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Release of a Reference Wholesale Price Index Using a Geometric Mean Formula

Introduction

In recent years, concern about the accuracy of price statistics has risen in industrialized countries where the statistical bias in price indexes seems to have grown significantly while actual prices have generally been stable.¹ The Bank of Japan has worked to improve the accuracy of its Wholesale Price Index (WPI) over the years, but many problems remain to be solved.²

One such issue is the formula used for calculating the index. Recently, the Bank decided to publish a reference WPI using a geometric mean formula (WPI-UGM) in addition to the conventional index using arithmetic mean method (Laspeyres index). Although the new formula may not succeed in removing the bias in the current index, the Bank considers that by publishing more data, it can provide users with more information about the possible measurement bias in the present WPI.

¹ In the United States, a report titled "Toward a More Accurate Measure of the Cost of Living" was submitted to a Senate Committee in December 1996 by the Advisory Commission to Study the Consumer Price Index (Boskin Commission). This report triggered a series of controversies over the accuracy of the Consumer Price Index (CPI). Chairman Alan Greenspan of the Federal Reserve Board has frequently made references to this issue. In Germany, the Bundesbank published a discussion paper in March 1998 titled "Problems of Inflation Measurement in Germany: Non-Technical Summary" (Hoffmann [1998]). In Japan, too, a paper was published concerning the problem of CPI measurement errors (in Japanese, Shiratsuka [1995]).

² In general, problems with the accuracy of price indexes can result from (1) factors relating to the formulae used to calculate indexes, as discussed in this paper; (2) failure to adapt statistical samples properly to reflect changes in consumer preferences and distribution channels; and (3) failure to make appropriate adjustments for changes in quality of goods and services. In order to deal with (2) and (3), the Bank revises the weights of goods based on expenditure on individual items (expenditure shares) every five years, reviews and replaces individual items in the basket when necessary, and makes an adjustment for quality changes between old and new items at the same time. Quality adjustment for such goods as personal computers is made by applying an econometric method known as the "hedonic regression method."