Calculation formula for 'impact of weight change', 'impact of index reset' and the other factors

The contribution of an item i is described as follows with the change rate c.

$$Contribution_i = \frac{(I_{t,i} - I_{t-1,i}) \times \frac{w_i}{w_{All}}}{I_{t-1,All}} \times 100 = \frac{(I_{t,i} - I_{t-1,i})}{I_{t-1,i}} \times 100 \times \frac{I_{t-1,i}}{I_{t-1,All}} \times \frac{w_i}{w_{All}} = c_{t,i} \times \frac{I_{t-1,i}}{I_{t-1,All}} \times \frac{w_i}{w_{All}}$$

I: index, w: weight, c: change from the previous year (%), i: item, All: all items

With this formula, the impact of the base revision on the contribution change of the item is decomposed as follows.

$$Contribution_i^{(N)} - Contribution_i^{(O)} = \left(\frac{w_i^{(N)}}{w_{All}^{(N)}} - \frac{w_i^{(O)}}{w_{All}^{(O)}}\right) \times c_{t,i}^{(O)} \times \frac{I_{t-1,i}^{(O)}}{I_{t-1,All}^{(O)}} \qquad \text{... impact of weight change}$$

$$+ \left(\frac{I_{t-1,i}^{(N)}}{I_{t-1,All}^{(N)}} - \frac{I_{t-1,i}^{(O)}}{I_{t-1,All}^{(O)}}\right) \times c_{t,i}^{(O)} \times \frac{w_i^{(O)}}{w_{All}^{(O)}}$$

$$+ \left(\frac{w_i^{(N)}}{w_{All}^{(N)}} - \frac{w_i^{(O)}}{w_{All}^{(O)}}\right) \times c_{t,i}^{(O)} \times \left(\frac{I_{t-1,i}^{(N)}}{I_{t-1,All}^{(N)}} - \frac{I_{t-1,i}^{(O)}}{I_{t-1,All}^{(O)}}\right)$$

impact of index reset

$$+ \frac{w_i^{(N)}}{w_{All}^{(N)}} \times \frac{I_{t-1,i}^{(N)}}{I_{t-1,All}^{(N)}} \times \left(c_{t,i}^{(N)} - c_{t,i}^{(O)}\right) \qquad \text{... impact of revision for calculation}$$
models and weights on inner-item in
'model-based estimation' items, etc.

O: old base, N: new base

The first term of the right side indicates the impact of weight change; the second term, the impact of index reset; the forth term, the impact of the other factors such as revision for calculation models and weights on inner-item in 'model-based estimation' items, changes of item indices for Japan derived from the update of regional integrating weights. The third term indicates the interaction between the impact of weight change and the impact of index reset, included in the impact of index reset here.

The impact of add/remove items are equals to the values of contribution (add items) or the values of contribution multiplied with negative one (remove or integrated items).