

# Estimation of Core Inflation with Use of Headline CPI's Characteristics of Cross-sectional Distribution

Under an inflation targeting regime, Korea's central bank and most major central banks set headline CPI, which is closely related to the real lives of the general public, as a target index for price stability. However, the CPI includes a number of items, such as agricultural and petroleum products, which show temporary/one-off price changes that can disrupt price movement. Taking this into consideration and in order to implement monetary policy in an appropriate way, major central banks estimate and use measures of core inflation as a price index that excludes the excessive volatility included in the headline CPI and at the same time reflects future changes that serve as a medium and long-term information.

In core inflation estimation-related studies previously undertaken by Korean researchers, cross-sectional distribution has not been discussed sufficiently, and accordingly, in-depth analysis of estimation method has not been sufficient. In view of this, core inflation is estimated based on analyses of the cross-sectional distribution of Korea's headline CPI to reflect its distribution characteristics and it is examined whether or not this new index can serve as a price index.

The analysis of cross-sectional distribution of the price volatility of the 81 items making up Korea's headline CPI shows that headline CPI growth is highly likely to fluctuate severely because of the items that occur on the two tails of the cross-sectional distribution. In order to remove this noise, core inflation is estimated with use of a trimmed mean measure and a specific product exclusion measure, by setting the weights of the items at both tails at zero and accordingly readjusting the weights of the rest items.

In case of an trimmed mean approach, unlike preceding studies, optimal trims are calculated and different trims are applied to the left tail and the right tail in consideration of the asymmetry of the distribution. The analysis shows that the optimal trim for core inflation is estimated to stand at 18% (left : 10.26%, right : 7.74%).

The products appearing frequently at both tails of the cross-sectional distribution based on the specific product exclusion measure are found to be substantially identical to products excluded from the current core inflation calculations. This implies that the products excluded from the current core inflation calculations in Korea are limited to items subject to supply shocks, which it is hard for the authorities to control, although they consider characteristics of the cross-sectional distribution and changes in the economy.

Comparisons in terms of stability, alignment and predictability were made between core inflation using a trimmed mean measure (18% trim) and the current core inflation calculation in an effort to evaluate the appropriateness of core inflation calculated based on the two measures. The comparison results show that the trimmed mean approach is relatively better than the exclusion approach in terms of stability and alignment. Meanwhile, no particular difference is seen between the two approaches in terms of predictability. However, consideration needs to be given to the fact that the exclusion measure reflects the adjustment possibility of the authorities and is relatively superior in terms of public understanding and transparency. Hence, a core inflation indicator using the trimmed mean measure and the indicator using the exclusion measure would both seem to have their own uses.

In this light, the authorities need to utilize core inflation indicators using various measures, alongside the existing price index. Comparison among various core inflation indicators enables an accurate grasp of basic movements in Korean prices, especially in the recent situation where domestic prices show instability due to a global hike in prices of raw materials, including that of oil. Hence, such a comparison is likely to help the authorities analyze, evaluate and forecast price conditions.