

Chain Laspeyres Index in the Korean CPI

Ji-Young, Choi

Division of Price Statistics, Korea National Statistical Office

Government Complex Daejeon, Dunsan-dong, Seo-gu

Daejeon, Korea

Panecia@nso.go.kr

1. Introduction

A common criticism about Laspeyres, fixed-base, price index is that it may not reflect the *current* consumption patterns which are able to change over time due to the technological development and demographic factors. For example, with the rapid technological advances in the information and telecommunication industry, new items such as mobile phones and PCs have appeared in the market and their relative importance is rising in the consumption expenditures. Though CPI should measure the true price movement, it may be not easy to reflect it owing to such out-of-date weights and less representative basket.

We have an interest in the chain index with annual links since it can overcome the out-of-date weight problem by the annual procedure of reweighting. This paper discusses the result of the trial calculation of chain index in Korean CPI.

2. Outline of the empirical study

For the calculation, the expenditure data from the FIES (Family Income and Expenditure Survey, 1995-2000) and price data from consumer price surveys were used.

As the first step in this analysis, we examined which one is more reliable to the Korean CPI between reweighting methods – price-updating and non-price-updating.

Reweighting with price-updating is the method that consumption values of the weights reference period are updated by multiplying each by the ratio of its sub-index for the later period to its value for the former period and then rescaling their sum on the basis of the assumption that the quantity of consumption by item is constant. Reweighting without price-updating is the method that the information from the FIES or a special survey is used. However, in most cases, the data from the FIES is just available with a time lag and a special survey costs too much. Therefore, some countries selecting this method applies the expenditure data from the previous year FIES due to such practical reasons.

The next step is to calculate the chain Laspeyres indices using the reweighting method of non-price-updating which applies the expenditure data of the previous year. And then, we compared the numerical results with the direct indice.

3. Numerical Results of the Study

Reweighting in CPI

It was found from the result of comparing two methods that the reweighting of non-price-updating is more accurate on the grounds that the weights measured by this method are similar to the real weights surveyed by HBS. The cause of a significant difference between the price-updating weights and the real weights is that the consumption patterns of households are not stable in Korea.

According to the calculated outcomes using reweighting without price-updating, the ratios of food & beverage, furniture & appliances and clothing & footwear decreased during the period from 1996 to 2000 year. On the other hand, the share of transportation and communication increased during the same period owing to the incremental consumption of items produced by IT industry.

Trial calculation of Chain-indices

- **Central Index (National CPI)** : The ratio of the annual chain indices change by year during the period from 1997 to 1999 are lower by 0.1%-0.3% than the direct Laspeyres indices. The reason is that the latter have an upward bias which means that they may not regard the principle of “substitution effect”.
- **Satellites index (Living Index** : centering on basic necessities like food, clothing and housing) : The ratio of the annual chain indices change by year is 0.0-0.4 % higher than that of the direct index caused by the low price elasticity of demand for necessities

4. Conclusion

As far as the Korean Laspeyres CPI is concerned, the problem of an upward bias caused by the substitution effect doesn't seem to be serious. However, it is not to be denied that chain index can reflect the current consumption patterns better than direct index.

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RESUME

Deputy director of Division of Price Statistics , Korea National Statistical Office