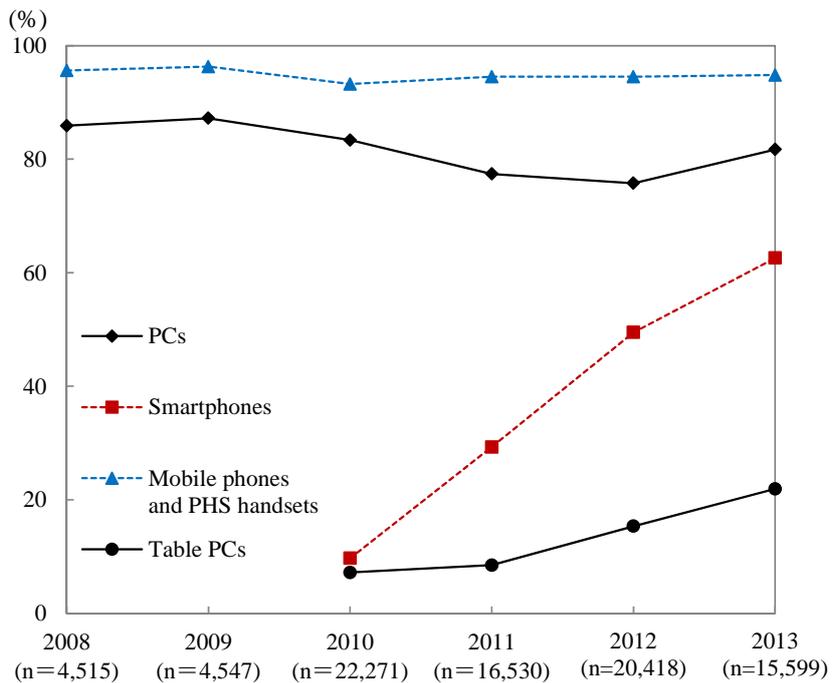


Fig.9 Trends of household penetration rates for main ICT devices[21]

- Charge for web content usage (subgroup: Recreational services)

From the above background, the market of web content, which is downloaded or streamed via the internet to PCs or mobile phones, has increased steadily[20], and further expansion hereafter is expected.

“Music download service fees”, added at the 2010-base revision, is to be renamed in order to expand its scope; to add content including not only music but also movies, apps, e-Books and so on.

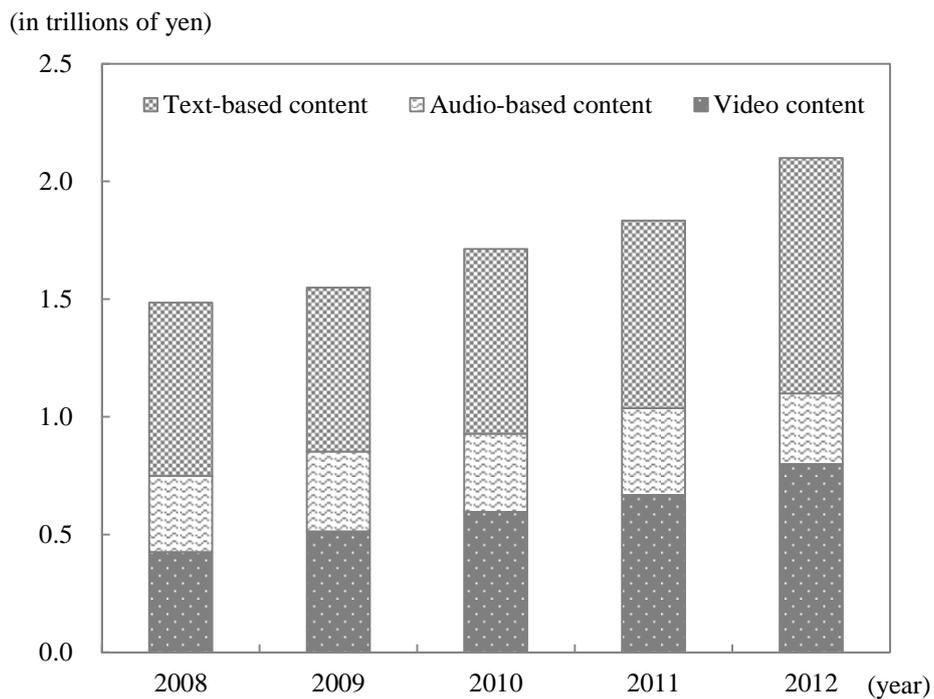


Fig.10 Trends in the digital content market (by content segment) (2008~2012)[22]

#### 5-4. Change in lifestyle and food life

As changes of the social structure in Japan, the increase of the double-income household due to women’s social advancement is given as well as aging. From such background, consumers’ lifestyle has changed and their food life is changing in connection with that.

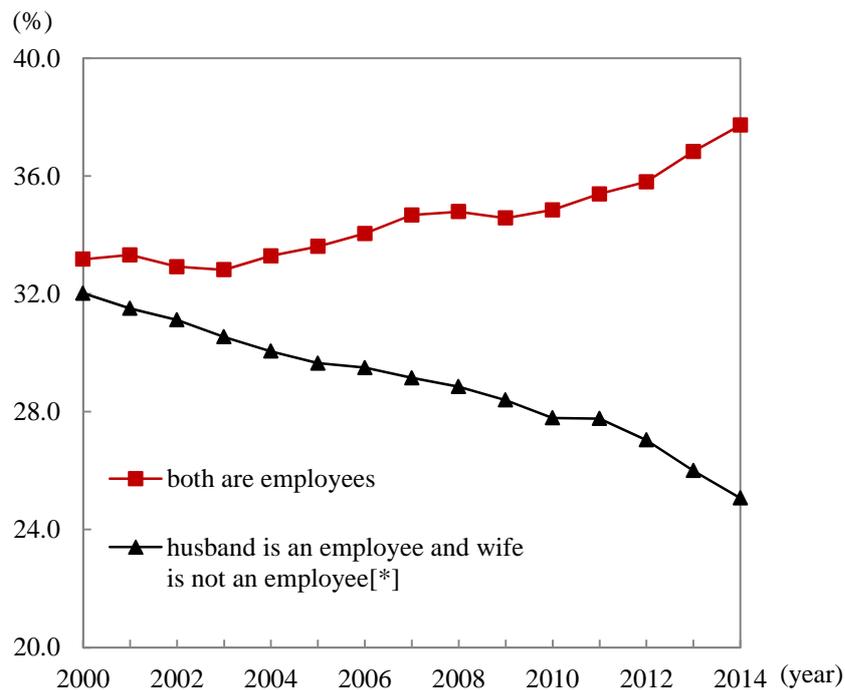


Fig.11 Trends of Proportion of households whose husband is an employee by labour force status of wife[23]

- Increase of importance of subgroup “Cooked food”

From the above background, the market of cooked food has increased year by year. It is thought the number of people who think cooking at home is troublesome or that they have no time to cook has increased[24].

Fig.12 shows the trends of household consumption expenditure proportion of each subgroup in the food group (2003~2013). According to this, the subgroup “Cooked food” increased the most, 1.49 % points. On the other hand, the subgroup “Fish & seafood” decreased the most, 2.60 % points, and “Fresh food (reentry)”<sup>9</sup> decreased 2.03 % points. Of course, the proportion of “Fresh food” is much larger than that of “Cooked food”, but it is considered that the transition of expenditure from “Fresh food” including “Fish & fresh seafood” to “Cooked food” happens as a tendency.

At this 2015-base revision, in the subgroup “Cooked food”, there are 4 items to be added, “Sushi (Box lunch) B”, “Box lunch B”, “Cooked pizza” and “Roast pork”, while there is no item to be deleted. Its total amount is the most among all sub groups. On the other hand, in the subgroup

<sup>9</sup> Group which includes groups of “Fish & fresh seafood”, “Fresh vegetables”, and “Fresh fruits”.

“Fresh food”, there is 1 item to be added, “Shiranui-mandarins”, while there are 3 items to be deleted, “Flounder”, “Lemons”, and “Iyo-mandarins”.

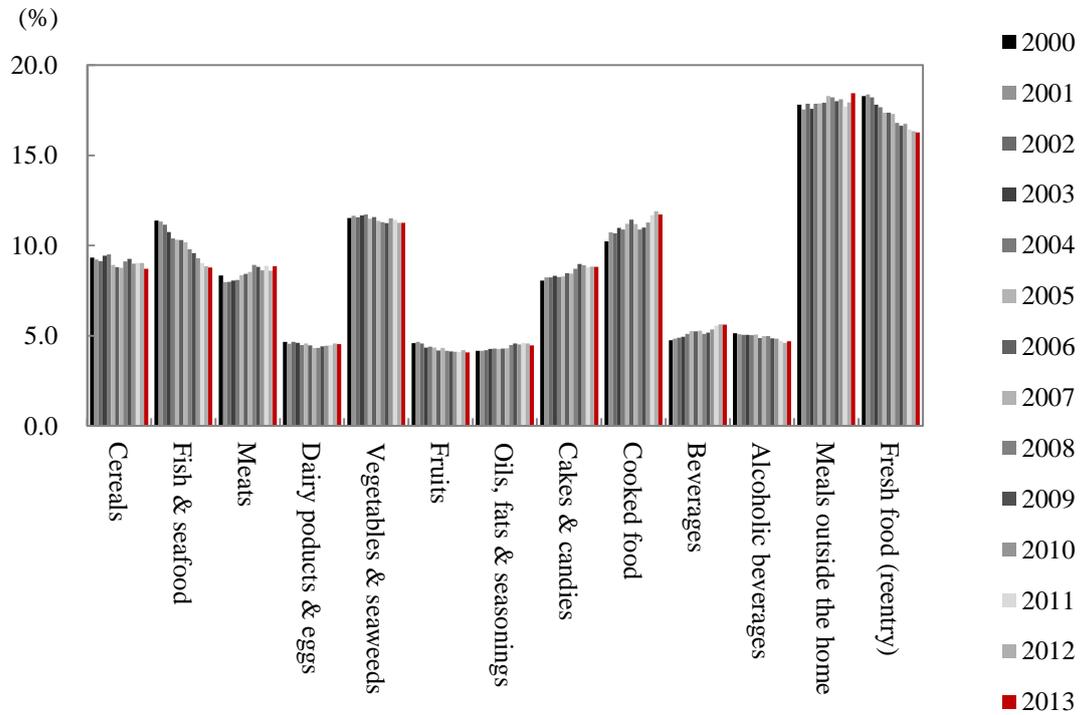


Fig.12 Trends of household consumption expenditure proportion of each subgroup in the food group (2003~2013)[25]

The following figures show trends of proportions of the number of items and weight in each subgroup in the “Food group” after the 1990-base. According to this, subgroup “Cooked food” has increased the most in both the number of items and weight.

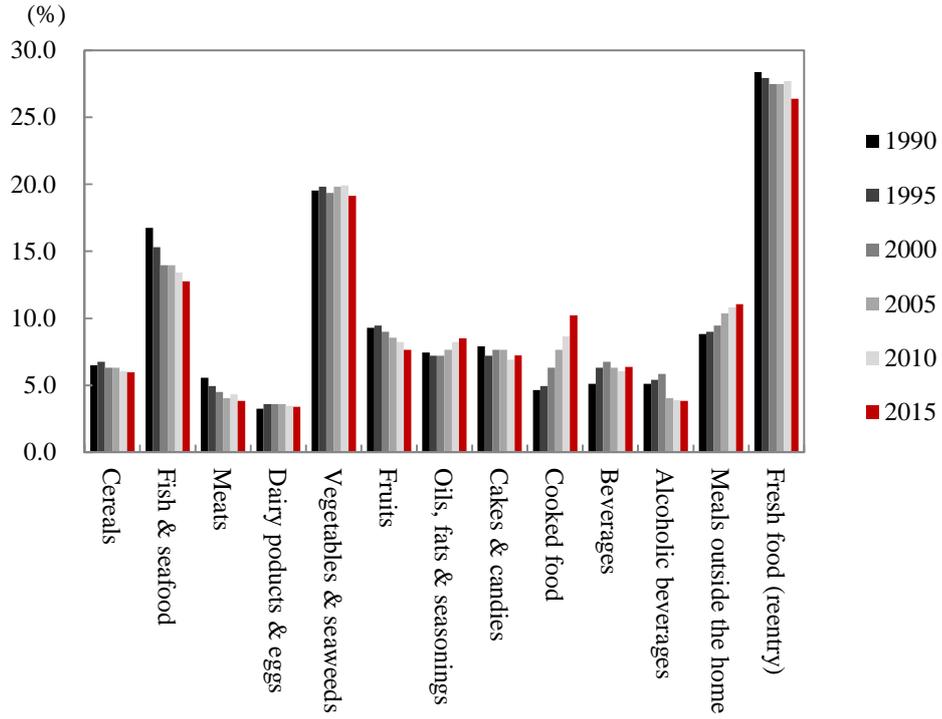


Fig.13 Trends of number proportions of items included in each subgroup in the food group (1990-base~2015-base)

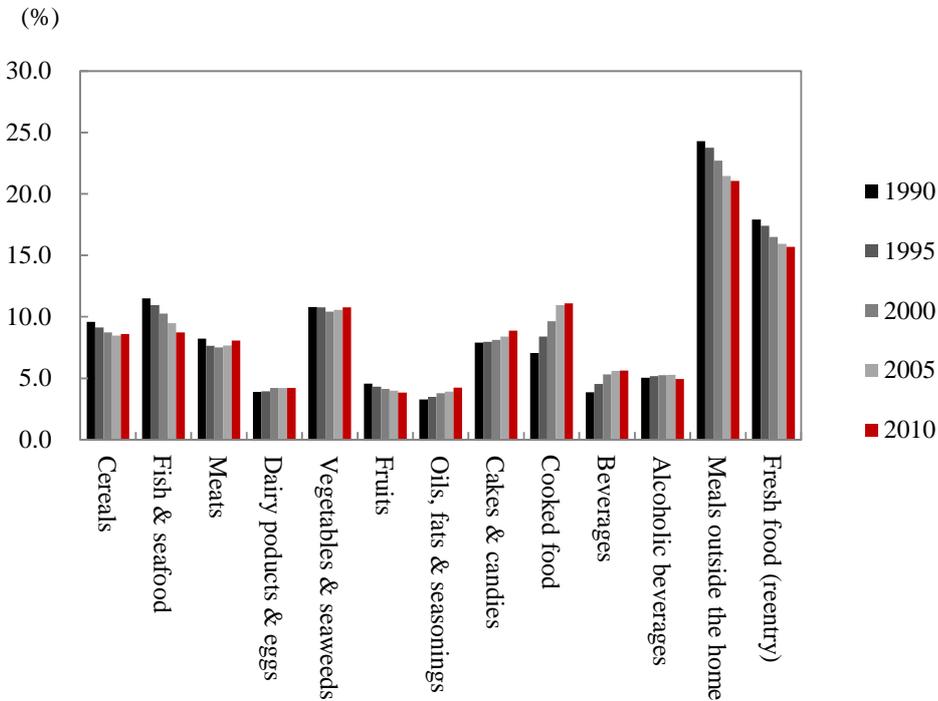


Fig.14 Trends of weight proportions of each subgroup in the food group (1990-base~2010-base)

- Coffee beverages (self-service) (subgroup: Beverages)

“Coffee beverage (self-service)” is the so-called “convenience store coffee”, a new hot seller of convenience stores. It is a product which provides customers with freshly brewed coffee by using a drip coffee machine installed in the store<sup>10</sup>. After 7-Eleven, which is the primacy convenience store chain in Japan, started selling it from Jan. 2013, the sales jumped to 1,000 million cups by July 2013.

Now it has spread to the stores of the whole country in the main convenience store chains. In addition, because its price range is equal to canned coffee, it has influenced the sales of not only the canned coffee market but also coffee shops. The strategy of the coffee beverage in each market is accelerating at a stretch.

To reflect this, “Coffee beverage (self-service)” is to be added by dividing the weight of “Coffee beverage”, which is already included. “Coffee beverage” was added at the 2000-base revision corresponding to the integrated weight of two FIES items, “Coffee beverages” and “Cocoa & cocoa beverages”.

Table.6 CPI items corresponding “Coffee beverages” and “Cocoa & cocoa beverages”

FIES items	2010-base CPI items	2015-base CPI items
Coffee beverages	Coffee beverage	Coffee beverage
Cocoa & cocoa beverages		Coffee beverage (self-service)

Convenience stores are continuing to provide new goods and services in order to meet various needs of Japanese people. Both the number of the stores and the amount of sales have increased since they were introduced to Japan in the 1970s, and now they make annual sales of about 10 trillion yen with more than 50 thousand stores nationwide. It is a huge business among the whole retail trade. It has become already indispensable for Japanese life and the Japanese economy[26]. In the past, young people were the central users, but especially after the Great East Japan Earthquake in 2011, elderly users have increased. Because convenience stores, which had the advantage of physical distribution, recovered early from the confusion of the product supply that happened soon after the disaster, its sense of existence was strengthened[27].

I'd like to get my eyes on the trend of the convenience store and consumer's consumption behavior from now on.

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<sup>10</sup> In some convenience stores it is provided by the clerks' brewing the coffee.

## 6. Conclusion

SBJ has proceeded with reviewing the basket items for 2015-based CPIs as explained above. It is considered that this revision meets actual consumption patterns and its changes are grasped by the careful special tabulation.

The background of market expansions of the main newly added items was considered based on newspapers in section 5. Family consumption in our country reflects the changes in society structure such as the rapidly aging of the population and women's social advancement. In addition, the Great East Japan Earthquake in 2011 influenced awareness and attitude of many Japanese strongly and it was again recognized that the consumption behavior is associated with that.

SBJ will continue to make efforts to improve accuracy for reliable CPIs by making basket items appropriate and corresponding to changes of consumption patterns through proper reviews.

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