# The Adaptation of the Variable Weights of Seasonal Agricultural and Marine Products in the Consumer Price Index

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## 1 Introduction

The aim of this paper is to compare different methods to compile the consumer price index(CPI) for seasonal agricultural and marine products. Section 2 describes two methods, i.e. a method constanat weights for using *bohap price* and another method variable weights for using *real price* application. It also looked at possibilities for the applicaton of these method with regard to the 4 aspects of the present circumstances. In section 3, the two methods are compared against the results obtained from the indexes. Finally, conclusions are given the last section.

## 2 Description of methods

### *2.1 Conparison of two methods*

Constant weights method (CWM) has been used for compiling CPI seasonal agricultural and marine products. This method enables us to remove abrupt price fluctuations, and prevents CPI from being distorted by seasonal change and irregular fluctuation. However, as time goes by, two kinds of problems arise from the method. First, the gap between the steady price and real price of each item is so wide that the change of real price is not suitably reflected in the CPI during the steady period. Secondly, consumption trends which differ according to seasons are not fully reflected in the CPI because monthly weights for each item are fixed when we compile sectoral CPI, i.e. the sum of individual items, and aggregate CPI. On the other hand, the Variable weights method (VWM) enables us to heighten the degree of real world reflection since it reflects the pattern of monthly consumption and yearly change in price is well applied in CPI.

### *2.2 Consideration for applying Variable Weights method*

In other to apply variable weights method to the real world survey, we review the data from the viewpoints of four aspects, i.e. consumption expenditure of urban households, carry-in amount, transaction amount, and the possibility of the price survey.

**Consumption expenditures of urban households** It is possible to survey ten items including yellow corvina, hairtail, radish, Chinese cabbage throughout the year. And we find out that 14 items including spinach, eggplant, pear, peach, and grape have longer periods for consumption expenditure.

**Carry-in amount** As for monthly carry-in amount, 11 items including yellow corvina, Chinese cabbage, and tomato are maintained above a certain amount throughout the year. And it is shown that 12 items including spinach, apple and melon have longer carry-in period than before.

**Transaction amount of money** When it comes to transaction amount, 12 items including yellow corvina, Chinese cabbage and leek are transacted above a certain amount throughout the year. And 11 items including eggplant, pear and strawberry have longer transaction period.

**Possibility of the price survey** It is possible to survey 4 items including Chinese cabbage, radish and unripe red pepper in the entire cities. And we could survey 10 items including yellow corvina, spinach and tomato in 70% of the entire cities.

Consequently, we conclude that it is possible to apply VWM to the real survey since yearly survey s have become possible and the number of items with shorter steady period is getting larger than before.

## 3 Application and Result

The method of weight application for the seasonal change in compiling CPI is as follows. Sectoral weights in fish, vegetables, and fruits are fixed as a constant weight. Weights for individual items in the same sector are applied as a variable weight by month. We get monthly weghts throught this method and calculate the weghts applying the average consumption expenditure amount of urban households from 1995 thorough 1997 by month and item.

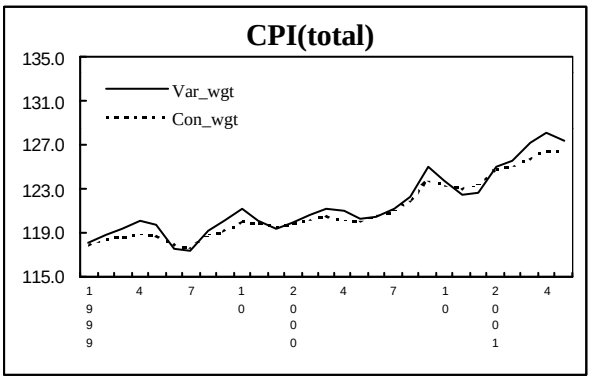
The real price survey is implemented from Jan. 1999. As we get a result of 2-year CPI compilation for seasonal agricultural and marine products, the fluctuation range of CPI using VWM is wider than that of CWM, but yearly average growth rate and the proportion of year-end are almost the same as each other. As it goes to the lower groups, the fluctuation of CPI using VWM is getting big and we can conclude that it suitably reflects agricultural and marine products' price trend.

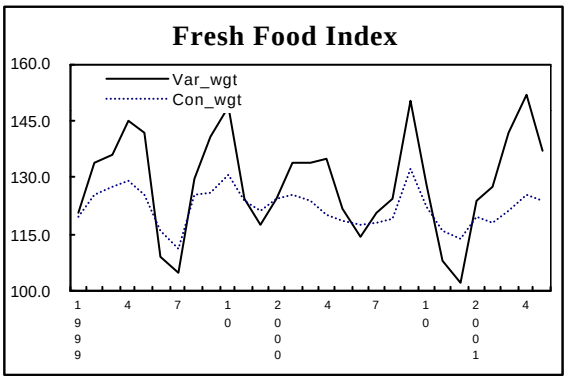
Table 1 Consumer Price Index(Total)

| | | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|
| Yearly mean rising rate | Constant weights(A) | 4.9 | 4.5 | 7.5 | 0.8 | 2.3 |
| | Variable weights(B) | 5.0 | 4.5 | 7.6 | 1.0 | 2.1 |
| | **Difference (A-B)** | **-0.1** | **0.0** | **-0.1** | **-0.2** | **0.2** |
| Change over the last month | Constant weights(A) | 4.9 | 6.6 | 4.0 | 1.4 | 3.2 |
| | Variable weights(B) | 4.8 | 6.4 | 4.0 | 1.6 | 2.8 |
| | **Difference (A-B)** | **0.1** | **0.2** | **0.0** | **-0.2** | **0.4** |

Table 2 Consumer Price Index(Fresh food)

| | | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|
| Yearly mean rising rate | Constant weights(A) | -3.2 | 8.3 | 8.3 | 8.6 | -1.9 |
| | Variable weights(B) | -2.1 | 9.5 | 9.3 | 10.6 | -3.7 |
| | **Difference (A-B)** | **-1.1** | **-1.2** | **-1.0** | **-2.0** | **1.8** |
| Change over the last month | Constant weights(A) | 10.3 | 9.3 | 8.9 | 3.7 | -6.3 |
| | Variable weights (B) | 8.4 | 7.7 | 9.7 | 9.2 | -13.3 |
| | **Difference (A-B)** | **1.9** | **1.6** | **-0.8** | **-5.5** | **7.0** |




## 4. Conclusion

In terms of the agricultural and marine products, VWM is available and its real world reflection is quite good. So we can conclude that it is possible to apply VWM for agricultural and marine products in compiling CPI. We plan to study for seasonal adjustment after accumulating a time series.