Comments on Dr. Weinstein’s paper

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Dr. Weinstein claims in his paper “Defining Price Stability in Japan: A View from America” that Japan’s CPI may have an upper bias of 1.8%. This judgment seems to be based on conjectures or misunderstandings of the methodology of Japan’s CPI, and I find the conclusion unacceptable. In this paper, I would like to point out main problems in Dr. Weinstein’s paper.

1. Quality Adjustment

We believe that the greater usage of hedonics in the US probably means that the Japanese CPI deviates by around 0.2 from the US CPI.”

1 In Japan’s CPI, quality adjustment is done mainly by the overlap method, and the hedonic method is currently applied to three items: personal computers, printers, and digital cameras. The overlap method is commonly used also in US CPI for the items to which the hedonic method is not applied.

2 According to the researches in Japan and foreign countries, it is not possible to determine whether either of the two methods produces consistently higher or lower results than the other method. This point can be verified by looking at some CPI data of Japan and USA. The example below shows that Japan’s CPI based on the overlap method is lower than the US CPI for the item to which the hedonic method is applied in US.

3 Figures 1 - 3 shows the CPI data of “major appliance” which include “refrigerator”. For “refrigerator”, US CPI applies the hedonic method for quality adjustment, while Japan’s CPI applies the overlap method. Unfortunately, direct comparison of “refrigerator” index is not possible because the US does not publish the item index for “refrigerator”, while Japan does. But we can compare the index of “major appliance”, which is the immediate higher level including “refrigerator”. According to the data, the US “major appliance” index stays quite stable since 1999, while Japan’s “Household Appliance” index shows annual decrease by 6 to 12 percent. Although it is not possible to determine the real causes of the difference between USA and Japan, this evidence shows that Japan’s CPI based on the overlap method is not necessarily higher than the US CPI based on the hedonic method.

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In regard to the use of the hedonic method, it should also be noted that USA stopped using the hedonic method for the personal computers, and switched to the “attribute” method. This fact also exemplifies that the hedonic method is neither universally desirable nor ideal for quality adjustment.

2. Lower Level Aggregation Formula

(P.11 Line 6)

“Based on these estimates, we believe that a reasonable estimate the upward bias [sic] due to lower level substitution to be around 0.4 percent per year in Japan as well.”

This statement is based on an analogy based on Dr. Weinstein’s analysis of the price data of 10 US cities. Although the details of the analysis cannot be known from Dr. Weinstein’s paper, a comparison between Laspeyres formula and Tomqvist formula seems to have been done using the US data. The data used in the analysis seems to represent limited area coverage within USA. Japan’s lower level aggregation formula is not Laspeyres formula but a formula called Dutot formula, which is expressed as the ratio of arithmetic mean prices. According to some researches, Dutot formula is known to give negligible biases when applied to homogeneous set of products. It is, therefore, not appropriate to equate the gap obtained in the analysis with a possible bias in Japan’s CPI.

\[
I_D = \frac{1}{n} \sum P_u \times 100 \quad \cdots \text{(Dutot formula)}
\]

\[
I_J = \prod \left( \frac{P_n}{P_{0i}} \right)^{\frac{1}{n}} \times 100 \quad \cdots \text{(Jevons formula)}
\]

In order to assess the magnitude of the difference of “Geometric Mean Formula”, we have done a small experimental calculation for “beer” using the real price data for Tokyo CPI. As shown in Table 1, the geometric mean formula(called Jevons) gives nearly identical results to that of the official CPI for most of the period. In two months, the geometric mean figure is lower by 0.1 than the official CPI in a few months, but it is higher in two other months. Although this experiment may be not be large enough to draw a firm conclusion, this result at least shows that even if Japan’s CPI adopted the geometric mean formula as in US the difference would be negligible.
3. **COLI vs COGI**

“For this reason most statistical agencies around the world recognize that the measurement goal of CPI is a COLI.”

7 This statement is contrary to the fact. So far as I see, there are many developed countries that recognize CPI as “Cost-of-Goods Index (COGI)” rather than “Cost-of-Living Index (COLI)”.

8 For example, the Technical Manual of UK CPI clearly states that “the CPI and RPI are specifically not intended to measure what people often refer to as ‘the cost of living’. Statistics Canada also takes the same position. In the European Union, HICP (Harmonized Index of Consumer Prices) is compiled by EU member countries with the same concept and methodology, and the HICP Manual adopted by EU also states that the HICP s are “Laspeyres-type indices” rather than “cost-of-living indices”. Japan has been taking the same position as these countries.

4. **Regional Price Difference**

If there is not much difference in the price of, say, a 0.5 liter bottle of Diet Coke in two cities, statistical agencies can save significant amount of money by not collecting regional price information on goods… This information could be used in Japan to increase the sample size of the lower level of the CPI.

9 While I appreciate Dr. Weinstein’s suggestion for possible improvement of efficiency of data collection, his observation is contrary to the current Japanese conditions. The Statistics Bureau conducts a large scale price survey every five years, and according to the result, the variation of prices among municipalities is much larger than Dr. Weinstein’s notion based on the scanner data of 10 cities in US.

10 Figure 4 shows the distribution of average prices of Coca Cola among different municipalities. The prices range from 100 yen to 150 yen per bottle of 500 ml. The standard deviation is 7 yen, or about 5 percent of the mean price, which is not a small variation. As this fact shows, a simple conjecture guessing the Japanese situation from US data is not necessarily correct.
5. **Conclusion**

11 There are several other misunderstandings in Dr. Weinstein’s paper. For example, while Dr. Weinstein points out that new items such as MP3 players and other new equipments are not reflected in Japan’s CPI. Until the 1995-base CPI, the items were replaced basically every five years due to the limitation of resources. But from the 2000-base CPI, it has become possible to introduce new items even before the next base year. As a result, iPod is already incorporated since 2007 in Japan’s CPI.

12 Although we cannot accept the claims that are based on misunderstandings or wrong inferences, we welcome comments and criticisms about the statistics we publish. We are ready to consider them as precious inputs for improving the quality of statistics. We would like disseminate both statistics and the information about the statistics so that users can better understand the statistics they are using.